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RECEIVED 30 July 2024

ACCEPTED 14 February 2025

PUBLISHED 11 March 2025

CITATION

Watts J, Hubner A, Pei J and Barros
Coelho M (2025) Is it safe? The effect of
narrative vs. non-narrative messages on
story-related knowledge of medicated
abortion.

Front. Commun. 10:1473154.
doi: 10.3389/fcomm.2025.1473154

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Is it safe? The effect of narrative vs. non-narrative messages on story-related knowledge of medicated abortion

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Introduction: Entertainment television programming has increasingly featured abortion content in storylines. To date, few studies have examined whether and how narratives vs. non-narratives impact learning and retention of polarizing health information. This study aims to investigate the potential for media-based learning from exposure to narratives.

Methods: We conducted a between subjects (format: narrative vs. non-narrative) by within subjects 2 (time: immediate post-test vs. delayed post-test) on a college population sample (time 1: $n = 220$; time 2: $n = 125$). Additionally, we tested both closed- and open-ended measures of knowledge by using a true/false test and free recall measure to test participants' memory of factual-based knowledge of medicated abortion.

Results: Both the non-narrative and narrative were equally effective on knowledge recognition (true/false scores), but the non-narrative was more effective for knowledge recall (open-ended scores). Individuals who were counter-attitudinal toward abortion exhibited greater knowledge recognition of medicated abortion at time 2 from watching the narrative. Knowledge recognition appeared stable at wave 2 while knowledge recall decayed at wave 2.

Discussion: Individuals are more likely to remember general safety and efficacy of medicated abortion regardless of format, but less likely to remember precise information about the medication from entertainment narratives. Narrative persuasion mechanisms were not found to mediate narrative exposure on knowledge about medicated abortion. However, narratives appear to facilitate learning about polarizing health information for those with unfavorable attitudes toward the topic.

KEYWORDS

entertainment, persuasion, learning, reproductive health, risks

Introduction

Nearly 50 years after the Supreme Court recognized abortion as a civil right in their *Roe v. Wade* ruling, the Supreme Court issued a new ruling overturning the decision (Sherman, 2022). In the months following the landmark reversal, abortion has been on the ballot as several states have moved to either protect or overturn abortion rights for their residents (Felix et al., 2024). Indeed, political pundits have opined that candidate's position on abortion—

whether for or against—will be a major deciding factor in the 2024 presidential election (Ax, 2023).

The safest form of abortion is a medicated abortion, which is a form of self-managed abortion; the most common of which involves a combination of mifepristone and misoprostol (Moseson et al., 2020). Medicated abortions typically happen in the first 10 weeks of pregnancy, have an efficacy rate of 96.7%, and are considered very safe as there are very few severe, adverse reactions (Chen and Creinin, 2015). Despite their efficacy and safety, roughly half of US adults believe medicated abortion should be illegal (Pew Research Center, 2023).

Abortion topics have also found their way into popular entertainment. A recent study, for example, found that over 60 plotlines in 2022 featured abortion (ANSIRH, 2022), suggesting that audiences are increasingly exposed to storylines that incorporate reproductive healthcare. While previous research has found that these plotlines can influence attitudes toward abortion (e.g., Brooks et al., 2022) less is known about whether and how individuals learn about abortion from these narratives.

Audiovisual stories are thought to be quite memorable (Cohen and Parra, 2016). Yet, prior research has found mixed results on learning from exposure to narratives vs. expository information (Golke et al., 2019). These differences have likely arisen due to the type of narrative being tested or individual factors. The primary theoretical lens of understanding how narratives are processed and their resulting efficacy in attitudinal and behavioral outcomes are the extended elaboration likelihood model (EELM, Slater and Rouner, 2002) and the entertainment overcoming resistance model (EORM, Moyer-Gusé, 2008). However, as these theories were developed to predict persuasion outcomes, not necessarily learning, it remains unclear whether the EELM and EORM offer suitable theoretical frameworks for narrative-based learning. As such, a key interest of the current research is to investigate the psychological mechanisms involved in learning about medicated abortions—a potentially polarizing health topic given the current political climate—embedded in an entertainment narrative structure (i.e., a televised medical drama).

The purpose of this research is to investigate knowledge acquisition and retention of self-medicated abortion related information provided in narrative vs. non-narrative formats. Specifically, we investigate whether a narrative or non-narrative influences individuals' ability to recall how to administer and risks associated with medicated abortions. We also use two forms of knowledge acquisition measures to test the sensitivity of close-ended vs. open-ended measures. Finally, as mentioned we explore whether the EELM and EORM are appropriate theories for narrative-based learning.

Because so little research has investigated the mechanisms involved in learning health information from narratives, the primary purpose of this research is to identify the mechanisms involved in narrative-based learning. Additionally, we also examine the perceived risks associated with medicated abortion and whether these perceptions remain stable or fluctuate over time. In doing so, we hope to illuminate knowledge acquisition of health information from narratives.

Narrative processing

A large body of research has examined the influence of narratives on prosocial outcomes related to health topics. For example, prior

research has indicated that narratives are a useful tool for promoting safe sex behavioral intentions (Moyer-Gusé and Nabi, 2010), cancer screening intentions (McGregor et al., 2016), and knowledge about organ donation (Morgan et al., 2009). A great deal of narrative research has focused on understanding the persuasive influence of narratives on story-consistent attitudes and behaviors through the theoretical lens of the extended elaboration likelihood model (Slater and Rouner, 2002) and the entertainment overcoming resistance model (Moyer-Gusé, 2008). Yet, understanding knowledge acquisition in adult populations from narrative exposure has important implications. For example, in a study conducted by Sukalla et al. (2017), the researchers embedded organ donation information within a narrative storyline and found that relevant information contributed to reducing attitudinal ambivalence and reactance toward organ donation.

In a meta-analysis conducted by Shen and Han (2014), effects of entertainment education on health outcomes were assessed. The researchers found that entertainment education programs had a stronger effect on health knowledge than any other outcomes of interest (i.e., attitudes, intentions, behaviors), suggesting that narratives are particularly effective at delivering health information. However, key methodological differences exist between narrative persuasion and entertainment education research. For one, narrative persuasion studies typically employ lab-based studies while entertainment education studies utilize field studies. Thus, narrative persuasion research focuses on internal validity to uncover the mechanisms that make entertainment media effective, while entertainment education focuses on ecological validity and the actual effects of media in the real-world. In other words, one area of research focuses on how narratives are effective while the other focuses on real-world effects but does not isolate causal mechanisms. In the current study, we work to build a bridge between these two different research agendas by comparing a narrative video with a non-narrative video to assess the causal relationship of narrative exposure on knowledge acquisition.

To explore what narrative mechanisms might explain the effect of narrative exposure on knowledge acquisition, we first test whether exposure to a narrative vs. comparable non-narrative with information about medicated abortion impacts learning outcomes. There is precedent for narrative exposure to result in learning. By way of example, a study by Brodie et al. (2001) found evidence that over half of the audience viewers of the medical drama *ER* who participated in a survey about the show reported enjoyment and learning about important health issues as a result of watching the show. Similarly, Hether et al. (2008) examined whether knowledge about breast cancer increased amongst female viewers after three different medical dramas simultaneously aired plots about breast cancer; they found that those that watched all three acquired the most knowledge. Taken together, we expect exposure to the narrative video to result in greater knowledge about medicated abortion relative to those exposed to the non-narrative video.

H1: The narrative will result in higher knowledge scores of self-medication abortion relative to the non-narrative.

Narrative involvement

The EELM asserts that individuals tend to be motivated to lose themselves in the narrative (Slater and Rouner, 2002); these motivations

to process entertainment rather than scrutinize the content have implications for downstream persuasive outcomes. The EELM posits that the primary means of narrative engagement are via engagement with the story world (i.e., transportation) and with characters (i.e., identification). Transportation refers to the ability to mentally travel into the story world (Green and Brock, 2000), and research has well-documented that viewers become “swept” into narratives, rendering an experience akin to mental traveling into the story world. Identification (Cohen, 2001) refers to seeing the world of the story through the eyes of a character, an experience that is described as the audience member momentarily adopting the cognitions and emotions of a character. Prior research has found that identification with characters is particularly critical for narrative persuasion (de Graaf et al., 2012).

The EORM (Moyer-Gusé, 2008) expanded the EELM’s notion that narrative processing plays an integral role in audience acceptance of a story’s message. The EORM proposes that narratives are particularly adept at reducing resistance to narrative content (i.e., counterarguing). In other words, narratives tend to draw one’s defenses down and mitigate the potential for an audience member to argue back—also referred to as counterarguing—with the persuasive content of the narrative.

More recently, research has also uncovered additional forms of narrative involvement such as self-referencing which refers to the concept of applying a narrative to oneself (Ku et al., 2019). Viewers may relate the situations portrayed in a narrative to their own life experiences. Although self-referencing may initially seem incompatible with identification as self-referencing implies that one’s thoughts are accessible whereas identification assumes that one momentarily adopts a character’s perspective, these processes are capable of functioning together (de Graaf, 2023). For instance, in a recent study, de Graaf (2023) found that both identification and self-referencing mediated indirect effects of a narrative about a woman battling skin cancer on participants’ perceived susceptibility. Although most studies that examine self-referencing as a result of similarity vs. dissimilarity to a character, it could be that narratives are more likely to induce self-referencing relative to a similar non-narrative message due to the engaging emotional elements imbued in a narrative.

Finally, recent media research has focused on the ability of certain types of narratives—meaningful narratives—to induce complex emotional responses as a result of exposure to portrayals that highlight challenging life situations (e.g., Ott et al., 2021). Because an unwanted pregnancy may be viewed as a moral quandary (Sumner, 2014), the depiction of an unwanted pregnancy in a narrative might elicit meaningful affect, often described as thoughtful reflections and appreciation of sobering content. Specifically, we anticipate the narrative to elicit meaningful affect (i.e., feeling moved, touched) (Oliver and Raney, 2011) due to the presence of a character contemplating how to respond and manage an unwanted pregnancy.

In summary, since the narrative contains an engaging plot and characters, we anticipate a narrative video vs. a non-narrative video about medicated abortion to result in more engagement via the story world (i.e., transportation) and the character (i.e., identification), while minimizing scrutiny of medicated abortions (i.e., counterarguing). Due to the relatable nature of dealing with personal challenges presented by the narrative, we also expect audiences to apply the story to themselves, resulting in self-referencing. Lastly, because of the dramatic tension and topic of portraying an unwanted pregnancy, the narrative will elicit higher levels of meaningful affect.

Put another way, because a non-narrative simply delivers fact-based information, the narrative video is expected to be more engaging.

H2: The narrative featuring a storyline on self-medicated abortion will induce greater transportation (H2a), greater identification (H2b) less counterarguing (H2c), more self-referencing (H2d), and higher levels of meaningful affect (H2e) relative to a non-narrative.

Psychological mechanisms for knowledge gain

As mentioned, the leading theories for narrative persuasion posit that exposure to narratives impacts story-consistent attitudes and behaviors, especially for counter-attitudinal individuals (Slater and Rouner, 2002; Moyer-Gusé, 2008). These theories are somewhat influenced by social cognitive theory (Bandura, 1986) which focuses on vicarious learning through social modeling. In other words, one way to think about the EELM and EORM is that entertainment narratives provide an opportunity to learn about social issues and how characters have responded to potentially complex situations. For instance, in a study by Chung and Slater (2013) the researchers exposed participants to either a high or low stigmatizing character. Participants engaged in more perspective taking with the less stigmatizing character, and in turn, reported higher social acceptance of the character. The researchers contended that to the degree an audience member is willing to take the perspective with a stigmatizing character, they will be more likely to accept the stigmatizing character.

In the context of the current study—learning about medicated abortion—we note that while this is a morally contentious topic, the resulting type of learning is not about whether to accept a marginalized population, but, rather, remember didactic information that is embedded in a narrative. Specifically, of key interest is determining what type of engagement with narratives results in an individual’s knowledge gain of health information.

Entertainment education

Most research on knowledge acquisition from narrative exposure tends to either come from entertainment education research or misinformation research. One of the primary goals of an entertainment education intervention is to increase knowledge of a topic, typically health-related, for viewers (for review see Brown, 2012). For instance, a study on the effect of an entertainment education program on viewer’s knowledge of HIV and AIDS in Bangladesh found that viewers who watched the television series were more likely to respond correctly to a survey questionnaire about HIV/AIDS compared to a demographically matched comparison group (Do and Kincaid, 2006). Although the serial program appeared to impart knowledge about HIV and AIDS, the researchers did not measure narrative involvement mechanisms (e.g., transportation, identification). Accordingly, some scholars have criticized entertainment education research for too narrowly focusing on audience outcomes (Kim and Noriega, 2020).

Recently, researchers of entertainment education and narrative persuasion have begun investigating what mechanisms might

be responsible for knowledge acquisition. [Murphy et al. \(2011\)](#) examined whether exposure to a storyline about lymphoma would increase audience's knowledge about lymphoma and cancer in general. In their study, Murphy and colleagues examined the role of emotional involvement, transportation, and character involvement (i.e., identification, wishful identification, liking, and parasocial interaction as one variable). The researchers found that transportation was the most predictive of knowledge gain in pre and post-test measures.

Narrative misinformation and narrative corrections

Closely related to the phenomenon of knowledge acquisition from narratives is research on the influence of narratives to perpetuate misinformed beliefs and correct misinformation. Indeed, it is well documented that entertainment narratives do not always present accurate information, especially when it comes to the portrayal of health and medicine. For example, a content analysis of cardiopulmonary resuscitation (CPR) presented in television programs (i.e., *ER*, *Chicago Hope*, and *Rescue 911*) found that television programs tended to minimize the outcomes of CPR by showing that most characters who received CPR survived ([Diem et al., 1996](#)). The researchers emphasize that portrayals of CPR in medical dramas do not match up with real world outcomes where individuals who receive CPR often have a lower survival rate (40%). Thus, implications from television exposure to inaccurate CPR portrayals suggest that audiences may falsely believe that recovery from CPR is likely.

Some research has examined whether narratives can correct misinformed beliefs and misinformation. For example, a study by [Sangalang et al. \(2019\)](#) examined whether a narrative, a narrative with embedded fear and anger emotions, or a control (no correction) influenced endorsement of misinformed beliefs regarding tobacco products. The researchers found evidence that both a narrative and negative emotional narrative reduced misinformed beliefs regarding tobacco, suggesting that participants not only gained knowledge about tobacco consumption but also corrected their beliefs about the harmful effects of tobacco. Although the researchers did not identify what psychological mechanisms might be responsible for narrative corrections, recent research might shed light on some of these mechanisms.

A recent study by [Watts and Moyer-Gusé \(2022\)](#) whether attention to unreliable characters could reduce misinformation from exposure to a television show that contained misleading and inaccurate information about HPV (Human Papillomavirus). When participants were exposed to a follow up video of fans of the show questioning the credibility of the character discussing inaccurate HPV information, participants trusted the character less, and in turn, scored higher on post-test knowledge assessment of HPV, indicating that involvement with characters impacts misinformation endorsement. Similarly, another recent study examined the impact of anecdotal (a type of narrative) evidence to counter misinformation about vaccines ([Krishna and Amazeen, 2022](#)). The researchers found that anecdotal evidence that countered vaccine misinformation were deemed more credible than misinformation, and in turn, reduced the endorsement of misinformation.

In summary, separate domains of narrative effects research have circled around narrative-based learning. Entertainment Education (EE) research which has largely investigated the influence of serial programs on knowledge, attitudes, and behaviors. Although, EE research has found that exposure to narratives results in knowledge acquisition, other than transportation and identification, few psychological mechanisms have been investigated. Conversely, narrative persuasion research has investigated a plethora of psychological mechanisms (e.g., EORM, [Moyer-Gusé, 2008](#)) yet research guided by the EORM, and related theories tends to be most interested in attitude and behavior change. Finally, narrative corrections and misinformation research has focused on the ability for narratives to correct misinformation and mechanisms related to credibility and trust of characters or individuals recounting a personal story appear to be the primary drivers for decreasing misinformation endorsement.

A key interest of the current research is to expand on previous findings to test whether additional psychological mechanisms mediate the relationship between narratives and knowledge acquisition. As previously mentioned, narrative involvement may occur via engagement with the story world (i.e., transportation) or the character (i.e., identification). Narratives can also reduce cognitive resistance to a potentially polarizing topic (i.e., counterarguing), resulting in exposure to information that a person may not have been aware of. Finally, narrative involvement may also impact the degree to which a story reminds audiences of a comparable situation (i.e., self-referencing) or may elicit emotional involvement (e.g., meaningful affect). Taken together, we expect that the indirect effect of the narrative on knowledge acquisition about medicated abortion to occur via these aforementioned narrative involvement mechanisms. Thus, we pose the following hypothesis:

H3: The indirect effect of the narrative on knowledge acquisition will occur via transportation (H3a), identification (H3b), counterarguing (H3c), self-referencing (H3d), and meaningful affect (H3e) relative to exposure to a non-narrative.

Prior attitudes

Because both the EELM and EORM ([Slater and Rouner, 2002](#); [Moyer-Gusé, 2008](#)) emphasize that narratives are particularly effective for the adoption of story-consistent attitudes among counter-attitudinal individuals. These theories suggest that due to the subtle persuasive nature of entertainment along with captivating audience's attention via several types of narrative involvement, counter-attitudinal individuals are more likely to adopt story-consistent attitudes and behaviors from narratives. Although our focus is on knowledge acquisition, not attitude change, we believe that a similar process occurs for story-consistent knowledge. Because audiences are likely to counterargue or tune out overtly persuasive messages (i.e., non-narrative messages), we expect a narrative about medicated abortion to be more effective for counter-attitudinal individuals on story-consistent knowledge.

H4: The indirect effect of the narrative on self-medicated abortion knowledge via narrative involvement mechanisms will

be moderated by individuals' abortion pre-test attitudes, such that the narrative will have a greater effect on counter-attitudinals.

Memory coding and retrieval

While knowledge acquisition from narrative exposure is important, we must ask ourselves, is it more likely to be *remembered*? Indeed, it is possible that individuals retain information presented in a narrative in their working, short-term memory; however, it is unknown whether this information is encoded—the process of storing information into memory (Warren, 1972)—into their long-term memory (Warren, 1972). During the encoding process extraneous details are discounted, so that only information that is deemed vital is remembered. According to the Limited Capacity Model of Motivated Mediated Message Processing (LC4MP), the way that an individual processes—and remembers—a media message depends on both their cognitive capacity and their motivations (Fisher et al., 2018; Fisher and Weber, 2020; Lang, 2000, 2009).

According to the LC4MP, individuals are cognitive misers, meaning that they “must prioritize (either consciously or unconsciously) certain information streams over other ones during message processing in order to manage their limited resources while still achieving their goals” (Fisher and Weber, 2020, p. 2). Narratives, especially audiovisual narratives, are packed with information (e.g., emotional content, pacing, audio cues, visual cues) that will overload an individual's cognitive capacity. Consequently, this overload might reduce one's memory for the content presented because individuals do not have enough cognitive resources available to encode the information to memory (Fisher et al., 2018). Brodie et al. (2001), for example, found that individuals who watched an episode of the medical drama *ER* discussing emergency contraception reported more awareness about the contraception than they did prior to the show air date. When they investigated the long-term effects, however, individuals' awareness returned to pre-show levels (Brodie et al., 2001). Consequently, this suggests that the individuals did not encode the information to their long-term memory. We hypothesize, therefore, that the non-narrative will promote greater knowledge retention in the second wave as compared to the narrative format (H5a).

H5a: The non-narrative will promote greater knowledge retention in the second wave relative to the narrative format.

On the other hand, memories themselves can be defined as a narrative (Sturken, 2008) which suggests that the structure of the narrative could aid the encoding process. When encoding information to memory the information is often conventionalized, a process where extraneous details are essentially stripped away (Bangerter, 2000). The details lost during this process are deemed unessential to the overall information presented. It could be that when core, factual information is tied to a narrative, the factual information will be retained—rather than be conventionalized—as it is deemed essential to the overall storyline. In contrast, when information is presented in a factual matter, individuals might forget key facts as they are not deemed essential. As such, we present a competing hypothesis that a narrative message will lead to greater knowledge retention in the second wave (H5b):

H5b: The narrative message will promote to greater knowledge retention in the second wave relative to the non-narrative.

Because few studies have examined whether individuals retain what they have learned in their long-term memory, we next turn our attention to what might lead to knowledge retention. Beyond the competing hypotheses presented, we investigate the psychological mechanisms for why retention might occur. We explore this relationship further by examining whether the concepts presented in H3 also exert an indirect effect on knowledge in the second wave (RQ1).

In terms of prior attitudes and their effect on knowledge retention, prior research suggests that individuals who are against abortion might learn more, and potentially retain more facts presented in the narrative as compared to the non-narrative, as entertainment media can suppress an individual's inclination to counterargue information that is counter-attitudinal (Kim and Vishak, 2008). At the same time, LC4MP posits that individuals are motivated processors, even when it comes to entertainment media, suggesting that they would be inclined to disregard information that is counter attitudinal (Fisher and Weber, 2020).

Beyond learning from narratives, an important outcome is investigating whether risk perceptions remain stable or fluctuate over time. Risk perceptions are defined as, “the subjective assessment of the probability of a specified type of accident happening and how concerned we are with the consequences,” (Sjöberg et al., 2004, p. 8). In the present study, both the narrative and non-narrative emphasize the safety and extremely rare side effects that are likely to occur from undergoing a medicated abortion. Therefore, risk perceptions in the current study are akin to knowledge in that both videos explicitly discuss the efficacy of the medication in detail. Therefore, we pose a final research question to examine whether an individual's prior attitudes toward abortion interact with narrative exposure on their knowledge retention and risk perceptions of medicated abortion.

RQ2: Do prior attitudes toward abortion interact with the narrative on knowledge and/or risk perceptions in the second wave?

Methods

Design

A mixed between- and within-subjects design was used to test the hypotheses that were preregistered on OSF.¹ The between-subjects portion of the study randomly assigned participants to either the narrative or non-narrative condition, and the within-subjects portion of the study measured participants outcomes of interest (i.e., knowledge scores and risk perceptions at time 1 and time 2).

After obtaining consent, time 1, participants provided baseline attitudes toward medicated abortion and then were randomly assigned to the video condition. Following stimulus exposure, participants responded to a post-test questionnaire regarding their

¹ <https://osf.io/ya85w/>

engagement with the video, emotional responses, and a knowledge test. In time 2, approximately 4–7 days later, participants were contacted again and responded to only the outcomes of interest (i.e., dependent variables: knowledge test and risk perceptions). Because knowledge was tested in two ways (i.e., true/false test and a thought-listing procedure), the measures were counterbalanced at both time points (e.g., participants were randomly presented with either the true/false test or thought-listing first then the other form of the knowledge measure).

Stimuli

The narrative video was an edited clip from a *Grey's Anatomy* episode titled, "Training Day." In the video, Lucia, a high school student, is on a class fieldtrip at a hospital where she discovers her period is late. The student discusses her missed period with a medical doctor who runs a pregnancy test. After being informed of her pregnancy, the student indicates the pregnancy is unwanted. She is offered a medicated abortion, and two doctors discuss the risks, complications, and instructions for taking the medication. The edited clip ran 3 min and 57 s.

The non-narrative video featured *Mama Doctor Jones*, an online educator and board-certified obstetrician-gynecologist, who has a channel on YouTube where she provides viewers with women's health information. The video featured Dr. Jones talking directly to the camera about facts related to a medicated abortion. The edited clip ran 3 min and 38 s.

Both videos educate viewers that medicated abortion typically involves a combination of mifepristone and misoprostol. In each video the doctor(s) explain that medicated abortion is safe for up to 10 weeks into the pregnancy. Both videos also explain that patients typically experience a heavier menstrual period and that pain peaks 2–4 h after taking the medication. Additionally, both videos emphasized that severe side effects are extremely rare. Lastly, in both videos, doctor(s) mention that if no bleeding or cramping occurs, patients should seek medical care in the event the medication is not working. The information was generally consistent across conditions.²

Participant characteristics

Participants were recruited from undergraduate courses in Journalism and Mass Communications at a midwestern university who received course credit for participation in the study. After receiving consent, 386 participants entered the study, and 99 participants did not complete part 1 of the study. After data cleaning procedures which involved removing 28 duplicate responses, 26 participants who failed one or both attention checks, and 13 participants who experienced technical issues with video playback, 220 participants remained in part 1 (time 1). Of these participants, 125 participants completed part 2 (time 2) of the study.

The majority of participants identified as women (79.1%) followed by men (19.5%), non-binary (0.9%), and transgender

(0.5%). The mean age was 19.85 ($SD = 1.03$) with participants ranging in age from 18 to 23. Finally, participants were majority White (92.7%) followed by Asian (3.6%) and Black (3.2%), or a race not identified in the survey.

Measures

All variables were measured on a scale of 1 to 7 unless noted otherwise (Table 1).

Pre-test attitudes

Before exposure to their respective video condition, participants were asked to rate their attitudes toward medicated abortion with a 1-item measure. Higher numbers indicate more favorable attitudes ($M = 5.49$, $SD = 1.79$). This item was embedded with two other items (i.e., physician assisted suicide and medical research using stem cells) to reduce biased responses toward the video. It should be noted that 71% of the total sample were above the midpoint, indicating the majority held a pro-attitudinal stance toward medicated abortion.

Identification

Identification was measured using a validated scale by Cohen (2001). Participants were asked to rate six items regarding their identification with the doctor, (i.e., "While watching the video, I felt I could really get inside the doctor's head," and "I tend to understand the reasons why the doctor says what they say") A composite measure was calculated by using the mean of the items ($M = 4.23$, $SD = 1.27$, $\alpha = 0.88$).

Transportation

A validated transportation scale by Green and Brock (2000) was used to assess narrative engagement. Participants responded to 11 items with higher scores indicating higher levels of transportation, (i.e., "While I was watching the video, I could easily picture what it described," and "I wanted to learn how the video ended"). Five items were removed following a CFA (Confirmatory Factor Analysis) procedure. A composite measure was calculated by using the mean of the items ($M = 3.95$, $SD = 1.10$, $\alpha = 0.73$).

Counterarguing

A measure by Watts et al. (2023) was used to assess the level of counterarguments participants reported in response to the video in their respective condition. Three items were presented to participants with higher scores indicating higher levels of counterarguing, (i.e., "I sometimes felt like I wanted to 'argue back' with what was being said in the video," and "This video really did not line up with my views on abortions"). A composite measure was calculated by using the mean of the items ($M = 2.35$, $SD = 1.41$, $\alpha = 0.90$).

Self-referencing

An adapted scale established by Dunlop et al. (2010) was used to measure personal involvement with the narrative. Participants were asked to respond to four items (i.e., "Parts of the video made me think about my own life," and "While watching the video, I was reminded of my own experiences"). Higher scores indicate higher levels of self-referencing. A composite measure was calculated by using the mean of the items ($M = 3.09$, $SD = 1.38$, $\alpha = 0.77$).

² The video stimuli can be viewed at OSF: <https://osf.io/ya85w/>.

TABLE 1 Zero-order correlations of study variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Identification	1										
2. Transportation	0.55**	1									
3. Counterarguing	-0.28**	-0.30**	1								
4. Self-Referencing	0.34**	0.64**	-0.23**	1							
5. Meaningful Affect	0.50**	0.59**	-0.20**	0.37**	1						
6. KR (T1)	0.00	0.12	-0.27**	0.14*	-0.07	1					
7. KR (T2)	0.07	0.13	-0.12	-0.00	-0.02	0.41**	1				
8. KRC (T1)	-0.06	0.09	-0.23**	0.11	-0.10	0.34**	0.25*	1			
9. KRC (T2)	-0.08	0.02	-0.12	-0.11	-0.03	0.06	0.14	0.60**	1		
10. RP (Time 1)	-0.21**	-0.12	0.36**	0.04	-0.13*	-0.18**	-0.06	-0.12	-0.11	1	
11. RP (Time 2)	-0.28**	-0.25**	0.28**	-0.06	-0.32**	-0.23*	-0.13	0.01	0.01	0.51**	1
12. Pre-test Attitude	0.28**	0.31**	-0.60**	0.16*	0.23**	0.15*	0.20*	0.15	-0.02	-0.39**	-0.27**

**Correlation is significant at the 0.01 level (two-tailed); *Correlation is significant at the 0.05 level (two-tailed).

KR, Knowledge Recognition; KRC, Knowledge Recall; RP, Risk Perceptions.

Meaningful affect

A measure by Oliver and Raney (2011) was used to assess participants' emotional involvement via meaningful affect. Participants were presented with eight items (i.e., touched, moved, meaningful, emotional, compassionate, inspired, introspective, and uplifted). A composite measure was calculated by using the mean of the items ($M = 4.19$, $SD = 1.47$, $\alpha = 0.91$).

Knowledge acquisition close-ended

An original true/false post-test measure was used to assess participants' knowledge of medicated abortion. Participants responded to five items (Appendix A). Correct answers were scored as 1 and incorrect answers were scored as 0. A sum was calculated for time 1 ($M = 3.79$, $SD = 0.89$) and time 2 ($M = 3.87$, $SD = 0.85$).

Knowledge acquisition open-ended

Using a thought-listing procedure, participants were asked to recall facts from the video. Participants were provided with eight lines and were instructed to write as many facts as they could recall. The responses were coded by the first, third, and fourth authors (Supplementary Materials A). A training session was held to code the thoughts for accurate information and assess the coding scheme. Disagreements on knowledge scores were discussed, and the coding scheme (Supplementary Materials B) was updated accordingly. To assess reliability, coders coded 54 thoughts and coded 1 for accurate information about medicated abortion and 0 for inaccurate or off-topic thoughts. Interrater reliability was achieved, Krippendorff's $\alpha = 0.89$, and remaining comments were split equally between the coders. Recall was summed for time 1 ($M = 2.79$, $SD = 1.97$) and time 2 ($M = 1.99$, $SD = 1.45$).

Perceived risk

A single-item measure was used to assess how risky participants rated medicated abortion with higher scores indicating higher perceptions of risk. Participants were presented with the measure at time 1 ($M = 2.87$, $SD = 1.26$) and time 2 ($M = 2.63$, $SD = 1.01$).

Confirmatory factor analysis

Before the formal data analysis, we conducted a confirmatory factor analysis (CFA) in Mplus version 8.11 (Muthén and Muthén, 2017) to verify the factor structure of the set of observed variables. The initial model results indicated a poor model fit per recommended cut-offs (Hu and Bentler, 1999) ($\chi^2(454) = 1440.52$ ($p < 0.001$), CFI = 0.72, TLI = 0.69, RMSEA = 0.10, SRMR = 0.10). The model was improved by removing the items with low factor loadings (value < 0.4) and estimating factor correlations (Guadagnoli and Velicer, 1988). As a result, our CFA model was improved with moderate goodness of fit indices ($\chi^2(310) = 741.36$ ($p < 0.001$), CFI = 0.86, TLI = 0.84, RMSEA = 0.08, SRMR = 0.09) with all standardized factor loadings between 0.42 and 0.95.

Results

Analytical procedure

All data analyses were conducted in SPSS version 28. For comparisons between conditions, ANOVAs were conducted. The Hayes PROCESS macro (2022) was used to assess indirect effects, moderated mediation, and moderation effects. Finally, a mixed model ANOVA was used to assess between and within effects of the narrative condition on knowledge scores and risk perceptions between time 1 and time 2.

Manipulation check

Participants were asked to rate the extent to which they felt the video included a dramatic portrayal of a pregnant person seeking a medicated abortion (1 = *Definitely not* to 5 = *Definitely yes*). Participants who watched the narrative video ($M = 3.18$, $SD = 1.26$) perceived a more dramatic portrayal of a pregnant person seeking a medicated abortion than those who were exposed to a non-narrative condition ($M = 2.20$, $SD = 1.14$) ($t(218) = -6.05$, $p < 0.001$, Cohen's $d = 1.20$). The manipulation was successful.

Effects of narrative condition (time 1, close-ended)

H1 hypothesized the narrative would result in a higher knowledge score of self-medication abortion relative to the non-narrative. Results from an ANOVA showed participants who were exposed to the narrative video ($M = 3.88$, $SE = 0.09$) earned higher knowledge scores than those in the non-narrative condition ($M = 3.71$, $SE = 0.09$), however, not statistically significant $F(1, 217) = 2.12$, $p = 0.15$. H1 was not supported.

H2 predicted the narrative featuring a storyline on self-medicated abortion would induce greater transportation (H2a), greater identification (H2b) less counterarguing (H2c), more self-referencing (H2d), and higher levels of meaningful affect (H2e) relative to a non-narrative. The results revealed that the narrative induced greater transportation ($M_{\text{narrative}} = 4.19$, $M_{\text{non-narrative}} = 3.70$), $F(1, 218) = 11.35$, $p < 0.001$, $\eta^2 = 0.05$, greater identification ($M_{\text{narrative}} = 4.62$, $M_{\text{non-narrative}} = 3.83$), $F(1, 218) = 23.88$, $p < 0.001$, $\eta^2 = 0.10$, higher levels of meaningful affect ($M_{\text{narrative}} = 4.35$, $M_{\text{non-narrative}} = 3.56$), $F(1, 218) = 21.11$, $p < 0.001$, $\eta^2 = 0.09$. However, we did not find significant differences on counterarguing ($M_{\text{narrative}} = 2.26$, $M_{\text{non-narrative}} = 2.44$), $F(1, 218) = 0.83$, $p = 0.36$, and self-referencing ($M_{\text{narrative}} = 3.20$, $M_{\text{non-narrative}} = 2.98$), $F(1, 218) = 1.44$, $p = 0.22$. H2 was partially supported; the narrative resulted in greater transportation, identification, and meaningful affect relative to the non-narrative condition.

Indirect effects of narrative on knowledge acquisition at time 1 (close-ended)

H3 predicted that the indirect effect of narrative exposure on knowledge acquisition (time 1) would occur through transportation (H3a), identification (H3b), counterarguing (H3c), self-referencing (H3d), and meaningful affect (H3e). Using PROCESS (Hayes, 2022), we conducted a parallel mediation (model 4) using 5,000 bootstrap simulations. Results revealed that only meaningful affect (indirect effect = -0.12 , $SE = 0.05$, LLCI -0.23 , ULCI -0.03) significantly mediated the relationship between narrative exposure and knowledge acquisition. The results also revealed non-significant results on transportation (indirect effect = 0.06 , $SE = 0.05$, LLCI -0.02 , ULCI 0.17), identification (indirect effect = -0.07 , $SE = 0.05$, LLCI -0.19 , ULCI 0.02), counterarguing (indirect effect = 0.04 , $SE = 0.04$, LLCI -0.03 , ULCI 0.11), and self-referencing ($B = 0.01$, $SE = 0.02$, LLCI -0.02 , ULCI 0.06). H3 found partial support for meaningful affect only. However, we note that the indirect effect was in the opposite direction.

We also assessed moderated mediation. As predicted by H4, the indirect effect of the narrative on self-medicated abortion knowledge via mediators would be moderated by individuals' abortion pre-test attitudes, such that the narrative would have a greater effect on knowledge for those who reported unfavorable attitudes toward abortion at pre-test. Using PROCESS (Hayes, 2022), we conducted a parallel mediation (model 7) using 5,000 bootstrap simulations. We did not find a moderated mediation effect of pre-test attitudes on any of the mediators, including transportation (index = 0.0002 , $SE = 0.01$, LLCI -0.03 , ULCI 0.03), identification (index = -0.01 , $SE = 0.01$, LLCI -0.04 , ULCI 0.01), counterarguing (index = 0.001 ,

$SE = 0.02$, LLCI -0.03 , ULCI 0.03), self-referencing (index = -0.002 , $SE = 0.01$, LLCI -0.02 , ULCI 0.01), and meaningful affect (index = -0.005 , $SE = 0.02$, LLCI -0.04 , ULCI 0.02). Therefore, H4 was not supported.

Indirect effects of narrative on knowledge acquisition at time 2 (closed-ended)

To answer RQ1, we further evaluated the parallel mediation on the relationship between narrative exposure and knowledge acquisition in the second wave (time 2). Results showed that none of the mediators had an effect on knowledge acquisition in the follow up true/false knowledge test.

To answer RQ2, we conducted simple moderation analysis (model 1) in PROCESS (Hayes, 2022), results showed pre-test attitude significantly moderated the relationship between narrative exposure and knowledge acquisition in the second wave (time 2) ($B = -0.28$, $SE = 0.07$, $p < 0.001$, LLCI -0.44 , ULCI -0.13) (Figure 1). Individuals who were less favorable toward medicated abortion performed better in the true/false test when watching the narrative. Conversely, the more favorable attitudes individuals held toward medicated abortion performed better on the true/false test when watching the non-narrative video. However, we did not find a significant moderation effect of pre-test attitude on the relationship between narrative exposure and risk perception in the second wave ($B = -0.04$, $SE = 0.09$, $p = 0.63$, LLCI -0.23 , ULCI 0.14). Prior attitudes interacted with the narrative on knowledge acquisition at time 2 but not risk perception.

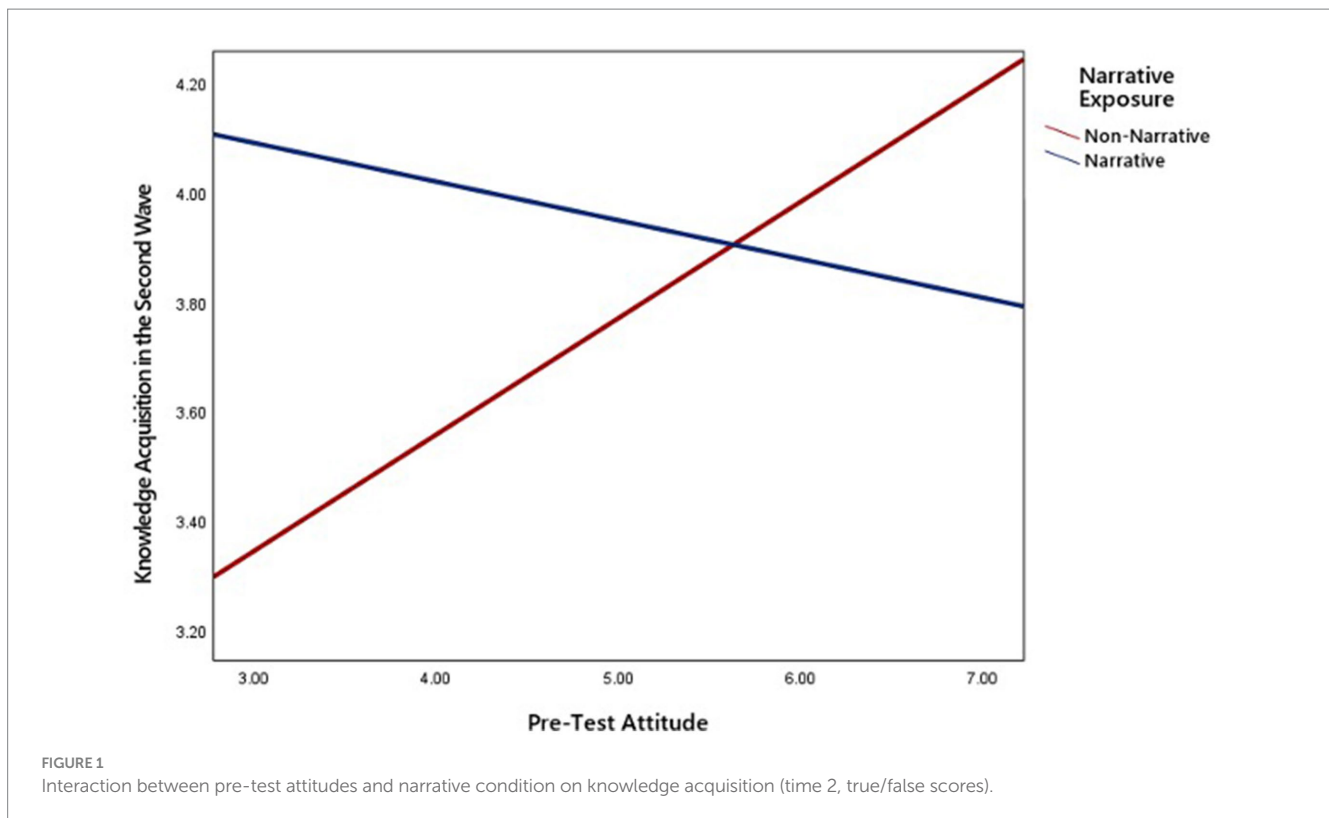
Effect of narrative condition on knowledge retention (time 1 & 2, close-ended)

We conducted two separate mixed ANOVAs to assess the effects of the narrative condition on knowledge scores between time 1 and time 2. Competing hypotheses were posed: H5, (a) narrative message or (b) non-narrative message would lead to greater knowledge retention in the second wave, the results revealed that the interaction effect of narrative on knowledge acquisition from time 1 to time 2 was not statistically significant, $F(1, 122) = 0.13$, $p = 0.72$. Hence, neither H5a nor H5b was supported. In other words, regardless of video condition, participants recognized facts about medicated abortion across the first and second wave.

Effects of narrative condition on knowledge score (open-ended)

To assess differences between knowledge score measures, all analyses with knowledge scores were re-run with the open-ended measure and are summarized below.

For H1 which predicted an effect of the narrative condition on knowledge acquisition (time 1). Results from the analysis, found that the non-narrative resulted in higher knowledge score ($M = 3.30$, $SE = 0.22$) at time 1, $F(1, 167) = 9.26$, $p < 0.01$, $\eta^2 = 0.05$ relative to the narrative condition ($M = 2.39$, $SE = 0.20$). Although the relationship was significant, H1 was not supported due to the unexpected direction of significant differences.



H3 predicted an indirect effect of the narrative condition on knowledge (time 1) via narrative involvement mediators in parallel (i.e., transportation, identification, counterarguing, self-referencing, and meaningful affect). None of the mediators significantly mediated the relationship between exposure to the video and knowledge about medicated abortion.

Per H4, we expected attitudes to moderate the indirect of the narrative on knowledge (time 1) via psychological mechanisms (i.e., transportation, identification, counterarguing, self-referencing, and meaningful affect). Results from the moderated mediation analysis were insignificant, such as transportation (index = 0.01, $SE = 0.03$, LLCI -0.06 , ULCI 0.10), identification (index = -0.01 , $SE = 0.03$, LLCI -0.07 , ULCI 0.03), counterarguing (index = -0.01 , $SE = 0.04$, LLCI -0.09 , ULCI 0.08), self-referencing (index = 0.0001, $SE = 0.02$, LLCI -0.04 , ULCI 0.04), and meaningful affect (index = -0.02 , $SE = 0.03$, LLCI -0.09 , ULCI 0.03).

We also explored whether any of the mediators mediated the indirect effect of the narrative on knowledge (time 2) (RQ1). Results from the mediation analysis found no significant indirect effects for any of the mediators.

To explore an interaction between pre-test attitudes and the narrative on knowledge (time 2) (RQ2), we conducted a simple moderation analysis in PROCESS (*model 1*). Results from the moderation analysis found no significant moderation effect of pre-test attitudes on the relationship between narrative exposure and knowledge acquisition in the second wave ($B = -0.23$, $SE = 0.17$, $p = 0.18$, LLCI -0.56 , ULCI 0.10).

Lastly, per H5, we posed competing hypotheses to determine whether the narrative or non-narrative was more effective for knowledge retention between time 1 and time 2 knowledge scores. Results from the mixed ANOVA indicated no interaction between the narrative condition and knowledge score difference at time 1 and time

2, $F(1, 88) = 1.99$, $p = 0.16$. However, significant differences were found between conditions and within subjects, indicating as mentioned that while the non-narrative was more effective for knowledge scores, individuals in both conditions reported less knowledge at time 2, yet neither video condition performed better at retaining knowledge about medicated abortion.

In summary, results from the analyses revealed that when examining the impact of video condition on knowledge recognition operationalized as the true/false test, neither video directly resulted in greater recognition of facts about medicated abortion. Immediately following exposure to the video, the narrative induced greater meaningful affect which decreased knowledge recognition. Additionally, pre-test attitudes interacted with the video condition on knowledge recognition at time 2 such that the counterattitudinal's knowledge recognition benefited more from exposure to the narrative vs. the non-narrative video. Results from the analyses examining knowledge operationalized as facts participants freely recalled in a thought-list procedure, revealed that video condition did matter. Participants exposed to the non-narrative video were more likely to recall facts about medicated abortion. Although participants recalled fewer facts several days later, neither video condition appeared more effective for retaining facts about medicated abortion.

Discussion

This study endeavored to answer whether narrative persuasion theories apply to knowledge acquisition, further identify psychological mechanisms that contribute to knowledge acquisition from exposure to narratives about a polarizing topic and assess whether closed- or open-ended measures offer better utility for measuring knowledge. A dearth of experimental research exists on learning outcomes from

narratives. Despite a call for future research to examine narrative processing on health information recall by [Quintero Johnson et al. \(2013\)](#), little research has advanced our understanding of how viewers learn and retain health information from entertainment. Many of the predicted mediators did not appear to mediate the indirect effect of the narrative on knowledge recognition, and none of the mediators mediated the indirect effect of the video condition on knowledge recall. As such, we echo [Quintero Johnson et al.'s \(2013\)](#) call to further investigate how narrative-based learning occurs. We discuss this further below in our theoretical implications.

Theoretical implications

We tested narrative-based learning guided by the theoretical frameworks of the EELM and EORM. Our study provides some evidence that these theories apply to narrative-based learning in that prior attitudes interacted with the narrative on knowledge scores in the second wave (close-ended) measure. Because the EELM and EORM postulate that narratives are effective for story-consistent attitudes and behaviors especially for counterattitudinal individuals, this finding converges with this premise. However, we note the small number of counter-attitudinals in this study, and future research should continue to examine narrative-based learning on polarizing health topics with a greater distribution of dispositions toward the topic. We also note that persuasion and learning are not necessarily interchangeable, and processes differ in these domains, especially when narrative-based learning features a neutral topic or individuals' interest varies. Future research should draw on various learning-based theories (e.g., social cognitive theory, [Bandura, 1986](#)) to examine how and under what contexts narratives are optimal for adult learners.

In our study, we found little evidence that knowledge acquisition was significantly impacted by exposure to the narrative or non-narrative condition. It was especially surprising that transportation had no impact on individuals' ability to learn from the narrative, and less surprising that we found low levels of counterarguing given that the sample indicated favorable attitudes toward medicated abortion. Future research should identify what mediators bolster learning from narratives for counter-attitudinals and whether these mediators differ from pro-attitudinals. For example, it could be that enjoyment for counter-attitudinal or uninterested audience members is particularly effective for enhancing learning.

The lack of indirect effects via identification and self-referencing is likely due to the scene selected for this study. In the *Grey's Anatomy* video, the individual facing a decision about their unwanted pregnancy was a high school student and participants may not have encountered similar situations. Further, in an effort to more equivalently compare identification across the narrative and non-narrative conditions, we measured identification with the doctor. College students likely could not identify with a doctor given their age and station in life.

However, when examining indirect effects of the narrative condition on knowledge scores (closed-ended) were found via meaningful effect. We found that the narrative condition increased meaningful affect, which in turn, was negatively associated with knowledge recognition. Per correlations, we note that meaningful affect was positively associated with attitudes toward medicated abortion and, although in the negative direction, had no significant

association with knowledge acquisition. It could be that in our study, becoming emotionally involved with the topic caused individuals to focus less on the details surrounding medicated abortion. Future research examining the indirect effects of narratives on learning and recall should examine whether certain types of emotions (e.g., anger, sadness, joy, hope) impact learning. For example, in a recent study by [Appel \(2022\)](#), perceptions of corniness were found to be a resistant emotion to narrative persuasion (i.e., attitudes and behavior intentions). Narratives that elicit corniness may also reduce knowledge outcomes. However, this has yet to be explored.

Operationalization of knowledge

We used two forms of knowledge scores in our study using both a true/false test and a thought-listing procedure. Using the true/false test, we found that participants' knowledge of medicated abortion remained stable approximately a week later regardless of the video condition assigned to them. Before discussing the potential implications of this finding, we first discuss the limitations of this operationalization.

To assess knowledge acquisition, we tested participants with five true/false questions. Although it is common to use these types of dichotomous questions in research, we have no way of knowing whether participants guessed or were confident in selecting their responses. Additionally, it should be mentioned that knowledge recognition meaningfully differs from knowledge recall. In a recent EE study, [Carpena \(2024\)](#) found that exposure to a narrative about hygiene increased knowledge which persisted 1 year later. However, Carpena questions whether such binary measures are sensitive enough to accurately assess participants' learning and, more importantly, learning decay from entertainment. We also add that using true/false measures must be created for each research topic and information presented in the narrative. In other words, unlike measuring attitudes or behavioral intentions, true/false measures are idiosyncratic to the topic and may be less reliable than established measures.

Recall is not commonly measured in narrative-based learning research, as thought-listings requires additional resources and qualitative coding. However, future research would do well to measure recall to determine whether exposure to narratives of other topics follow similar patterns as found in this research. Interestingly, while initially, the non-narrative performed more effectively than the narrative on knowledge of medicated abortion, recall decayed at time 2 regardless of video condition. We also were unable to ascertain why the non-narrative was better at recall given the mechanisms we chose to include in the study favor narrative involvement. It could be that individuals trusted or perceived higher credibility with the non-narrative video.

These conflicting findings suggest that knowledge recall (open-ended measure) captures a greater sensitivity of knowledge. It seems more likely that individuals encoded generic information rather than precise information about health topics. Future research should consider whether recognition or recall is more integral to the theoretical aims of the research and desired outcomes of message treatment.

Practical implications

Learning can occur in a variety of ways, and watching entertainment narratives is one modality that offers opportunities for

audiences to learn or become exposed to topics they are unfamiliar with. Practitioners and content creators should be aware of their educational goals with their audiences. For instance, beyond knowledge acquisition, entertainment narratives may encourage information seeking and interest in educational topics. [Bartsch and Schneider \(2014\)](#) found that individuals who watched war films were more interested in reading an article about war via their emotional involvement and reflective thoughts, indicating an interest in the topic.

Despite differences in our knowledge outcome measures, participants reported perceptions that medicated abortions were relatively safe. If the purpose of an entertainment or non-entertainment video is to argue for the safety and efficacy of a health medication, it appears that participants were able to glean this message from either video, even when they struggled with recalling the precise names of the medication or details of administering it. Content creators should continue to provide accurate and useful information regarding medications in entertainment narratives to reinforce their safety and efficacy.

Limitations

We highlight that our participants were college students and most of them were pro-attitudinal toward medicated abortion. We note in this study that we did not collect partisan identity or strength, but future research should collect partisanship information to further examine whether political affiliation impacts learning of polarizing information. Although this research was, in part, inspired and guided by the influence of EE on learning, we note that these two fields of narrative research focus on what some scholars would consider substantially different populations. As is common for narrative persuasion research, convenience samples are used. In contrast, EE research tends to focus on audience surveys in developing countries. The characteristics of our sample (i.e., a WEIRD population) are considered atypical for the majority of the world ([Henrich et al., 2010](#)) and are highly educated. It is possible that narrative-based learning might appeal to individuals across a spectrum of educational attainment. Second, the sample included a small percentage of men who may not perceive the topic of unwanted pregnancy relevant to their lived experiences.

We note that since all participants were exposed to both the closed- and open-ended knowledge measures, caution is warranted in over interpreting whether knowledge recall or recognition were impacted by the narrative or non-narrative condition. Future research should use random assignment to robustly test whether recall or recognition differ.

Conclusion

Narratives may impact attitudes, behaviors, and knowledge about health topics. The aim of this research was to better understand how narratives impart health knowledge about medicated abortion. Although narratives were equally as effective as a social media video for recognizing facts about medicated abortion, we found that narratives were more optimal for captivating audience attention. Further, narratives were especially helpful for knowledge recognition in a delayed post-test for counter-attitudinal individuals. This research also found that non-narratives were more effective for recalling facts about medicated abortion. Future research should continue to explore

message processing and message factors that influence incidental learning from narratives featuring polarizing health topics.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by University of Kansas Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation was not required from the participants or the participants' legal guardians/next of kin because consent was obtained via an information statement provided to participants prior to entering the online study.

Author contributions

JW: Conceptualization, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing. AH: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. JP: Data curation, Formal analysis, Writing – original draft. MB: Formal analysis, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fcomm.2025.1473154/full#supplementary-material>

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Appendix A

Knowledge Test

1. Self-medicated abortions are usually safe for up to 16 weeks of pregnancy. True/**False**
2. Medicated abortion involves a combination of two medications: mifepristone and misoprostol. **True**/False
3. It is somewhat common for individuals to experience severe side effects requiring medical attention following a medical abortion. True/**False**
4. It is typical to experience a heavy period and cramping after having a medicated abortion. **True**/False
5. If no bleeding occurs after a medicated abortion, then the individual should seek medical attention or contact their medical provider. **True**/False