

Prime-time abortion on *Grey's Anatomy*: What do US viewers learn from fictional portrayals of abortion on television?

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Abstract

CONTEXT: Entertainment television can impact viewers' knowledge, attitudes, and reproductive health behaviors, yet little research has examined the impact of scripted abortion plotlines on viewers' abortion knowledge or social supportiveness for those having abortions. We examined the impact of an abortion storyline from *Grey's Anatomy* on US-based viewers.

METHOD: We conducted an online survey of likely *Grey's Anatomy* viewers prior to the episode's airing, assessing abortion ideology, knowledge, and support. After airing, we resurveyed respondents (including both those who had and had not viewed the target episode). We tested three hypotheses: episode exposure would (1) improve abortion knowledge and (2) increase support for medication abortion and decrease support for self-induced abortion, and (3) the effects on knowledge and supportive intention would be moderated by state support for abortion. We used independent samples *t* tests to examine hypotheses 1 and 2 and PROCESS macro to test the moderated effects (hypothesis 3).

RESULTS: The results of the pretest/posttest analysis indicated that exposure to the episode significantly improved medication abortion knowledge. Increases in medication abortion knowledge were tied to explicit educational dialogue and did not translate into an increase in general abortion knowledge or social supportiveness. Notably, abortion-related state policy significantly moderated the influence of exposure for respondents in states with policies favorable to abortion access.

CONCLUSIONS: These findings suggest that entertainment television can contribute to meaningful increases in viewers' knowledge about abortion, but that the potential for impact of entertainment-education is closely linked to episode content and moderated by state-level abortion policy.

KEYWORDS

abortion, pregnancy, reproductive health, stigma, women's health

INTRODUCTION

Entertainment television can be an important source of information about reproductive health,¹⁻³ contributing to positive attitudes toward contraceptive use⁴ and testing for sexually transmitted

infections,⁵ improving knowledge about emergency contraception⁶ and condom use,⁷ and increasing intentions to engage in safe sex behaviors.⁸ However, television can also have adverse impacts, increasing the anxiety and fear that pregnant viewers feel about their impending births.^{9,10} While these prior studies have examined

entertainment media's influence on areas of reproductive health knowledge, the impact of abortion stories remains largely unexamined. This gap is important to address because abortion policy remains one of the most controversial and polarizing areas of public policy.¹¹

Beyond directly contributing to an understudied area within entertainment-education, the current inquiry adds to extant research in two important ways. First, most empirical evidence for the power of entertainment-education are retrieved from controlled experiments that use convenience samples that do not necessarily represent the actual viewership of a particular show,¹² cross-sectional surveys that draw on representative samples but rely heavily on correlational data,¹³ or pre-experimental designs that assess change without a suitable control condition.¹⁴ While such studies provide numerous insights into the underlying mechanisms of entertainment-education, additional experimental evidence, from naturalistic settings with actual viewers, is needed as well. The current study is able to fill this gap by having early access to the script of the entertainment-education program, allowing researchers to capture baseline data and recruit likely viewers. Second, the study highlights the need to focus on the context in which entertainment-education is consumed, especially when dealing with value-laden and polarizing issues such as abortion. Therefore, the study assesses the moderating role-played by abortion-related state policies, in shaping the impact of exposure to an abortion storyline.

Entertainment-education and abortion

Despite being common in the United States (US),¹⁵ television often depicts abortion in inaccurate ways: exaggerating medical risk,¹⁶ misrepresenting patient demographics,¹⁷ depicting unrealistically few barriers to access,¹⁸ and misrepresenting the medical procedure itself.¹⁹ However, there are examples of abortion stories on television that are accurate, nuanced, and humanizing.²⁰ Thus, despite patterns of inaccuracy, individual depictions have the potential to inform cultural conversations about abortion in an evidence-based way.

This potential is due to the unique ways in which people engage with stories. Given that cultural conversations about abortion are often politically polarized and frequently reliant on misinformation,¹¹ individuals have the tendency to either seek out information that affirms their prior beliefs,²¹ or, because of stigma, avoid the topic of abortion altogether.^{22,23} Yet, people process information from stories differently than didactic, nonnarrative, information. In contrast to didactic messages, which are processed according an individual's interest in and involvement with an issue,²⁴ Slater and Rouner's²⁵ extended elaboration likelihood model (E-ELM) proposes that a viewer's engagement with a narrative motivates them to process the message contained therein. The greater a viewer's involvement with the story, the more receptive the viewer will be to the ideas conveyed.²⁵ This model suggests that stories can be used as a tool for addressing value-laden topics, including abortion. Thus, narrative engagement—through popular television storytelling—creates an

opportunity to interest and involve viewers thinking about abortion in a way that they might otherwise resist.

Beyond the immersive potential of entertainment, onscreen representations of abortion also provide opportunities for vicarious learning. Following Bandura's social cognitive theory,²⁶ an individual's behavior is guided by the interaction between personal attributes, behavioral patterns, and environmental factors. Environmental factors include the media we consume, such that characters on screen can serve as behavioral models. Effective modeling can increase feelings of self-efficacy and shape outcome expectancies, encouraging viewers to adopt the modeled behavior. Consequently, entertainment narratives that accurately depict a character's abortion decision and experience may help construct more productive narratives.

Grey's Anatomy and medication abortion

Drawing on these models, we examine the impact of an abortion storyline on the November 7, 2019, episode of ABC's *Grey's Anatomy*, entitled "Papa Don't Preach" (Season 16, Episode 7). *Grey's Anatomy* is the longest-running prime-time medical drama currently airing in the US; during the 2019–2020 season it had a weekly audience between 6 and 7.5 million viewers.²⁷ Notably, although abortion-related storylines have been increasing on screen, the large, and diverse, viewership of *Grey's Anatomy* offers a unique opportunity to expose more people to information about medication abortion.²⁸ This particular storyline provided the opportunity to examine how an abortion depiction impacts audiences' knowledge of abortion and level of support for people who have abortions.

The relevant storyline revolves around pregnancy decision-making for both Dr. Amelia Shepherd, a neurosurgeon at the hospital, and Cassidy, a trauma patient who arrives in the emergency department. Amelia reveals to Dr. Owen Hunt, her ex-husband and a trauma surgeon, that she is pregnant and that the father of the pregnancy is their mutual friend and colleague. Amelia and Owen's relationship ended in part because she did not want to have children and he did, so this disclosure is a shock to Owen. Complicating this storyline is the arrival of Cassidy, a white woman whose 10-year-old son Henry shares with the doctors that he found his mother at the bottom of a stairwell. After examining the patient, Owen tells Cassidy that she is pregnant, and she is distraught that "it didn't work." Given this reaction, Owen confides in Amelia that he suspects Cassidy tried to self-induce an abortion by falling down the stairs. Amelia offers to talk to the patient, who shares that she cannot afford another child, and that she tried to go to a clinic to terminate the pregnancy but could not take time off work or find childcare. She attempted to terminate the pregnancy using herbs she purchased online, and, after ingesting more than was recommended, became dizzy, and fell down the stairs. Cassidy says she would never do anything to intentionally injure herself for her son's sake. Amelia comforts her, saying that Owen can perform the abortion after she is treated for injuries related to the fall. Outside the patient's room, Owen and Amelia argue about whether Amelia overstepped in promising Cassidy an abortion, which Owen

does not want to provide. It is clear that he is upset about Amelia's pregnancy and taking it out on Cassidy. Owen performs a surgery to repair an injury to Cassidy's spleen, but does not perform an abortion procedure. After the operation, Amelia and a nurse go into Cassidy's room and provide her with detailed instructions for taking mifepristone and misoprostol to induce an abortion and give her the mifepristone. Cassidy takes the medication and seems grateful to the providers.

From the perspective of entertainment-education, there are several key elements in the episode's message. First, medication abortion was portrayed as a safe medical intervention, with a detailed explanation of the medication abortion process, its side effects, and necessary follow-up care. Because this message was communicated in an emotional way, using a compelling, sympathetic character, E-ELM would suggest that viewers are more likely to engage with the underlying messages that communicate specific information about abortion care. Thus, we posed that: exposure to "Papa Don't Preach" will improve (a) knowledge about medication abortion and (b) general knowledge about abortion (hypothesis 1).

Second, medically-supervised medication abortion was portrayed not only as a safe intervention, but also a choice that was compassionately supported by the characters who provided the care Cassidy was seeking. In contrast, self-induced abortion was portrayed very critically, as a desperate and inherently unsafe choice. Thus, the episode modeled what social support for abortion might look like, while also communicating a message about what types of abortion are requiring or deserving of support. Hence, our second hypothesis predicts that: exposure to "Papa Don't Preach" will (a) increase support for medically-supervised medication abortion and (b) decrease support for self-induced abortion (hypothesis 2).

Despite findings that suggest that edutainment messages have the capacity to influence various health-related outcomes, there is a need for more research into the boundary conditions that enhance the effectiveness of messages. As argued by Bae,²⁹ current investigations need to shift their focus from *what* effects edutainment has on viewers toward *how* and *why* the effects are obtained. To this end, there is a growing need to examine the interplay between edutainment effects and the context in which they are obtained.

Context of entertainment-education

From the earliest studies of mass communication, media effects scholars were sensitive to the fact that the context in which mediated communication is consumed can affect its interpretation.³⁰ For instance, Gerbner and colleagues³¹ argued that the personal, day-to-day environment produces variations in the cultivation of mass media content. In particular, when one's everyday environment is congruent with television's messages (e.g., watching crime dramas and living in a crime-ridden neighborhood), it reinforces perceptions of the world as a dangerous place; however, when personal experience contradicts television portrayals, the cultivation effect is less pronounced. Likewise, Liebes and Katz³² observed that television programs do not impose themselves

unequivocally on viewers and that the contexts in which stories are consumed help viewers to negotiate their meaning. More recently, Walter and colleagues³³ demonstrated that cultural factors could substantially influence the interpretation of the same entertainment-education intervention. In particular, using experimental evidence, the study showed that participants with a collectivistic-orientation were more likely to rely on social norms when making judgments about the narrative, compared to those with an individualistic-orientation.

However, the entertainment-education literature remains largely silent on the role-played by social, cultural, and political factors in enhancing or attenuating the impact of entertainment-education efforts. Indeed, the vast majority of studied moderators within the entertainment-education literature focus, almost exclusively, on individual-level differences, and much less attention have been given to collective-level differences that may directly relate to the underlying mechanism of narrative persuasion. This gap is especially perplexing since, in part, entertainment-education is presumed to be impactful due to its capacity to transmit a vast amount of information about social norms, behavior patterns, and lifestyles to geographically dispersed areas.²⁶ If such, it stands to reason that the social, cultural, and political context in which entertainment-education is consumed, in those dispersed areas, should matter.

In particular, we considered the role that policies around abortion (e.g., laws that restrict or broaden access) might play in how viewers respond to the message. We predicted that respondents living in states that are more supportive of abortion access might be more comfortable seeking additional information or engaging in conversations about abortion, or, given their environment, more receptive to stories that illustrate the need for such policies. Thus, we posed that: the effects on (a) knowledge and (b) supportive intentions will be moderated by state-level support for abortion, such that participants from states with "abortion supportive" policies will experience more positive change from exposure to "Papa Don't Preach," compared to those from states with "abortion hostile" policies (hypothesis 3).

METHODS

Data collection

We selected this storyline for study because *Grey's Anatomy* writers made the teleplay for the "Papa Don't Preach" episode available to the research team prior to the episode's airing so that we could collect baseline data. This access allowed us to recruit self-identified *Grey's Anatomy* viewers before the episode was available, and then recontact them after the initial airdate.

We collected data through Qualtrics, focusing on US residents aged 18 and older. In an initial screening, we asked participants to indicate if they follow a number of medical TV shows in their current or most recent season, including *General Hospital*, *Chicago Med*, *New Amsterdam*, *The Resident*, and *Grey's Anatomy*. We only recruited those who reported watching *Grey's Anatomy* "occasionally—about half the

episodes,” “frequently—most of the episodes,” or “always—every episode” to the study.

In order to evaluate the interplay between entertainment-education, individual ideologies, and state policies on abortion-related outcomes, we employed a pretest/posttest design with *Grey's Anatomy* viewers. We collected pretest data from November 3 to 7, 2019, with the pretest survey closing two hours prior to the episode's first airing. The pretest survey asked participants about their own demographic characteristics, political affiliation, political ideology, abortion ideology, personal experience with abortion, measures of abortion knowledge (general abortion knowledge and medication abortion knowledge), and measures of abortion social support (opinions of people who have abortions, and level of support for medically supervised medication abortion and self-induced abortion).

Qualtrics re-contacted pretest respondents the day after the episode aired and provided a posttest survey link. Participants completed the posttest survey regardless of whether they had viewed the episode “Papa Don't Preach,” allowing us to compare likely *Grey's Anatomy* viewers who had and had not been exposed to the message. The posttest survey included the same measures of abortion knowledge and social support included in the pretest.

Qualtrics disbursed compensation to participants after they completed both surveys. At the conclusion of the posttest survey, we debriefed all respondents regarding the true purpose of the study. The Northwestern University Institutional Review Board approved this study.

Participants

A priori power calculations³⁴ with conservative estimates from a meta-analysis of narrative persuasion,³⁵ revealed that a posttest sample size of $N = 264$ was required to achieve power of $1 - \beta = 0.80$ ($d = 0.35$, $\alpha = 0.05$) to detect a difference between two independent means.

To validate self-reported exposure, we asked participants who reported having viewed the episode four general recall questions, each accompanied by a relevant image from the episode. Importantly, to ensure that the questions did not prime participants to make judgments about abortion, none of the questions referenced the abortion directly, though they did affirm that viewers were familiar with the relevant characters. The specific items were: (1) “What brings this woman into the hospital?” [correct answer: “She fell down the stairs”], (2) “What is the relationship between these characters?” [correct answer: “The woman is the boy's mother”], (3) “What do these characters discuss in the episode?” [correct answer: “The woman's pregnancy”], and (4) “Why is this character at the hospital?” [correct answer: “He is seeking surgery for his daughter”]. We screened out respondents who reported viewing the episode but responded incorrectly to two or more recall items.

In order to ensure that attrition between Wave 1 and Wave 2 occurred at random, we conducted a series of chi-square and *t* test analyses, comparing Wave 1 respondents who also participated in Wave 2 with those who did not across a variety of characteristics.

Measures

Change in general abortion knowledge

We assessed respondents' level of general abortion knowledge with 10 true/false statements developed by the research team (e.g., “Most people who have abortions are raising children,” “Most people who get abortions are teenagers,” “Abortion is legal in all 50 states,” “Most people who have abortions are poor”). In order to assess whether respondents' knowledge increased after exposure, we computed general abortion knowledge by subtracting the number of correct responses at posttest from the number of correct responses at the pretest survey.

Change in medication abortion knowledge

We provided participants with a definition of medication abortion (“Medication abortion is a procedure that uses pills to end a pregnancy. A medication abortion doesn't require surgery or anesthesia and can be started either in a medical office or at home with follow-up visits to your medical provider”) and then asked a series of five true/false questions to assess their medication abortion knowledge (e.g., “Medication abortion is not safe for teenagers,” “It's possible to have a safe abortion with pills instead of surgery,” “Abortion pills are available for purchase at most pharmacies,” “Medication abortion is the same as ‘Plan B’ or ‘the morning after pill,’”). As with the general abortion knowledge, we computed a medication abortion knowledge index by subtracting the number of correct responses at posttest from the number of correct responses at pretest.

Change in social support for supervised medication abortion

Based on previous measures of health-related social support,³⁶ we asked respondents what they would do upon learning a close friend was intending to have a medication abortion under medical supervision. Possible responses were “scold her,” “encourage her,” “talk to her about the best way to do it,” or “talk to her about ways to avoid it,” with participants able to indicate how they felt about each response from “completely disagree” to “completely agree.” As with the knowledge scale, we calculated change in social support for medically-supervised medication abortion by subtracting respondents' scores at posttest from their scores on the pretest survey.

Change in social support for self-induced abortion

We asked participants what they would do upon learning that their “close friend is intending to perform a self-managed abortion to end their pregnancy.” We provided this definition: “Self-managed abortion occurs when a person chooses to perform their own abortion outside

a medical setting. Self-managed abortion is a broad term that includes all methods a person may use to end their own pregnancy, including medication, herbs, and manual aspiration.” The available responses were the same as for the measure of social support for medically-supervised medication abortion. We calculated change in social support for self-induced abortion by subtracting respondents’ scores at posttest from their scores at pretest.

Abortion-related ideology

We asked participants to describe themselves on a scale from (1) “pro-choice” to (10) “pro-life.”

Views regarding people who undergo abortion

In two pairs of statements, we asked respondents to choose which came closest to their view: first, “Someone can be a good person and have an abortion” or “Someone cannot be a good person and have an abortion;” second, “Having an abortion can be a responsible choice” or “having an abortion cannot be a responsible choice.”

Abortion-related state policy

We assessed state-level support for abortion by asking respondents to indicate their state of residence, and then using the Guttmacher Institute³⁷ categorization of state abortion policies for 2019 to classify each state, from (1) “Very hostile” to (7) “Very supportive.”

Analysis

To test hypotheses 1 and 2, we used a multivariate analysis of variance (MANOVA), where viewing status (watched episode vs. did not watch episode) was entered as a fixed factor and change in abortion knowledge (general and medication), as well as social support (medication and self-induced) were entered as outcomes. Given potential biases associated with self-selection into viewing conditions, the model also controlled for age, biological sex, race/ethnicity (with non-Hispanic white as a reference condition), and political affiliation.

We used PROCESS macro (Model 2)³⁸ to test the moderated effects of episode exposure on medical abortion-related knowledge and social support. Specifically, exposure to the episode (yes/no) was entered as a binary predictor, difference (from Wave 1 to Wave 2) in abortion knowledge and social support were the outcomes, and state policy, abortion ideology were the moderators. As with the MANOVA, the PROCESS model controlled for the age, biological sex, race/ethnicity (with non-Hispanic white as a reference condition), and political affiliation. We used SPSS version 26 to conduct all the analyses in this study.

RESULTS

Sample

Overall, 628 participants met the screening criteria for the pretest survey and consented to participate in the study. Of those, 614 finished the pretest questionnaire and 303 (48.2%) completed the posttest questionnaire, including 133 respondents who reported having viewed the episode, and 170 who reported not viewing it. After screening out respondents who gave two or more incorrect responses on episode recall questions ($n = 29$), our posttest sample size included 274 respondents: 104 who watched the episode and 170 who did not. Table 1 below.

The majority of the sample ($M_{\text{age}} = 41.04$, $SD = 13.94$) identified as female ($n = 187$, 68%) and 199 (73%) self-identified as white, with Black ($n = 46$, 17%), Latinx ($n = 22$, 8%), and Asian ($n = 11$, 4%) comprising the remainder. The sample was quite diverse in terms of political affiliation, with 118 (43%) Democrats, 97 (35%) Republicans, and 49 (18%) Independents. We measured political ideology from (1) “extremely liberal” to (10) “extremely conservative” with a mean of 6.01 ($SD = 2.87$). In terms of ideology specific to abortion, the sample was slightly more pro-life than pro-choice ($M = 6.07$, $SD = 3.37$). With that in mind, however, the views in the sample regarding people who undergo abortion were quite positive. Specifically, the vast majority of respondents agreed that “Someone can be a good person and have an abortion (89%)” and that “Having an abortion can be a responsible choice (72%).”

One-hundred thirty-six (54%) respondents indicated that they, or someone close to them, had had an abortion. The sample included respondents from all 50 states. Notably, according to the Guttmacher Institute’s categorization of state abortion policies for 2019 to classify each state from (1) “Very hostile” to (7) “Very supportive”³⁷ the respondents in our sample resided in states that were slightly more hostile than supportive to abortion ($M = 3.32$, $SD = 1.77$).

Our analysis of attrition found that, when comparing Wave 1 participants who did and did not participate in Wave 2, the results did not record significant differences for political affiliation ($\chi^2[3, N = 599] = 1.02$, $p = 0.797$), political ideology ($t[597] = 0.65$, $p = 0.521$), employment status ($\chi^2[5, N = 599] = 9.79$, $p = 0.082$), marital status ($\chi^2[4, N = 599] = 1.07$, $p = 0.899$), education ($t[597] = 0.13$, $p = 0.897$), sexual orientation ($\chi^2[7, N = 599] = 6.11$, $p = 0.527$), gender identity ($\chi^2[4, N = 599] = 0.99$, $p = 0.912$), sex ($\chi^2[2, N = 599] = 0.12$, $p = 0.944$), abortion ideology ($t[597] = 1.84$, $p = 0.067$), as well as whether they or anyone close to them had previously obtained an abortion ($\chi^2[1, N = 550] = 1.70$, $p = 0.193$). Similarly, Little’s MCAR test that included all demographic variables, as well as the research outcomes, indicated that the missing data resulting from attrition occurred at random; $\chi^2(4) = 3.29$, $p = 0.51$.

Before testing the hypotheses, we used a paired-samples t test to assess whether there were any changes in the outcome variables after the airing of the episode in the overall sample. According to the findings, there were no significant differences in general abortion knowledge ($t[273] = 0.33$, $p = 0.74$), social support for supervised

TABLE 1 Demographic descriptors of study participants ($N = 274$)

Variables	Condition	
	Watched episode	Did not watch episode
Age	43.2 (15.6)	39.7 (12.7)
Gender		
Female	77%	63%
Male	22%	37%
Other	1%	-
Race/ethnicity		
White	72%	73%
Black/African American	16%	17%
Hispanic/Latinx	10%	7%
American Indian/Alaska Native	2%	1%
Asian	4%	4%
Native Hawaiian/Pacific Islander	1%	1%
Biracial/Multiracial	1%	1%
Education		
Middle school	1%	1%
High school	29%	39%
College	50%	41%
Graduate school	9%	7%
Postgraduate school	12%	13%
Democrat	53%	37%
Republican	27%	41%
Independent	19%	17%
Political ideology	5.4 (3.0)	6.4 (2.7)
Abortion experience		
Yes	49%	50%
Abortion ideology	5.6 (3.6)	6.3 (3.2)
State policy	3.7 (1.9)	3.1 (1.7)
N	104	170

Note: We measured political ideology on a 10-point scale (ranging from (1) “extremely liberal” to (10) “extremely conservative”) and abortion ideology on a 10-point scale (ranging from (1) “pro-choice” to (10) “pro-life”). We assessed abortion-related state policy through Guttmacher Institute labels. We measured abortion experience by asking participants if they or someone close to them ever had an abortion.

medication abortion ($t[273] = 0.32, p = 0.75$), or social support for self-induced abortion ($t[273] = 1.30, p = 0.19$). Hence, in the overall sample, there were no change from baseline to posttest. Interestingly, there was a significant change from baseline to posttest with regard to knowledge of medication abortion ($t[273] = 2.42, p = 0.02$), such that after the airing of the episode, the overall sample had slightly higher knowledge of medication abortion ($M = 2.16, SD = 1.33$) compared to baseline ($M = 1.98, SD = 1.30$). These results, however, provide only partial information since they do not differentiate between participants who watched the episode and those who were not exposed to the relevant content.

Findings

Our MANCOVA test of hypotheses 1 and 2 revealed a main effect of message type; Wilk's $\lambda = 0.95, F(4, 262) = 3.41, p = 0.01, \eta_p^2 = 0.05$. After establishing a significant omnibus effect, we tested the specific hypotheses with a univariate analysis. As predicted by hypothesis 1a, exposure to this abortion plotline significantly improved participants' knowledge regarding medication abortion ($F[1, 265] = 12.21, p = 0.001, \eta_p^2 = 0.05$) such that, on average, those who watched the episode performed better on the medication abortion knowledge index ($M_{change} = 0.62, SD = 1.44$), compared to those who did not watch it ($M_{change} = 0.11, SD = 1.02$). In contrast with hypothesis 1b, exposure to the episode did not improve participants' general knowledge about abortion ($F[1, 265] = 0.66, p = 0.42, \eta_p^2 = 0.00$), with both those who were exposed ($M_{change} = 0.26, SD = 1.68$) and those who were not exposed ($M_{change} = 0.04, SD = 1.63$) performing comparably on measures of knowledge. Similarly, there was no support for hypothesis 2, as participants were not more likely to report social support for supervised medication abortion ($F[1, 265] = 1.19, p = 0.28, \eta_p^2 = 0.01$) and less support for self-induced abortion ($F[1, 265] = 0.49, p = 0.49, \eta_p^2 = 0.00$) after exposure. In particular, participants who watched the episode reported slightly higher intent to support friends who decide to undergo a supervised medication abortion ($M_{change} = 0.08, SD = 1.40$ vs. $M_{change} = -0.10, SD = 1.54$), as well as self-induced abortion ($M_{change} = 0.18, SD = 1.82$ vs. $M_{change} = 0.10, SD = 1.50$); these differences were not statistically significant.

In our PROCESS macro test of the moderated effects of episode exposure (hypothesis 3), both abortion policy ($b = 0.08, SE = 0.09, p = 0.33, 95\% \text{ CI} [-0.08, 0.25]$) and abortion ideology ($b = 0.07, SE = 0.04, p = 0.12, 95\% \text{ CI} [-0.02, 0.16]$) emerged as nonsignificant moderators. Further, there was no significant interaction between exposure to the episode and abortion policy on general abortion knowledge ($b = -0.02, SE = 0.12, p = 0.86, 95\% \text{ CI} [-0.25, 0.21]$), as well as between exposure to the episode and abortion ideology on general abortion knowledge ($b = 0.01, SE = 0.06, p = 0.87, 95\% \text{ CI} [-0.11, 0.13]$). Likewise, abortion ideology did not moderate the effect of exposure on social support for supervised medication abortion ($b = 0.02, SE = 0.06, p = 0.67, 95\% \text{ CI} [-0.09, 0.13]$). However, as indicated in Table 2, abortion-related state policy significantly moderated the influence of exposure on supervised medication abortion support ($b = 0.21, SE = 0.10, p = 0.03, 95\% \text{ CI} [0.02, 0.42], \Delta R^2 = 0.02$).

To further probe this interaction, we used the Johnson-Neyman analysis of significance regions.³⁸ The analysis indicated a significant effect of exposure on supervised medication abortion support only for respondents who reside in states with favorable policies toward abortion (≥ 5.01 on the Guttmacher Institute scale, 16% of the sample)—there was no significant effect for those who reside in states where abortion policies are defined as middle-ground or hostile (< 5.01 , 84% of the sample).

Notably, abortion policy ($b = 0.16, SE = 0.12, p = 0.17, 95\% \text{ CI} [-0.07, 0.38]$) and abortion ideology ($b = -0.01, SE = 0.06, p = 0.80,$

TABLE 2 Direct and moderated effects of exposure on social support for medication abortion with medical supervision

Predicting variables	Medication abortion support	
	Direct estimate (SE) 95% CI	Moderated estimate (SE) 95% CI
Exposure (1 = yes)	-0.65 (0.55) [-1.73, 0.43]	-
Abortion ideology	0.01 (0.04) [-.07, 0.08]	0.02 (0.06) [-0.09, 0.13]
Abortion policy	-0.07 (0.07) [-0.21, 0.07]	0.21* (0.10) [0.02, 0.42]

Note: The table presents unstandardized coefficients, computed based on the difference in research outcomes from Wave 1 to Wave 2.

* $p < 0.05$.

95% CI [-0.13, 0.10]) did not moderate the effect of exposure to the episode on social support for self-induced abortion.

DISCUSSION

Our results suggest that the knowledge gains viewers experience after watching an abortion storyline are closely tied to the specific abortion content, and do not extend to other aspects of the story. Episode viewers performed significantly better on a measure of medication abortion knowledge than nonviewers, most likely because a trustworthy physician character explicitly stated how medication abortion works and provided assurance that it was safe. However, viewers' general abortion knowledge did not improve, even though elements of the story could have provided insight on these measures. Thus, even though Cassidy was a poor, single mother in her twenties, viewers did not apply this example to a broader knowledge of the demographics of US abortion patients, in which most patients are parenting and low-income. Without an explicit statement that this example was more generalizable, it did not translate into an increase in knowledge.

Yet, the findings do show that a small amount of information, concisely presented, can lead to significant increases in medication abortion knowledge. The scene in which the physician character shares information about medication abortion is about 45 s long, but the information communicated therein led to a knowledge increase for viewers. The narrative conditions under which this information was presented may also have contributed to its impact: in the preceding moments, Cassidy spoke lovingly of her son and the opportunities she strives to offer him, while her physician offered words of support, reiterating that it was *her* decision, regardless of the circumstances. In line with the E-ELM, the heightened emotions of this scene should engage the viewer's

affective faculties, deepening their involvement with both the characters and the plot and motivating them to attend to this information more closely.²⁵ Had other types of abortion information been directly communicated by a character of authority within a similarly compelling moment in the storyline, we might have found similar increases in general abortion knowledge.

Furthermore, even though Cassidy's situation was presented sympathetically, viewers did not report significantly higher levels of social support for a friend seeking either a medically-supervised medication abortion or a self-induced abortion. They did report a slightly higher intention for support, albeit not at a statistically significant level; further research on different types of portrayals might find this inclination to be more significant. Notably, these effects were moderated by state-level abortion policy: for respondents in states with more favorable laws toward abortion access, viewing the episode significantly increased their reported social support for medically-supervised medication abortion (but not self-induced abortion), even when controlling for respondents' personal abortion ideology. Given previous research that found individual-level variables (e.g., personal political beliefs, knowledge of someone who had an abortion) better account for differences in abortion knowledge than state-level policy,³⁹ it could be that correlated individual-level variables not only make those in higher-access states have greater knowledge, but more receptive to gains in knowledge. This result also accords with the predictions of social cognitive theory: since one's inclinations and behaviors are guided by environmental factors (in this case, state-level policy) as well as one's individual attributes and prior behavioral patterns, it stands to reason that those who live in states that are more supportive of abortion would be more inclined to adopt the advocated behavior than those who live in abortion-hostile states.²⁶ This finding highlights an important limitation of narrative interventions—although stories are powerful tools of persuasion, they cannot wholly override the context in which they are viewed. Fortunately, the knowledge gains reported by viewers of the episode may lead to more favorable attitudes toward abortion, which can produce downstream effects on voting behavior and potentially lead to legislative change.

The current study is notably limited. Because the “Papa Don't Preach” abortion message was mixed and complex (alternating an unsafe self-induced abortion attempt with a safe medically-supervised abortion; providing few details about the self-induced abortion while giving explicit detail about the medication abortion; working to educate explicitly on the medical aspects of abortion, but not the social or demographics realities of accessing care) it is hard to pinpoint which parts of the message viewers found most compelling or concerning, or narrow or generalizable. Although the focus on a pretest/posttest design with actual viewers of *Grey's Anatomy* might increase the ecological validity of the findings⁴⁰ and complement extant entertainment-education research that often focuses on convenience samples or more artificial designs, it also limits our ability to establish causal effects. Our conclusions are limited by all respondents watching the entire

episode; we are not able to draw conclusions about which parts of episode's message could have increased knowledge or influenced support. However, because respondents viewed the entire episode in the same way organic viewers would, we are able to see how a general viewing audience might have been impacted by viewing.

Further, without random assignment, viewers and nonviewers may potentially differ on variables other than the ones we controlled for in our analyses. For instance, it might be the case that only avid followers of *Grey's Anatomy* watched the show in broadcast, whereas less enthusiastic viewers may wait until the episode becomes available on streaming services. The potential for this and other differences between conditions means that we cannot pinpoint the episode as the cause of the difference in abortion-related outcomes. Relatedly, as with any other longitudinal study, there is a concern for differential attrition that might be related to key research variables. Although several statistical analyses did not support this concern, such analyses cannot fully account for selective attrition. Thus, attrition remains a primary concern when interpreting our findings.

Our use of the diction "self-managed abortion" in describing Cassidy's actions, and the definition of self-management in our survey instrument, also raise limitations and concerns. Cassidy's decision to attempt to end her pregnancy via herbs of unknown type or quantity is better described as "self-induced abortion," and has been referred to as such throughout this paper. In contrast, "self-managed abortion" better refers to using medications (like the pills Cassidy was given in the hospital) without immediate medical supervision. Our conflation of these terms, and the phrasing of "self-management" in the survey itself, is a problem from both a research and policy perspective. Because self-management with pills is likely to be safe,⁴¹ and other means of self-induction are more dubious, examining knowledge and support for these different types of abortion should clearly differentiate in both terminology and definition. Indeed, the episode portrays self-induced abortion as dangerous and medically supervised medication abortion as safe, but does not allow us to examine how viewers might understand self-managed abortion using the exact same pills of the regimen that Cassidy initiated in the hospital. Other television shows have looked as self-management using pills, and further research ought to explore this difference directly.

Finally, given the complexity of both the plotline and of individuals' beliefs about abortion, there is likely a range of ideas about social support around abortion (either medically-supervised medication abortion, or self-induced abortion), what it means, what it looks like, and what it hopes to achieve. An online survey is limited in its ability to ask relevant follow-ups and probe divergent ways of understanding the episode and incorporating it into one's understanding of abortion support. Future inquiries considering qualitative means of data collection and analysis might provide further insight into how television

stories impact viewers' knowledge and beliefs around an issue as polarized and complex as abortion.

CONCLUSION

A recent report looking at the impact of immigration-related storylines on American television found that audience impact increased cumulatively: the more storylines related to immigration that viewers saw, the more likely they were to feel differently toward immigrants or to take action around the issue (e.g., seeking more information or making a donation to a relevant charity).⁴² This might apply similarly to stories about abortion. For example, while the single example of Cassidy's story, as a low-income mother obtaining an abortion, did not lead to an increase in knowledge about abortion patients generally and did not increase the expressed level of social support, it could be that a pattern of representations might shape what viewers know (correctly, or not) about abortion and how they might respond to people in their lives who have abortions. Given that the number of abortion depictions on television is increasing across different genres and intended audiences,⁴³ it could be that, while a single depiction has a modest impact, the overall increase in portrayals can increase knowledge and support about abortion in a more substantial way.

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