Experimental Evidence for Differences in the Prosocial Effects of Binge-Watched Versus Appointment-Viewed Television Programs

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Abstract

This study investigated the influence of television consumption patterns on changes in attitudes toward depicted social out-groups. Participants were randomly assigned to view six episodes of Amazon's *Transparent*, a comedy-drama program about a family whose father comes out as a transgender woman, in either one 3-hr ("binge-watching") session or six weekly half-hour ("appointment-viewing") sessions. Across both groups, we found exposure to the narrative reduced anti-transgender prejudice. Counter to the predictions of the extended elaboration likelihood model and the entertainment overcoming resistance model, however, improvement in prejudice toward transgender people was not predicted by narrative or character involvement. Rather, reduction in prejudice was an outcome of viewing condition, such that those who viewed the program on a schedule of one episode per week exhibited lower levels of postexposure prejudice than those who binge-watched, and their attitudinal changes were more persistent 3 weeks later. Results are discussed in the context of the original elaboration likelihood model, proposing mechanisms for further testing.

Keywords

binge-watching, television, online streaming, transgender, media effects, experiment

One of the more popular prosocial effects in mass media research has been the improvement in intergroup relations. A wide body of literature in communication has found mediated intergroup contact, especially through fictional narratives, can decrease

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prejudice against social out-groups and increase acceptance, both socially and in policy (e.g., Bond & Compton, 2015; Ortiz & Harwood, 2007; Schiappa, Gregg, & Hewes, 2005, 2006). However, in the contemporary entertainment media environment, representations of social out-groups are highly fragmented along the fault lines of "new" and "old" media. Indeed, past research has found representations of a variety of social out-groups are far more frequent in entertainment media produced and/or distributed by online streaming services than those produced/distributed by the "traditional" cable, network television, and film providers (Cook, 2018; Corfield, 2017; Smith, Choueiti, & Pieper, 2016). For example, Smith and colleagues (2016) found *all* substantive transgender representations were in media produced by or for online streaming services.

This stark difference in the distribution of diverse representations between streaming services and "traditional" network and cable television becomes particularly significant when one considers the phenomenon of *binge-watching*, or the consumption of television programs in "binges" of several consecutive hours, rather than on the traditional network and cable schedule of one episode per week (Schweidel & Moe, 2016). Binge-watching is a *new* phenomenon; it emerged with the popularization of DVD box sets prior to the development of online streaming services (Jenner, 2016). Nonetheless, binge viewing behavior has reached critical mass with the proliferation of online television distribution. As of 2017, 71% of American adults have had a subscription streaming service such as Netflix, Hulu, or Amazon Prime, and an estimated 60% of subscribers binge-watch programs at least once per week (Morning & Consult, 2018a, 2018b). Among subscribers aged 18 to 29, that number rises to 73%, with 60% binge-watching several times per week (Morning Consult, 2018a). As television producers consider how to court key audiences, this prevalence of binge-watching becomes a key factor in how shows are made in every domain of production, from writing to distribution (Bernardin, 2018; Jenner, 2016). Given, then, that online streaming services differ from network and cable television both in their frequency of social out-group representation and in their dominant viewing patters, how might the prosocial effects of these representations differ? If mode of consumption differs—particularly pertaining to the timeline of viewing—might the observed effects also differ? Little research has investigated this matter.

Moving to fill this gap in the literature, the present study employed an experimental design to examine whether fictional television narratives depicting social out-groups produce different effects when they are consumed along the "binge-watching" model of television viewing rather than the traditional model of one episode per week. Investigating the influence of Amazon's *Transparent* on viewers' prejudice toward transgender people, we found exposure to the narrative indeed reduced anti-transgender prejudice. Counter to predictions of the extended elaboration likelihood model (E-ELM; Slater & Rouner, 2002) and the entertainment overcoming resistance model (EROM; Moyer-Gusé, 2008), however, improvement in prejudice toward transgender people was not predicted by narrative or character involvement. Rather, reduction in prejudice was an outcome of viewing condition such that those who viewed the program on a schedule of one episode per week exhibited lower levels of postexposure

prejudice than those who binge-watched. Moreover, their attitudinal changes were more persistent 3 weeks later.

The Prosocial Effects of Mediated Intergroup Contact

One of the social powers of media is the capacity to facilitate "contact" between groups of people who would otherwise never meet. This *mediated intergroup contact* offers opportunities for nonhostile interactions between social in-group and out-group members that ultimately lead to more positive intergroup attitudes (Joyce & Harwood, 2014; Ortiz & Harwood, 2007). In perhaps the clearest articulation of this principle, Schiappa and colleagues (2005) posited these mediated interactions constitute "parasocial contact," a synthesis of Allport's (1954) contact hypothesis and Horton and Wohl's (1956) conception of "parasocial interaction." This combined framework, they argued, suggests that, through offering pseudo-interpersonal interaction with avoided or otherwise unencountered social out-groups, fictional narratives can decrease levels of prejudice against out-group members in nonmediated contexts (Schiappa et al., 2005, 2006)

Indeed, a wealth of literature has demonstrated parasocial or mediated intergroup contact with social minorities and stigmatized groups through fictional narratives decreases social distance from and reduces prejudice against members of those groups (e.g., Chung & Slater, 2013; Hoffner & Cohen, 2012; Mangelschots, 2017; Ortiz & Harwood, 2007; Riggle, Ellis, & Crawford, 1996; Schiappa et al., 2005, 2006) and influences policy opinions pertaining to them (e.g., Bond & Compton, 2015). Much of this research has investigated how mediated contact with gay characters influences heterosexual viewers' attitudes toward gay men (Bond & Compton, 2015; Ortiz & Harwood, 2007; Riggle et al., 1996; Schiappa et al., 2005, 2006). Particularly for those with little interpersonal contact with gay people, this body of research has consistently found mediated exposure decreases antigay prejudice (Bond & Compton, 2015; Schiappa et al., 2005, 2006). Other research has extended these findings to other out-groups. Research by Mangelschots (2017), for example, found parasocial contact with the character Kaat Bomans, a transgender woman on the Belgian soap opera *Thuis*, reduced prejudice against transgender individuals. Therefore, we hypothesize the following:

> **H1:** Exposure to a social out-group character will result in lower levels of prejudice against that social group at Time 2 (postexposure) than Time 1 (preexposure).

However, significant research has demonstrated mediated intergroup contact alone is not an absolute driver of positive attitudinal change. Rather, the capacity for contact to positively influence attitudes comes, at least in part, from the development of *relationships* with out-group characters. For example, Hoffner and Cohen (2012) found the development of *parasocial relationships* with the character Monk, a detective with obsessive–compulsive disorder (OCD), decreased belief in OCD-related stereotypes (see also Tian & Hoffner, 2010). Whereas parasocial *contact* refers to the mere exposure of viewers to out-group media figures (Schiappa et al., 2005, 2006), parasocial *relationships* refer to viewers' development of cognitive and affective involvements

with those figures (Auter & Palmgreen, 2000; Giles, 2002; Rubin, Perse, & Powell, 1985; Rubin & McHugh, 1987; Rubin & Rubin, 2001). As Dibble, Hartmann, and Rosaen (2016) compellingly argued in their conceptual clarification, whereas parasocial contact consists of a simulated mutual experience during the viewing experience, "parasocial relationship refers to a longer-term association that may begin to develop during viewing, but also extends beyond the media exposure situation" (p. 25). That is, if we analogize these two types of mediated interactions to interpersonal interactions, parasocial contact constitutes conversation, whereas parasocial relationships constitute relational investments such as friendship (Eyal & Dailey, 2012; Rubin & McHugh, 1987; Tukachinsky, 2010). Indeed, Eyal and Dailey (2012) demonstrated the same processes of relational investment that underlie interpersonal friendships predicted the development of viewers' parasocial relationships with fictional characters.

Yet, despite their differences, parasocial contact and parasocial relationships are closely related. As Schiappa and colleagues (2005) noted, parasocial *contact* facilitates the development of further parasocial *relationships*, which, in turn, drive attitudinal changes. In their words,

> for our purposes, we treat PSI [parasocial interaction] as *contact* or *exposure* and use the phrase *parasocial response* as shorthand for the cognitive and affective reactions we have to such contact . . . And, just as interpersonal interaction can lead to various sorts of interpersonal responses and relationships, parasocial interaction can lead to various sorts of parasocial responses and (one-sided) relationships. (p. 96)

These relationships can result from positive parasocial responses that yield positive outcomes, but so too can relationships form from negative parasocial responses that yield negative outcomes (Dibble & Rosaen, 2011).

Rubin and McHugh (1987) offered empirical evidence of such a process, finding parasocial relationships were arrived at by first moving from social and task attraction to parasocial interaction, and then finally to relationship importance. Moreover, Schiappa and colleagues (2006) found viewing frequency, in combination with parasocial interaction, predicted positive attitude change, whereas Cohen (1997) found having strong parasocial relationships with characters increased viewers' likelihood of continuing to watch the program. As such, the development of parasocial relationships is a cyclical process whereby contact and relationship strength bolster one another, ultimately leading to greater attitude change. Therefore, we hypothesize the following:

H2: Participants who develop stronger parasocial relationships with a social outgroup character will exhibit lower levels of prejudice against that social group post-exposure compared with those who develop weaker parasocial relationships.

The Effects of Narrative and Character Involvement in Fictional Media

A wide body of literature has concerned itself with how fictional media influence individuals' attitudes and behaviors (e.g., Green & Brock, 2000; Moyer-Gusé, 2008;

Moyer-Gusé & Nabi, 2010; Murphy, Frank, Moran, & Patnoe-Woodley, 2011; Slater & Rouner, 2002), and various causal mechanisms have been identified over time. Although parasocial relationships were among the first mechanisms to be identified (Horton & Wohl, 1956), many others have since developed robust lines of inquiry. Scholars have subsequently attempted to unify understandings of these mechanisms in new theoretical frameworks. Building on Petty and Cacioppo's (1986) elaboration likelihood model (ELM), which suggests audiences are most durably persuaded when they have sufficient motivation (e.g., personal relevance) and ability (cognitive, emotional, etc.) to process a persuasive message, Slater and Rouner (2002) proposed engagement with narratives overcomes the potential lack of either. This E-ELM, they argued, indicates "absorption or engagement with the narrative" (Slater and Rouner, 2002, p. 178) overcomes the lack of personal issue relevance and increases the ability to understand, thereby increasing the likelihood of enduring story-consistent attitudes.

Synthesizing E-ELM with insights from social cognitive theory (Bandura, 2009), Moyer-Gusé (2008) proposed a more thorough EORM. Positioned in the context of reactance, counterarguing, and selective avoidance, among other forms of persuasion resistance, EORM maintains the narrative format of fictional entertainment media helps overcome these forms of resistance via the "emotional experience of being swept up into the narrative itself and becoming involved with the characters therein" (Moyer-Gusé, 2008, p. 408). Indeed, Moyer-Gusé and Nabi (2010) found, as predicted by EORM and E-ELM, exposure to a dramatic narrative reduced persuasion resistance, and the reduction in resistance was associated with what Moyer-Gusé (2008) referred to as *narrative involvement* and *character involvement*. In addition to the development of parasocial relationships already discussed, the elements of character involvement include identification with the media character, perceived similarity to the character, and liking the character, whereas narrative involvement includes transportation into the narrative and enjoyment of the narrative (Moyer-Gusé, 2008).

Character involvement. In his seminal work on *identification*, Cohen (2001) wrote, "*identification* is a mechanism through which audience members experience reception and interpretation of the text from the inside, as if the events were happening to them" (p. 245). He further argued, through identifying with media figures, audience members "experience social reality from other perspectives" and thus develop alternative social attitudes (Cohen, 2001, p. 246). Numerous studies have since demonstrated the significant impact of identification on attitudinal and behavioral change, including increases in social acceptance (e.g., de Graaf, Hoeken, Sanders, & Beentjes, 2012; Eyal & Dailey, 2012; Joyce & Harwood, 2014; Tal-Or & Cohen, 2010).

Despite being related to identification in several ways, *perceived similarity* is different, in that it involves a direct comparison of oneself and the media character, rather than empathy and perspective-taking (Eyal & Rubin, 2003; Moyer-Gusé, 2008). Building on similar findings of past work, Tian and Hoffner (2010) found perceived similarity between oneself and a media character strongly affects the development of parasocial relationships (see also Cohen, 2006; Eyal & Rubin, 2003; Hoffner & Cantor,

1991; Klimmt, Hartmann, & Schramm, 2006). Similarly, Hoffner and Buchanan (2005) found perceived similarity increased viewers' identification with the similar character.

Again related to, yet distinct from, identification, *liking* a media character has been found to have a significant positive effect on both the strength of parasocial relationship (Dibble & Rosaen, 2011) and the magnitude of attitudinal change toward social out-groups (Joyce & Harwood, 2014). Indeed, Schiappa and colleagues (2005) found both perceived similarity and liking of out-group characters were associated with reduction in prejudice against the depicted out-groups.

Narrative involvement. Whereas identification, similarity, and liking relate to viewers' cognitive and emotional responses to characters, *transportation* refers to the general feeling of immersion in the fictional narrative (Green & Brock, 2000; Green, Brock, & Kaufman, 2004; Moyer-Gusé, 2008; Tal-Or & Cohen, 2010). Both Chung and Slater (2013) and Murphy and colleagues (2011) have found transportation greatly influences viewer attitudes. Moreover, Chung and Slater (2013) found transportation was not negatively affected by a character's stigmatized identity, meaning viewers who experience high levels of transportation may still engage with the character and thus be attitudinally influenced.

Chung and Slater (2013) additionally found viewers' narrative *enjoyment* was not negatively affected by a character's stigmatized identity. Although Hartmann and his colleagues (Hartmann & Goldhoorn, 2011; Hartmann & Klimmt, 2005; Klimmt et al., 2006) have argued enjoyment is an *outcome* of parasocial interaction, rather than a *predictor*, Moyer-Gusé's (2008) EORM suggests that, through reducing selective avoidance and message resistance, enjoyment should increase acceptance of message-consistent attitudes.

Taking these findings together, we hypothesize the following:

H3: Participants who experience greater narrative and character involvement—that is, identification, perceived similarity, liking, transportation, and/or enjoyment—will exhibit lower levels of prejudice against the depicted social out-group postexposure compared with those who experience lesser narrative and character involvement.

The Effects of Binge-Watched Television

Although television media have traditionally been consumed via networks or cable, they are increasingly consumed via online streaming services (Jenner, 2016). As of 2017, 71% of American adults have had a subscription streaming service such as Netflix, Hulu, or Amazon Prime (Morning Consult, 2018b). Attendant to this shift to streaming services has been a shift to "binge-watching" as a dominant mode of consumption (Jenner, 2016). According to a survey conducted by Morning Consult (2018a), 60% of respondents reported binge-watching television at least once per week, and Schweidel and Moe's (2016) study of Hulu data found in more than 50% of

television viewing sessions viewers watched two or more episodes. Furthermore, research by Ameri, Honka, and Xie (2017) indicates binge-watching incidences, at least among anime viewers, are steadily increasing over time. Although definitions of "binge-watching" range from "the consumption of multiple episodes of a television series in a short period of time" (Schweidel and Moe, 2016, p. 1; see also Pena, 2015; Walton-Pattison, Dombrowski, & Presseau, 2016) to two to three continuous hours of programming (Devasagayam, 2014; Pittman & Sheehan, 2015), we adopted for the present study Ameri and colleague's (2017) statistically robust definition of *viewing three or more hours in a single day*.

As binge-watching has become more prominent, a small but burgeoning literature on the phenomenon has developed. Much of this early literature investigated outcomes of binge-watching behavior. For instance, Pena (2015) found, depending on the program being consumed, binge-watching can significantly influence viewers' reception of the program. In another study, de Feijter, Khan, and van Gisbergen (2016) found the more episodes viewed in a single binge-watching session, the less viewers enjoyed the program, more they experienced guilt, and more they engaged in secondary activities such as eating, instant messaging, or using social media. As a consequence, they noted, "viewers might lose focus of substantial details of the story—dialogue and plot points—that are essential for the contemporary complex TV narratives" (de Feijter et al., 2016, p. 65). Ameri and colleagues (2017) further found though anime viewers reported enjoying binge-watched programs more, such behavior reduced their likelihood of producing their own content than if they had watched the program over more time. This suggests viewers who binge-watch are less likely to be influenced by media content in ways viewers are known to be influenced when engaging in one episode per week viewing, or what Matrix (2014) called "appointment viewing." Therefore, we hypothesize the following:

> **H4:** Participants who consume the television program on an appointment-viewing schedule will exhibit lower levels of prejudice against the depicted social out-group postexposure than those who consume the program in a single binge-watching session.

Moreover, recent research by Warren (2016) and Devasagayam (2014) has investigated the relationship between binge-watching behavior and elements of narrative and character involvement previously discussed. Specifically, Devasagayam (2014) found the vast majority of participants formed parasocial relationships with characters in programs they binge-watched, whereas Warren (2016) found binge-watching significantly increased viewers' levels of transportation. As such, if narrative and character involvement increase the effects of fictional narratives, and if binge-watching increases narrative and character involvement, we might expect the following:

> **H5:** The relationship between viewing schedule (appointment-viewing vs. binge-watching) and levels of prejudice against the depicted social out-group postexposure will be mediated by levels of narrative and character involvement.

Yet while it seems clear binge-watched programs should yield lesser effects on viewers' social attitudes in the *short term* (i.e., at Time 2), the question remains of whether—and if so, how—the *long-term* effects (i.e., at Time 3) of binge-watched television may differ from those of television consumed one episode per week. Horvath, Horton, Lodge, and Hattie (2017) thus far offer the only clear evidence on this question, finding "although binge watching leads to strong memory formation immediately following program viewing, these memories decay more rapidly than memories formed after daily- or weekly-episode viewing schedules." Therefore, extending the implications of their findings, we hypothesize the following:

> **H6:** Participants who consume the television program on an appointment-viewing schedule will exhibit more persistent attitudinal change toward the depicted social out-group group at Time 3 (3 weeks after Time 2) than those who consume the program in a single binge-watching session.

It is important to note that because there is such a small extant literature on the effects of binge-watched television, these final three hypotheses (**H4**-**H6**) are somewhat speculative. That is to say, these hypotheses are based on the findings and logical implications of the few (and methodologically limited) studies available, rather than reflective of clear patterns or explanatory mechanisms found in a more extensive literature. Because of the limitations of existing studies, the present study aims to firmly establish whether the hypothesized effects occur as a baseline from which to launch further studies probing the precise causal mechanisms.

Method

Stimulus: Amazon's Transparent

Amazon Prime, one of the three largest online streaming services, aired the half-hour comedy-drama program *Transparent* from 2014 to 2019, which was delivered to viewers in full-series batches annually (with the exception of the final season). *Transparent* tells the story of the Pfefferman family, which is dealing with the recent revelation that the family's patriarch, Maura (née Mort, played by Jeffrey Tambor), is a transgender woman. Participants were exposed to the first six episodes of the first series of *Transparent* (six half-hour episodes for a total of 3 hr) online, either in one continuous 3-hr session (binge-watching) or in six half-hour sessions, each separated by roughly 7 days (appointment viewing). Across these six episodes, Maura comes out to all three of her children, each of whom copes with the news in different ways, ranging from immediately accepting to highly resistant. She also runs into an old friend who is shocked by her transgender identity and she forms close friendships with two other transgender women. The show has been immensely popular among viewers (Tretbar, 2014), and has been highly critically acclaimed, winning two Golden Globe awards, three Critics' Choice awards, and eight Primetime Emmy awards as of the time of writing.[1]

Participants

Potential participants ($N = 281$) were recruited from Amazon's Mechanical Turk (MTurk). Although some consider it a controversial sampling platform, scholars across various fields have convincingly demonstrated the reliability of results obtained from MTurk (Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Paolacci & Chandler, 2014; Rand, 2012). For example, Berinsky et al. (2012) found MTurk workers are more representative of the U.S. population than convenience samples found offline and far more representative than the "college sophomore" convenience sample often relied upon for social science research. Moreover, they replicated the findings of three gold standard studies that each used different types of samples (Internet panel, in-person convenience, and face-to-face survey) using an MTurk sample. In the present study, the mean participant age was nearly 40 with a range of 21 to 69, thus offering a much more representative sample—and one whose preexposure attitudes toward transgender people were less likely to skew positive—than if an undergraduate sample had been employed.

Participants were offered modest financial compensation for participation in the full study; those who dropped out of the study were paid a prorated amount. Those who had previously viewed one or more episodes of *Transparent* were excluded from participation. Of those who responded to the solicitation for participants, 251 (89%) were both eligible to participate and chose to do so. Potential participants were then randomly assigned into one of two groups—an appointment-viewing group ($n = 129$) or a binge-watching group ($n = 122$). Due to concerns about attrition in the appointment-viewing group, in which participants would need to return once per week, we deliberately oversampled. Although we did not need to oversample for the binge-watching group, we needed to ensure true random assignment to condition (i.e., 50% chance of being placed in either group), so we sampled evenly into both groups. Not doing so would have meant the odds of being placed into the appointment-viewing group would have been significantly higher for all participants than the odds of being placed into the binge-watching group. However, because we did not need all 122 participants in the condition, 60 were randomly selected from the pool assigned to the binge-watching condition for invitation to participate in the full study. Of the 189 participants invited to participate across both groups, 92% began the study, resulting in a total starting participant pool of $N = 174$. Of those participants, 60% completed the experiment, resulting in a final sample of $N = 105$ valid cases ($n = 69$ from the appointment-viewing group and $n = 36$ from the binge-watching group).

Although we cannot be certain the reason attrition was higher than expected among binge-watching participants and lower than expected among appointment-viewing participants, we can offer some reasonable conjecture. Regarding the binge-watching group, because participants agreed to their viewing condition 6 weeks before actually participating in the study, they may have agreed without fully considering their schedule or may have filled their schedules with conflicts in the intervening time, forgetting their agreement to participate. As for the appointment-viewing group, we strongly suspect participants ceased to drop from the study because they developed interest and

investment in the program and genuinely wanted to continue watching. Indeed, several participants emailed to comment how much they enjoyed the show, with one participant writing, "I love this show! I can't wait till Fridays [the day weekly invites were sent out] just so I can watch the next one." Moreover, at the conclusion of the study, several participants emailed to inform they would continue to watch the next series on their own time.

Participants were 54% female-identified ($n = 57$) and 46% male-identified ($n = 48$), none of whom further identified as transgender. The sample ranged in age from 21 to 69 ($M = 38.99$, $SD = 12.04$). The majority of participants identified as White ($n = 84$, 80%), whereas the remainder identified as Latino/Hispanic ($n = 7$, 7%), Black/African American ($n = 6$, 6%), Asian American/Pacific Islander ($n = 4$, 4%), multiracial ($n = 3$, 3%), or American Indian/Alaska Native ($n = 1$, 1%). Most participants identified as straight ($n = 98$, 93%), with the remaining participants identifying as bisexual ($n = 5$, 5%) or gay ($n = 2$, 2%).

Procedure

Potential participants completed a screener questionnaire, which explained the project would entail viewing 3 hr of award-winning television on a personalized schedule over the course of 6 weeks and asked whether they would be willing to participate in the study as described. Participants who indicated willingness were then directed to a subsequent page on which they were asked to check from a list of 12 programs distributed by Netflix, Hulu, or Amazon all the shows of which they had previously viewed one or more episodes. Those who had watched *Transparent* were excluded from participation.

Eligible participants ($N = 251$) were randomly assigned into experimental conditions as described above and messaged to inform them of their assigned viewing schedule. All sampled participants ($N = 187$) were then invited to complete a questionnaire consisting of standard demographic questions and measures of both familiarity with and attitudes toward transgender people and other social out-groups prior to exposure to the stimulus (Time 1). In all, $N = 174$ completed the questionnaire.

The next week, participants in the appointment-viewing condition ($n = 114$) were invited to view the first episode. Participants were sent invitations on Friday morning and had until Sunday night to complete their viewing. After viewing, participants answered two questions to ensure they viewed the program. Questions were chosen such that intense focus would not be required to remember the details of the answer, while the details would also not be found in summaries of the episodes online. Across the entire experiment, seven participants were terminated from the study for failing attention checks. Participants in the appointment-viewing condition repeated this process every week for 6 weeks.

Concurrent to the appointment viewers' final week, participants in the binge-watching condition ($n = 60$) were invited to watch all six episodes in one continuous session. Participants had 5 hr from beginning their viewing to finish, so as to ensure fidelity to the binge phenomenon. Like those in the appointment-viewing condition,

Table 1. Timeline of Experimental Procedure.

Appointment-viewing condition	Week	Binge-watching condition
Preexposure questionnaire ($n = 129$)	1 (Time 1)	Preexposure questionnaire ($n = 58$)
Episode 1 viewing ($n = 114$)	2	—
Episode 2 viewing	3	—
Episode 3 viewing	4	—
Episode 4 viewing	5	—
Episode 5 viewing	6	—
Episode 6 viewing + postexposure questionnaire ($n = 69$)	7 (Time 2)	Episode 1-6 viewing + postexposure questionnaire ($n = 36$)
—	8	—
—	9	—
Postexposure questionnaire ($n = 52$)	10 (Time 3)	Postexposure questionnaire ($n = 30$)

participants in the binge-watching condition received invitations to begin viewing on Friday morning and had until Sunday night to finish. They likewise answered two questions to ensure viewing between each episode.

Immediately after viewing the sixth and final episodes, remaining participants in both conditions ($n = 69$ from the appointment-viewing group and $n = 36$ from the binge-watching group) completed a questionnaire reassessing attitudes toward transgender people, as well as assessing relevant narrative and character involvement variables (Time 2). Three weeks later, all remaining participants were invited to complete a final questionnaire reassessing attitudes toward transgender people (Time 3); 78% of participants ($n = 52$ from the appointment-viewing group and $n = 30$ from the binge-watching group) completed this final questionnaire. Table 1 presents the timeline of events for the experimental procedure.

Measures

All measures took the form of 7-point Likert-type scales, except where otherwise stated, although response labels differed depending on the construct. For all scales, greater scores indicate greater magnitudes of the construct. In addition to the traditional Cronbach's alpha, scale reliabilities were assessed via hierarchical omega, which offers a more robust assessment of scale reliability and internal consistency (Peters, 2014).

Prejudice toward transgender people. To measure prejudice toward transgender people, we adapted the five-item revised short form of the Attitudes Toward Lesbians and Gay Men Scale (Herek & McLemore, 2011), rewriting measures to ask about transgender people (e.g., "I think male-to-female transgender people are disgusting" and "Male-to-female transgenderism is merely a different kind of lifestyle that should *not* be condemned"). Two items related to sexual intercourse were dropped because of their

irrelevance. Items were averaged to form a single factor and tested for reliability (α = .97, ω_h = .89).[2]

Although test sensitization was a concern because the same measure was employed at three different points in the study, we feel confident in our measurements for a few reasons. First, at their closest, measurements were 3 weeks apart, making it unlikely that participants remembered the specifics of the questionnaire items. Second, because participants were MTurk workers, they participate in such a large volume of activities (including studies) that it would be difficult for them to maintain enough mental distinction between tasks that they would be sensitized to the measure. Finally, we embedded the items measuring prejudice toward transgender people in a set of distractor items about various prejudices, including toward Jewish people, gays and lesbians, and Black Americans.

Parasocial relationship. Parasocial relationship with the transgender main character, Maura, was measured using an adaptation of Rubin and Perse's (1987) 10-item Parasocial Interaction Scale. Sample items included the following: "Maura makes me feel comfortable, as if I am with a friend" and "I would like to meet Maura in person." One item concerning missing the character when they are not in an episode was dropped because Maura is in every episode. Items were averaged and tested for reliability (α = .92, ω_h = .83).

Identification. Identification with Maura was measured using Tal-Or and Cohen's (2010) five-item adaptation of Cohen's (2001) original scale. Items were mildly adapted to suit the current study. For example, "I understood the events in the movie the way Jack understood them" was adapted to read, "I understood the events in the television program the way Maura understood them." Items were averaged and tested for reliability (α = .91, ω_h = .85).

Perceived similarity. Following Tian and Hoffner (2010), similarity to Maura was measured using five items from Auter and Palmgreen's (2000) Audience-Persona Interaction Scale. Sample items included the following: "Maura reminds me of myself" and "I seem to have the same beliefs or attitudes as Maura." Items were averaged and tested for reliability (α = .86, ω_h = .68).

Liking. Liking of Maura was measured using Dibble and Rosaen's (2011) seven-item scale. Sample items included the following: "I like Maura" and "I have no respect for Maura." Items were averaged and tested for reliability (α = .93, ω_h = .87).

Transportation. Transportation into the narrative was measured using six items adopted from Green and Brock's (2000) Transportation Scale. Sample items included the following: "I was mentally involved in the television program while watching it" and "I could picture myself in the scene of the events portrayed in the television program." Items were averaged and tested for reliability (α = .85, ω_h = .80).

Table 2. Means (Standard Deviations) and Percentages for Demographics and Preexposure Prejudice.

Variable	Condition		$t(103)/\chi^2$	p
	Appointment viewing ($n = 69$)	Binge-watching ($n = 36$)		
Age	39.0 (12.48)	39.0 (11.31)	−0.01	.995
Gender (female)	57%	50%	0.41	.524
Sexual orientation			1.12	.570
Heterosexual	93%	94%		
Homosexual	3%	0%		
Bisexual	4%	6%		
Race/ethnicity			5.14	.400
White	83%	75%		
Latino/Hispanic	7%	6%		
Black/African American	6%	6%		
Asian American/Pacific Islander	2%	8%		
Multiracial	2%	6%		
American Indian/Alaska Native	2%	0%		
Prejudice toward transgender people	2.44 (1.52)	2.87 (1.83)	−1.29	.200

Note. The third column presents chi-squares for categorical variables and *t* tests for continuous variables. For *t* tests, Levene's tests were conducted and indicated equal variances between groups. Not all categorical variables sum to 100% due to rounding.

Enjoyment. Following Chung and Slater (2013), enjoyment of the narrative was measured using five items on a 7-point Semantic Differential Scale and three items on a 7-point Likert-type scale. Items were averaged and tested for reliability ($\alpha = .98$, $\omega_h = .96$).

Results

Preliminary Analyses

To ensure successful random assignment to the experimental conditions, we ran a series of chi-square and *t* tests on demographic and preexposure prejudice measures. As shown in Table 2, there were no statistically significant differences between groups on any measure. Thus, random assignment to the conditions was successful and the differences in experimental group size caused by lack of expected attrition among appointment-viewing participants did not produce significant differences on any research or control variables.

Hypothesis Testing

H1 predicted exposure to a social out-group character would reduce prejudice against members of that group, regardless of condition. A paired samples *t* test revealed a

Table 3. Summary of Regression Analysis for Variables Predicting Postexposure (Time 2) Prejudice (N = 105).

Variable	B	b (SE)	95% CI
Block 1: Narrative and character involvement			
PSR with Maura	0.02	0.02 (0.13)	[−0.24, 0.29]
Identification with Maura	−0.03	−0.03 (0.09)	[−0.21, 0.15]
Perceived similarity to Maura	−0.07	−0.08 (0.08)	[−0.24, 0.07]
Liking of Maura	−0.42***	−0.52 (0.13)	[−0.77, −0.26]
Transportation into program	−0.10	−0.13 (0.11)	[−0.35, 0.09]
Enjoyment of program	0.15	0.14 (0.09)	[−0.04, 0.33]
Δ adjusted R^2		.52***	
Block 2: Preexposure (Time 1) Prejudice			
Prejudice toward transgender people	0.59***	0.47 (0.04)	[0.39, 0.56]
Δ adjusted R^2		.26***	
Total adjusted R^2		.78***	

Note. Cell entries are final-entry OLS coefficients. CI = confidence interval; PSR = parasocial relationship; OLS = ordinary least squares.
*p < .05. **p < .01. ***p < .001.

significant difference in levels of anti-transgender prejudice between Time 1 (M = 2.58, SD = 1.64) and Time 2 (M = 2.18, SD = 1.32), $t(104)$ = 4.30, p < .001, 95% confidence interval (CI) = [0.22, 0.60], Cohen's d = 0.27. Thus, as postexposure levels of prejudice were significantly lower than preexposure levels, **H1** was fully supported.

Together, **H2** and **H3** predicted experiencing greater parasocial relationship, identification, perceived similarity, liking, transportation, and enjoyment would result in lower levels of postexposure prejudice. To test these hypotheses, we conduct an ordinary least squares (OLS) regression with prejudice at Time 2 as the dependent variable; parasocial relationship, narrative involvement, and character involvement variables as independent variables; and preexposure prejudice as a control variable. As indicated in Table 3, parasocial relationship with Maura was a nonsignificant predictor of prejudice, as were both the narrative involvement variables. Liking of Maura was a statistically significant predictor (β = −0.42, p < .001) such that greater liking was associated with less postexposure prejudice, while each of the other character involvement variables was nonsignificant. Therefore, **H2** was not supported, while **H3** was partially supported.

H4 predicted participants who consumed the television program on an appointment-viewing schedule would exhibit less postexposure prejudice against members of the depicted social out-group than those who consumed the program on a binge-watching schedule. To examine differences across time between the conditions, we first conducted independent samples *t* tests comparing postexposure prejudice between groups at Time 2 and at Time 3. Because Levene's tests for equality of variances indicated unequal variances between the groups at both postexposure measurement times,

we employed Welch's *t* test rather than Student's *t* test. Results indicated prejudice levels in the binge-watching condition ($M = 2.56$, $SD = 1.59$) and appointment-viewing condition ($M = 1.98$, $SD = 1.12$) at Time 2 were not significantly different, $t(53.52) = -1.94$, $p = .058$, 95% CI = $[-1.17, 0.02]$. However, at Time 3, the difference between prejudice levels in the binge-watching condition ($M = 3.22$, $SD = 1.81$) and appointment-viewing condition ($M = 2.22$, $SD = 1.13$) *was* statistically significant, $t(42.17) = -2.73$, $p = .009$, 95% CI = $[-1.74, -0.26]$, Cohen's $d = 0.66$.

Next, we conducted a repeated-measures analysis of variance (ANOVA) with measurement time (Time 1, Time 2, Time 3) as the within-subjects variable and condition (appointment-viewing vs. binge-watching) as the between-subjects variable. Analysis revealed a significant main effect of time on prejudice toward transgender people, $F(2, 79) = 9.02$, $p < .001$, $\eta^2 = .19$. In addition, there was a significant between-subjects effect such that participants in the appointment-viewing condition exhibited less prejudice than those in the binge-watching condition, $F(1, 80) = 7.01$, $p = .01$, $\eta^2 = .08$. There was no significant interaction effect, $F(2, 79) = 1.79$, $p = .173$. Taking the results of these tests together, **H4** was supported.

H5 predicted narrative and character involvement measures would mediate the relationship between viewing condition and levels of postexposure prejudice. To test this hypothesis, we ran two conditional process analyses using OLS regression models and a bootstrap estimation of 10,000 samples (Hayes, 2013). These analyses offer bootstrap estimates of mediated effects with 95% CI. In the first analysis, postexposure prejudice at Time 2 was the dependent variable, while condition was the independent variable and narrative and character involvement variables were included as mediators. As shown in Figure 1, narrative and character involvement variables were all significantly predicted by condition such that participants in the appointment-viewing condition experienced each more strongly. However, in turn, only liking of Maura ($B = -0.86$, $p < .001$) and enjoyment of the program ($B = 0.30$, $p < .05$) were significant predictors of prejudice. Thus, in addition to the main effect of condition on postexposure prejudice ($B = 0.58$, $p < .05$), only liking and enjoyment mediated the relationship between condition and outcome at Time 2.

In the second analysis, postexposure prejudice at Time 3 was the dependent variable. As shown in Figure 2, again narrative and character involvement variables were all significantly predicted by condition such that participants in the appointment-viewing condition experienced each more strongly. In this case, however, none of the narrative or character involvement variables significantly predicted prejudice. Thus, there was a main effect of condition on postexposure prejudice ($B = 1.00$, $p < .01$), but the relationship between condition and outcome was not mediated by narrative and character involvement at Time 3. Taking these results together, **H5** was not supported.

Finally, **H6** predicted viewers in the appointment-viewing condition would exhibit more persistent attitude change than those in the binge-watching condition. Further probing the observed between-subjects effect (condition), a test of within-subjects contrasts revealed a nonlinear quadratic pattern such that prejudicial attitudes at Time 2 decreased for participants in both groups, but the effect diminished entirely for participants in the binge-watching condition and only partially for participants in the
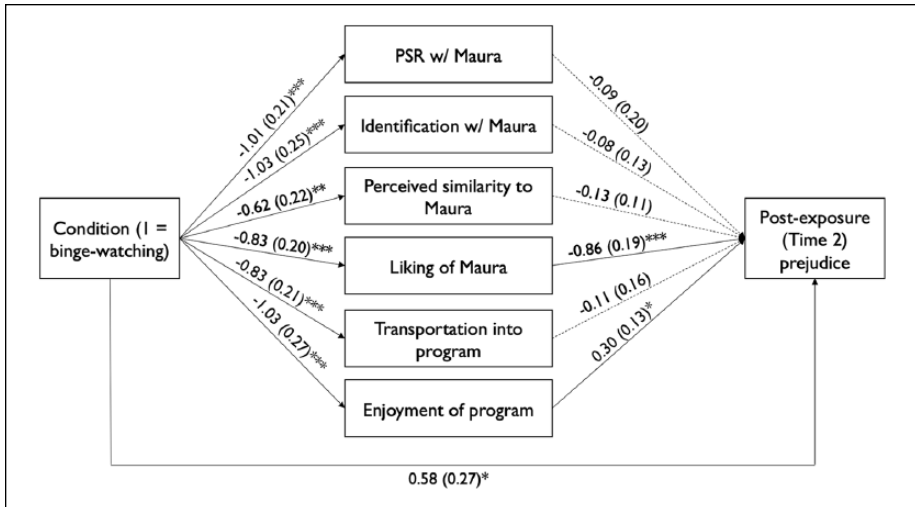
Figure 1. Unstandardized regression coefficients (and standard errors) for the effect of viewing condition on Time 2 prejudice toward transgender people as mediated by narrative and character involvement.
Note. PSR = parasocial relationship.
*p < .05. **p < .01. ***p < .001.

appointment-viewing condition at Time 3. Figure 3 presents this quadratic trend, $F(1, 80) = 17.85, p < .001, \eta^2 = .182$. Therefore, **H6** was fully supported.

Discussion

With the advent of online streaming services, binge-watching has emerged as a dominant mode of television consumption. However, little work has investigated how the effects of binge-watched television might differ from those of television consumed on the traditional appointment-viewing schedule. The present study was designed to fill that gap, assessing how the prosocial effects of television media differ in the context of prejudice toward transgender people. In our experimental study, we found that, regardless of viewing schedule, exposure to the fictional narrative reduced anti-transgender prejudice among participants. Moreover, postexposure prejudice levels differed by experimental condition such that participants in the appointment-viewing condition exhibited less prejudice. Most significantly, however, the reduction in prejudice caused by exposure to the narrative persisted 3 weeks after viewing for those in the appointment-viewing condition, whereas it dissipated entirely for those in the binge-watching condition. Thus, we offer clear early evidence that binge-watched television does not produce the same prosocial effects as television consumed on an appointment-viewing schedule. Below, we unpack these and other findings, discussing their theoretical implications.
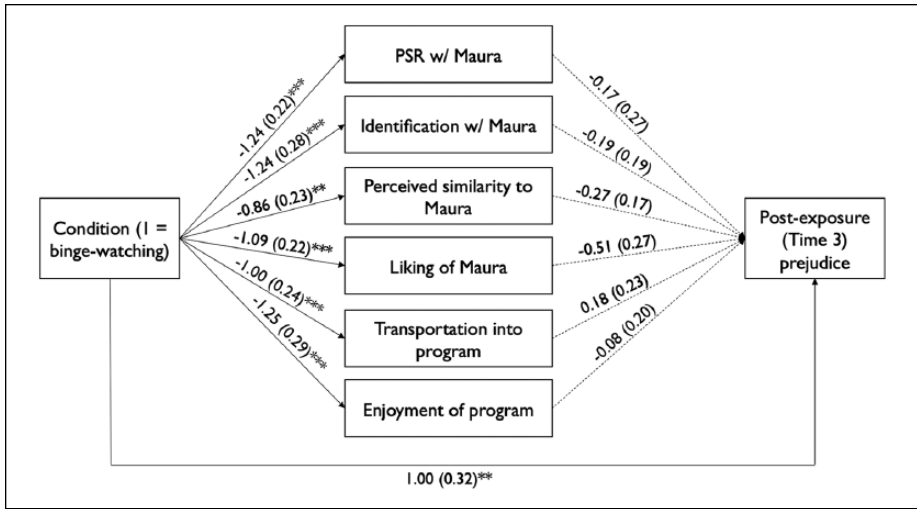
Figure 2. Unstandardized regression coefficients (and standard errors) for the effect of viewing condition on Time 3 prejudice toward transgender people as mediated by narrative and character involvement.
Note. PSR = parasocial relationship.
*p < .05. **p < .01. ***p < .001.

Consistent with prior studies of the influence of fictional narratives on social attitudes and beliefs (e.g., Bond & Compton, 2015; Chung & Slater, 2013; Hoffner & Cohen, 2012), and confirming our first hypothesis, viewing *Transparent* caused significant decreases in prejudice against transgender people. These results, thus, offer further evidence in support of the parasocial contact/mediated intergroup contact hypothesis, which maintains that exposure to fictional narratives depicting social outgroup characters positively influences attitudes toward that group generally (Joyce & Harwood, 2014; Ortiz & Harwood, 2007; Schiappa et al., 2005, 2006) However, the strength of parasocial relationship developed with Maura did not predict the magnitude of prejudice reduction, as prior work indicated should be the case (e.g., Hoffner & Cohen, 2012). This suggests, at least in certain contexts, mere exposure to social out-group members is enough to influence attitudes, which, indeed, other research on anti-transgender prejudice has found (Flores et al., 2017).

Similarly, counter to the predictions of E-ELM (Slater & Rouner, 2002) and EORM (Moyer-Gusé, 2008), most measures of narrative and character involvement—specifically, identification with the character, perceived similarity to the character, transportation into the narrative, and enjoyment of the program—did not predict postexposure prejudice levels; only liking the character of Maura was associated with decreased prejudice. Although liking Maura and enjoyment of the program mediated the relationship between condition and postexposure prejudice at Time 2, no narrative or character involvement variables mediated this relationship at Time 3. Although these results contradict the
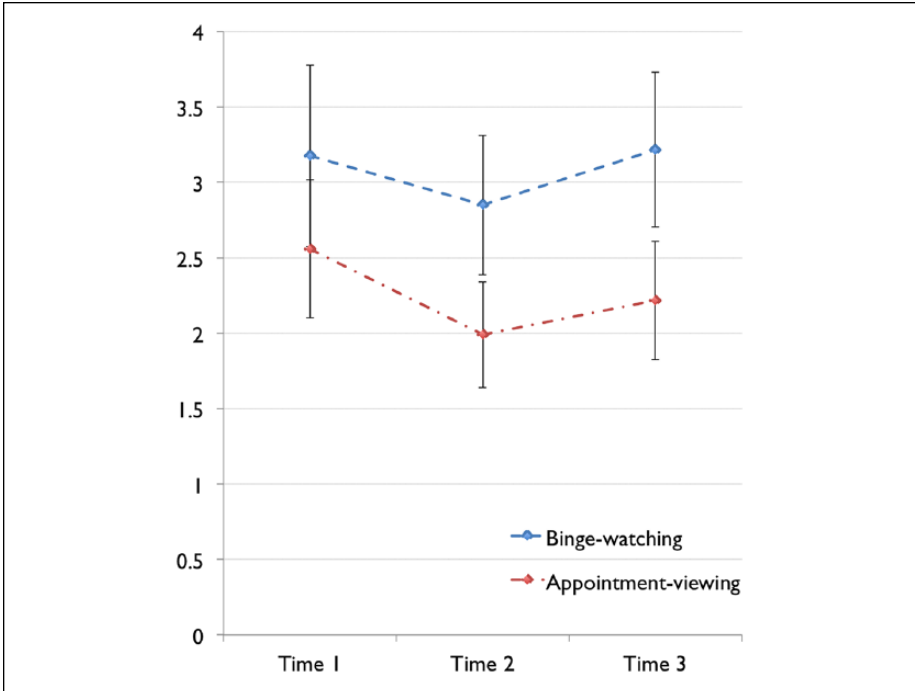
Figure 3. Quadratic trend in levels of prejudice toward transgender people over time by condition.

E-ELM and EORM models, as well as empirical research supporting them (e.g., Moyer-Gusé & Nabi, 2010; Slater, Rouner, & Long, 2006), they confirm the findings of other research, such as the work by Jensen, Bernat, Wilson, and Goonewardene (2011) that found identification and transportation did not predict delayed media effects. Furthermore, that liking and enjoyment mediated the relationship between viewing schedule and post-exposure prejudice in the immediate posttest but not the delayed posttest indicates perhaps narrative and character involvement influence attitudes during the viewing process, but not in the processes of information processing, storage, and retrieval. These results, thus, call into question both the E-ELM and EORM models, suggesting perhaps other mechanisms are at play in the process of fictional narrative persuasion.

Indeed, our findings regarding the differential effects of binge-watching and appointment-viewing indicate the original ELM (Petty & Cacioppo, 1986) may be a more accurate model. Although E-ELM (Slater & Rouner, 2002) and supporting research (Appel & Richter, 2007) maintains fictional narratives are not processed in the same way as other persuasive messages, and thus dual-process models such as ELM (Petty & Cacioppo, 1986) do not explain their effects, the original ELM does offer evidence that the effects of binge-watched television may differ from appointment-viewed television.

In its original formulation, ELM argues persuasion (i.e., attitudinal change) is arrived at one of two routes: central or peripheral (Briñol & Petty, 2015; Petty & Cacioppo, 1986). Whereas the central route involves active cognitive deliberation that situates experience and knowledge to determine an argument's merits, the peripheral route relies on heuristic cues and identification with the information source to determine (without deliberation) whether the persuasive argument is acceptable (Briñol & Petty, 2015; Petty, Briñol, & Priester, 2009). However, because attitudes arrived at via peripheral routes rely on more ephemeral mechanisms (e.g., emotional states, feelings about sources), they are also more easily undermined in the long term (Petty et al., 2009). In contrast, attitudes arrived at via central routes are more likely to persist because the mechanisms of deliberation more thoroughly incorporate persuasive information into one's cognitive structure (Haugtvedt & Petty, 1992; Petty, Haugtvedt, & Smith, 1995). In the context of prejudicial attitudes, research by Cárdaba, Briñol, Horcajo, and Petty (2013, 2014) demonstrated, though reductions in prejudice were arrived at via both central *and* peripheral routes, those arrived at by central routes were more persistent over time.

Slater and Rouner (2002) suggested that in the context of fictional narratives "a clean distinction between central and peripheral processes is no longer discernable" (p. 177) because absorption into narratives mitigates the deliberative processes that permit counterarguing (i.e., persuasion resistance). Yet, by this logic, attitudinal changes caused by fictional narratives would always fail to persist because of the lack of deliberation, even though research in line with E-ELM has demonstrated this kind of attitudinal change does in fact persist, if not increase (Appel & Richter, 2007). Thus, we must consider the possibility the delineation between central and peripheral persuasion might exist in narrative contexts, as well.

Indeed, we might see separate central and peripheral routes emerge in relation to viewing schedule. Specifically, the nature of binge-watching does not lend itself to central processing as it entails a kind of transportation in the narrative world that Slater and Rouner (2002) contended prohibits deliberation. Viewing one episode per week, alternatively, allows more time for deliberation (and even discussion) between episodes, which permits a central route to be taken. As Jensen and colleagues (2011) articulated in their "delay hypothesis," "the full impact of fictional narratives may be felt over time as bits and fragments of the message are disconnected and then activated out of their original context" (pp. 509-510). Moreover, de Feijter and colleagues (2016) offered evidence that binge-watchers are more likely to engage in secondary behaviors while viewing, which would certainly limit viewers' ability (even if not motivation) to deliberate and incline them toward peripheral processing, whereas appointment-viewing encourages more focused attention that would encourage central processing.

The results of the present study certainly indicate some support for this model. First, consistent with the nascent literature on binge-watched television (Ameri et al., 2017; de Feijter et al., 2016; Pena, 2015; Schweidel & Moe, 2016), participants in the appointment-viewing condition exhibited less prejudice than those in the binge-watching condition after exposure to *Transparent*. More significantly, however, we found

participants in the appointment-viewing condition exhibited more persistent attitudinal change, whereas those in the binge-watching condition returned to preexposure prejudice levels 3 weeks after viewing the program. Although these results do not offer direct evidence of ELM, they are consistent with the model while contradicting competing models (E-ELM and EORM). Thus, taking the present findings along with Horvath et al.'s (2017) findings that binge-watching resulted in more rapid memory decay and psychological research indicating how condensed timeline studying ("cramming") produces weaker long-term learning than studying on a distributed timeline (Gluckman, Vlach, & Sandhofer, 2014; Kornell, 2009; Küpper-Tetzel, 2015), we must reconsider the arguments presented by Appel and Richer (2007) and Slater and Rouner (2002), among others, that dual-process models such as ELM should not be applied to contexts of narrative persuasion. Rather, we might consider if, and if so how, such models might inform the effects of fictional narratives.

Finally, this study adds to a nascent, but rapidly expanding literature on contemporary media representations of transgender people (Billard, 2016, 2019b, 2019c; Billard & MacAuley, 2017; Capuzza & Spencer, 2017) and their effects on public attitudes (Billard, 2019a; Gillig et al., 2017).

Implications for Industry

Beyond their theoretical implications, the results of this study have interesting implications for the entertainment industry and the effectiveness of industry diversity initiatives. Considering again that representations of most social out-groups are more frequent in programs found on online streaming services than on cable or network television (Smith et al., 2016) and that online streaming television is more frequently binge-watched than appointment-viewed (Schweidel & Moe, 2016), our results suggest diverse representations are, ironically, currently more prevalent on platforms on which they are less effective at improving intergroup attitudes. This study's conclusion that weekly paced programs are important vectors of prejudice reduction suggests network and cable television producers should follow the example of online streaming services in increasing the representational diversity of their programs so as to lend their greater effectiveness to advancing social equality.

Limitations and Future Directions

Despite its significant theoretical and practical implications, the present study has several limitations that must be addressed in future work. First, the study has limited external validity because participants were incentivized to participate, we cannot be sure they would have chosen to watch the show without external influence. Although the stimulus program is highly popular with a wide following (Tretbar, 2014), so many may have viewed the program for its popularity regardless of their preexisting feelings about transgender people or issues, we cannot overlook the fact that exposure and viewing schedule are both entirely self-selected in the real world.

Second, our experimental design lacked a control condition in addition to the two experimental conditions. Although our results clearly indicate a difference in the effects of binge-watched versus appointment-viewed television programs, the lack of control group makes it impossible to know whether either condition produces effects significantly different from no exposure at all. Third, the heightened media visibility and political volatility surrounding transgender individuals during the run of this experiment may have influenced participants' changes in prejudice beyond their exposure to the stimulus. Similarly, if participants engaged in extensive discussion about the program or about transgender issues more broadly with family, friends, and/or peers, this may have influenced their reported prejudice levels and introduced error into the data.

Fourth, this study is merely an early experimental investigation of how the effects of binge-watched television may differ from those of television consumed one episode per week. Particularly considering Pena's (2015) findings that "the effect of binge watching on viewer reception is contingent on the show" (p. 54), further studies are needed across television genres and programs depicting other social groups or issues to ensure the generalizability of these findings. Finally, our study did not directly test the mechanisms of ELM (e.g., deliberation) offered as a potential explanation of our findings. Thus, further studies explicitly measuring these mechanisms would be required to confirm our theoretical proposition that ELM explains the differential effects of binge-watching and appointment viewing.

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Declaration of Conflicting Interests

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Notes

1. It is important to note that the show came to a hasty ending because of numerous scandals involving Jeffrey Tambor, the actor who portrayed the transgender lead character, Maura. Specifically, he was accused of serial sexual harassment by his personal assistant, Van Barnes, and one of his costars, Trace Lysette, both of whom are transgender women. He

was subsequently fired from the show's fifth series, which was announced to be its last (Goldberg, 2018). However, the present study was conducted from June to August 2016, between the release of the second and third series of the show and over a year prior to the first public accusation against Tambor. Thus, the scandal cannot have affected participants' perceptions of the show or the character of Maura.

2. This study was conducted prior to the publication of the Attitudes Toward Transgender Men and Women (ATTMW) scale (Billard, 2018), which would have been a more appropriate measure.

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