The Persuasive Effects of Narrative Entertainment: A Meta-Analysis of Recent Experiments

Bardia Rahmani, Dylan W. Groves, Beatrice Montano, Donald P. Green *

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Abstract

Narrative entertainment has attracted increasing attention from social scientists and policymakers. One strand of research seeks to understand whether the entertainment that audiences consume in everyday life affects their beliefs, attitudes, and behaviors; another, whether purpose-built narrative media campaigns hold promise as a means of addressing social, economic, and political problems. Building on previous literature reviews, we present the results of a meta-analysis of 377 findings from 77 experiments that assess the persuasive effects of narrative radio, TV, and film programs, including a recent wave of studies in low- and middle-income countries. We apply a hierarchical-effects model to studies evaluating narrative media effects across a range of settings and issue domains. The results suggest that narrative entertainment is quite influential, with sizable persuasive effects that remain apparent weeks after initial exposure. A smaller literature reports head-to-head tests of the relative effectiveness of narrative versus non-narrative messages; although inconclusive, the evidence suggests that narratives may be only slightly more persuasive than non-narrative messages. If true, this finding would imply that the main advantage of narratives may be their ability to attract and engage large audiences. We conclude by calling attention to gaps in the literature and proposing avenues for further research.

Keywords: Narrative persuasion, edutainment, media, meta-analysis

The Persuasive Effects of Narrative Entertainment: A Meta-Analysis of Recent Experiments

Whether exposure to mass media shapes an audience's beliefs, attitudes, and behaviors is a longstanding question in the social sciences. The extant literature has tended to focus on overtly persuasive or didactic forms of communication such as political advertisements and news media, but a growing body of work has considered the persuasive potential of narrative entertainment.[1] Globally, narrative films, television series, radio serials, and podcasts are a major part – often *the* major part – of audiences' media diets. Sensing that narratives influence what audiences think and do, practitioners in the fields of international development and public health have increasingly incorporated the principles of entertainment-education ("edutainment") into behavior change campaigns. Examples of recent edutainment interventions include feature films to inform people about their rights under anti-poverty programs in India (Ravallion, van de Walle, Dutta, & Murgai, 2015), radio dramas to facilitate ethnic reconciliation in post-conflict Rwanda (Paluck & Green, 2009), and TV shows to reduce HIV/AIDS stigma in Nigeria (Banerjee, La Ferrara, & Orozco Olvera, 2019). Whether and under what conditions these interventions are effective are questions of great importance for policy makers, especially in settings where limited state capacity makes edutainment one of the few scalable and cost-effective options.

Since Cantril & Allport (1935), theoretical work has long suggested that narrative entertainment may have a unique ability to inform and persuade (Paluck, 2012). Overtly persuasive messages often fail to sway audiences, perhaps because audiences tend to avoid exposure to uncongenial media sources (Knobloch-Westerwick, 2014) or because they engage in motivated resistance to information that contradicts their prior beliefs (Kruglanski, Webster, & Klem, 1993). Narrative entertainment differs from overt forms of communication in ways that may overcome these barriers to persuasion. First, because persuasive messages are embedded in entertaining content, audiences may actively seek out and consume counter-attitudinal content they would otherwise

[1] Following Hinyard & Kreuter (2007), we define a narrative as follows: "Any cohesive or coherent story with an identifiable beginning, middle, and end, that provides information about scene, characters, and conflict; raises unanswered questions or unresolved conflict; and provides resolution" (p. 778).

avoid (Pratkanis & Aronson, 2002; Strange, 2002). Second, transportation into a narrative or the point of view of a character might bypass audience members' tendency to counter-argue, in line with the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and its theoretical descendant that is specific to edutainment, the Extended Elaboration Likelihood Model (E-ELM, Slater & Rouner 2002). Scholars have also suggested a third reason why entertainment may persuade: appealing characters who are shown to thrive in a given drama may serve as models of socially appropriate behavior (Bandura, 2004a, 2004b).

Yet despite the wealth of theoretical work on narrative persuasion, systematic empirical investigation of the effects of entertainment media remains patchy and the principal findings remain unclear. While a growing number of randomized control trials (RCTs) have sought to assess the effects of edutainment campaigns, results run the gamut. Some studies find that edutainment can cause meaningful changes in beliefs, attitudes, and behaviors (Green, Wilke, & Cooper, 2020). Other studies find null effects, raising questions about the effectiveness of these interventions (Cherrington et al., 2015). Even where edutainment is found to be persuasive, it is unclear if it is any more so than non-narrative communication. Some studies find that narrative messages are less informative and persuasive than didactic messages (Bekalu, Bigman, McCloud, Lin, & Viswanath, 2018); others hold that narrative entertainment has unique persuasive properties (Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013). Given the growing number of studies and their disparate findings, a systematic review and meta-analysis is needed to estimate the expected causal effect of narrative entertainment on an assortment of outcomes.

Building upon meta-analyses by Ratcliff & Sun (2020), Braddock & Dillard (2016), and Shen & Han (2014), we conduct a meta-analysis of randomized experiments evaluating the effects of narrative entertainment on beliefs, attitudes, intentions, behaviors, priorities, and norms. In all, our sample comprises 77 experimental comparisons drawn from 57 articles, amounting to a total of 24,380 unique individual respondents – by far the largest and most comprehensive sample assembled to date. The narrative treatments include feature films, short films, television series, and radio dramas that span a range of domains, from misinformation-correction to health promo-

tion to prejudice reduction. The dramas themselves differ markedly in terms of elements such as length, style, target audience, and manner of administration; some dramas are designed to elicit changes in their audience, while others are primarily intended as entertainment. Finally, studies are drawn from 12 countries and four continents. The large number of randomized evaluations allows us to precisely estimate the persuasive effect of entertainment, and the diversity of treatments allows us to explore heterogeneous effects depending on outcome type, topic, the setting in which entertainment is consumed, the timing of experimental evaluation, and whether the drama in question was a purpose-built persuasive intervention or primarily intended as entertainment.

Our primary analysis compares individuals who randomly received narrative message treatments to those who received either no message or an unrelated placebo message. Pooling across 63 studies (presented across 47 papers) we find that treated individuals are more likely to express message-consistent attitudes ($\beta = 0.276$, $p < 0.001$), beliefs ($\beta = 0.316$, $p < 0.05$), and behavioral intentions ($\beta = 0.299$, $p < 0.01$) and to engage in message-consistent behaviors ($\beta = 0.21$, $p < 0.05$) than untreated individuals. For all of these outcomes – the four most common across the studies in our sample – effects are substantively meaningful and statistically significant. When we turn to outcomes like perceived norms and priorities, effects are apparently positive yet fall short of statistical significance; however, meta-analytic estimates are imprecise because few studies measure these outcomes. The take-home message is broadly positive: on average, exposure to narrative entertainment causes audiences to update their attitudes, beliefs, and intentions and to change their real-world behaviors.

Results from a heterogeneous effects analysis add nuance to these findings. First, we find that estimated treatment effects tend to be smaller in online experiments than laboratory and field experiments. Interestingly, we do not observe any difference in the size of treatment effects in lab and field experiments. One potential explanation is that online study participants are less attentive to media interventions than in-person participants, but that the naturalism of the setting has less of an influence. In addition, we find that reported treatment effects are similar in size when measured after a delay versus immediately after exposure. These latter results point to the

potential persistence of edutainment effects, with respondents sometimes showing evidence of attitude and behavior change months or even years after initial exposure. That said, we emphasize that these findings should be seen as suggestive given the potential non-comparability of studies. Future work might explore these claims by randomizing the setting in which respondents view a message or by employing repeated measures to track study outcomes over time.

We also explore whether narrative entertainment is especially persuasive in certain substantive domains. Narrative interventions are frequently used by practitioners seeking to reduce prejudice and discrimination against out-groups, including ethnic and sexual minorities, migrant workers, and HIV-positive people. The plurality of studies in our sample – 22 of 63 – measure the effects of narrative entertainment on out-group stigma. Edutainment interventions are also particularly prevalent in the field of public health; 20 of the 63 studies in our sample focus on health-related outcomes. The remaining studies focus on other outcomes, such as promoting political participation or encouraging gender equality. Is edutainment equally effective across domains? Our heterogeneous effects analysis finds that, although treatment effects are slightly larger for prejudice- and health-related outcomes than other outcomes, these differences are not statistically significant and average estimated treatment effects are positive across all of these domains. These findings suggest that the effects of edutainment are broadly consistent regardless of the message in question.

Finally, we compare the effects of dramas explicitly designed by researchers, NGOs, or governments to shift outcomes to the effects of dramas that are primarily intended as entertainment. Interestingly, we do not find significant differences in effect sizes between education-first and entertainment-first content. These latter results should direct more scholarly and practitioner attention to the potential influence of entertainment programs found "in the wild."

Our secondary analysis focuses on experiments that specifically compare individuals who randomly received narrative message treatments to those who received non-narrative messages with equivalent content. Although narratives seem to have somewhat stronger average effects, no statistically significant difference was detected between narrative and non-narrative treatments

for any of the outcome categories. If one were to accept the null hypothesis of no difference in effectiveness, these findings stand in contrast to prominent theories of narrative persuasion that hold that narrative messages have unique persuasive properties, including E-ELM (Slater & Rouner, 2002) and Social Cognitive Theory (Bandura, 2004b). It appears that conditional on audiences sitting down to view or listen, narrative content is not markedly more persuasive than non-narrative content. That said, our meta-analysis is unable to address the question of whether narrative entertainment attracts larger and different audiences than non-narrative messages, which in turn would imply greater net effects.[2] Moreover, our secondary analysis includes far fewer studies than the main analysis (14 experimental comparisons within 12 papers), and we have less power to distinguish the effects of narrative versus non-narrative communication. Comparing the effectiveness of narrative and non-narrative messages is thus a question that future research should continue to explore.

Our meta-analysis expands upon prior work in a few ways. Unlike prior meta-analyses that only compare narrative messages either to control conditions (Braddock & Dillard, 2016) or to information-equivalent non-narrative conditions (Ratcliff & Sun, 2020), our study encompasses both kinds of comparisons. Critically, our work benefits from an increase in the number of RCTs evaluating the effects of narrative entertainment in recent years, driven in part by a wave of field experiments conducted in low- and middle-income countries in the Global South. The profusion of new edutainment RCTs allows us to dramatically increase the size of our sample relative to prior efforts. For instance, Braddock & Dillard (2016) include 34 studies comparing narrative messages and control conditions whose total N is 7,376; our analysis includes 63 such studies (drawn from 47 papers) and nearly three times as many subjects. Ratcliff & Sun (2020) include 9 studies comparing narrative messages and non-narrative messages; our study includes 14 (drawn from 12 papers). Our updated sample also reflects a greater geographic breadth than previous efforts, which tend to be heavily weighted towards studies conducted in high-income Western

[2]None of the studies in our sample employ Preference-Incorporating Choice and Assignment (PICA) designs (Benedictis-Kessner, Baum, Berinsky, & Yamamoto, 2019), which allow researchers to assess whether media effects are stronger or weaker among those participants with different media preferences.

countries. Finally, our work differs from meta-analyses that restrict their sample to studies that measure the effects of narrative interventions on outcomes in particular domains, like public health (Shen & Han, 2014; Zebregs, van den Putte, Neijens, & de Graaf, 2015), or among specific sub-populations (Ballard, Davis, & Hoffner, 2021). To our knowledge, our updated sample is thus both the largest and most comprehensive assembled to date and its findings are correspondingly applicable across many subfields.

The rest of our paper proceeds as follows. We first outline our search procedure and statistical approach, before presenting a descriptive overview of the studies in our sample. After checking for publication bias and finding little evidence of it, we present the results of our meta-analysis. We conclude by discussing the implications of our findings and directions for future research.

Methodology

Search Procedure

We sought to identify all *randomized experimental evaluations* of the effects of audio or visual narrative messages on attitudes, beliefs, behavioral intentions, behaviors, priorities, and norms since 2009.[3] To identify studies for our meta-analysis, we conducted a literature search using the following databases: JSTOR, National Center for Biotechnology Information (NCBI), Taylor and Francis, EBSCOhost, the Cochrane Library, and Proquest. In order to avoid potential publication bias, we also searched Proquest's Dissertations and Theses index, which includes Master's and PhD Theses for universities belonging to the Committee for Institutional Cooperation (CIC). For each database, we conducted a search using 16 permutations of four substantive keywords ("Entertainment-education," "edutainment," "narrative persuasion," and "Education entertainment") and four methodology-related keywords ("randomized," "experiment," "trial," and "RCT"). Our search parameters included all content on each database from 2009 through 2020. This search procedure yielded an initial universe of 8,920 articles.

Next, we applied a series of exclusion criteria to refine our sample – also shown in Figure C1.

[3]The publication of Paluck (2009) in this year heralded a surge of research interest in the topic and new commitment to rigorous experimental methods of evaluation.

We began by removing duplicates, leaving us with 7,468 articles. We then eliminated articles that were clearly irrelevant based on their title or abstract, including those that addressed an irrelevant topic, were not RCTs, explored non-narrative media messages only, or had narrative message treatments other than film, TV, radio, or podcasts.[4]

The 391 articles that remained were then given a close reading, during which we validated the previous exclusion criteria and added several more filters. First, we eliminated uncompleted studies such as pre-analysis plans. Second, we eliminated studies whose outcome measures fell outside our purview – for example, audience members' enjoyment of the treatment, marketing or commercial outcomes, or within-classroom pedagogical outcomes. Third, we eliminated studies in which the narrative message treatment was bundled with a non-narrative treatment such that the effect of the former could not be isolated from that of the latter. We also removed studies that only presented results in the form of a mediation analysis, which made it impossible for a reader to calculate the average treatment effect. Finally, we eliminated studies that did not have one or more of the following comparison groups: a pure control group, a placebo control group, or an information-equivalent non-narrative comparison group.[5] For instance, we excluded studies that only compared gain- vs. loss-framing without reference to a control group. We did not restrict our sample on the basis of population type or geography.

To independently validate the sample, a co-author who was not involved in the initial search process closely read the remaining 103 articles. The co-author reapplied the aforementioned criteria and also eliminated articles comparing compound treatments (for example, studies that compared an audiovisual narrative message to a written non-narrative message). After this round of cuts, 73 articles remained. As we proceeded with the coding of findings, we eliminated articles that did not contain enough statistical information to warrant inclusion in the meta-analysis, as well as articles that contained too few randomly-assigned clusters to produce reliable estimates

[4]Our initial search captured 60 non-English-language articles. We translated the title and abstract of these articles using ChatGPT and applied the same exclusion criteria. All 60 of these articles were excluded from the sample for failing to meet the aforementioned criteria.

[5]We also excluded one of the interventions from Jones & Paris (2018) and all of Hopfer (2012) because the researchers pooled participants in the pure control group and the non-narrative control group into a single combined control group, to which the intervention group is compared.

of treatment effects. This search process yielded a final sample of 57 articles.

Several of these 57 *papers* included multiple studies. Others had multiple unique interventions – for instance, a positive vs. negative valence narrative, each of which is compared to a control condition. In total, we identified 77 unique evaluations of randomized interventions, which we refer to as *studies*. Each outcome and/or time period constitutes a unique *finding* within the same study, for a total of 377 *findings*, i.e. observations.

Coding Procedure

For each paper, we coded the findings from every reported experimental comparison. We categorized each finding into one of six outcome types: attitude, belief, behavioral intention, behavior, social norm, and priority. We note that the latter outcome, the priority or importance accorded to a particular social issue, is often neglected in studies exploring narrative effects or lumped together with other outcomes. We believe this outcome warrants its own analysis on the grounds that the importance that audiences accord a given topic can, in principle, change even when attitudes and beliefs remain the same. Indeed, foundational studies of media effects find precisely this pattern – media exposure changed not what people thought but what they thought about (Iyengar, Peters, & Kinder, 1982). Definitions and examples of each outcome type are included in Table 1.

For each finding, we recorded the estimated effect size and standard error of the estimate. Some effect sizes and standard errors were directly reported in the paper; others had to be inferred based on the reported mean, standard deviation, and N of each experimental group or converted from another statistical form such as an odds ratio. For comparability, we standardized effect sizes and standard errors using the standard deviation of each study's control group. Across the 77 experimental comparisons, we identified and coded 377 findings.

We then coded descriptive information to allow for comparisons within and across subgroups of findings. First, we noted whether the authors compared the treatment group to a "pure" no-message control group, a placebo control group, or an information-equivalent non-narrative message group. Our main analysis compares narrative message treatments to pure or placebo control

Table 1
Outcome Types

Outcome Type	Definition	Examples
Attitude	"A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993)	Stigma toward migrant workers (Yan, n.d.); ethnic minority thermometer rating (Murrar & Brauer, 2018); support for gender equality (Green et al., 2020)
Belief	"Cognitions about the probability that an object or event is associated with a given attribute" (Fishbein & Ajzen, 1975)	Perceived severity of HIV (Lapinski & Nwulu, 2008); HPV knowledge (Murphy et al., 2013); ascription of responsibility for climate change to humans (Bilandzic & Sukalla, 2019)
Behavioral intention	"A measure of the strength of one's intention to perform a specific behavior" (Fishbein & Ajzen, 1975)	Intention to get a mammography (Kreuter et al., 2010); vaccine intent (Hopfer, 2012); willingness to volunteer (Perciful & Meyer, 2017)
Behavior	"The overt actions of an individual" (Albarracin et al., 2005)	alcohol consumption (Engels et al., 2009); quitting smoking (Cherrington et al., 2015); HIV testing (Chittamuru, n.d.); starting a business (Bjorvatn et al., 2020)
Priority	"Items that are considered to be the most important and that need to be urgently addressed" (Zahariadis, 2016)	Perceived value of equality (Zhang, n.d.); importance ascribed to individual freedom (Jones & Paris, 2018); education is an important goal (Wilke et al., 2022)
Norm	"Perceptions about others' beliefs and behaviors" (Ajzen & Fishbein, 2002), which encompasses both perceptions about what others do or think (descriptive norms) and perceptions about what others approve or disapprove of (injunctive norms)	Perceptions of diversity norms (Murrar & Brauer, 2018); perceived sexual risk-taking norms (Basaran et al., 2019); perception that community would intervene to stop VAW (Green et al., 2020)

conditions, while our secondary analysis compares narrative messages to non-narrative conditions. For the main analysis, effect sizes were coded in the "positive" direction if estimates were in the intended (message-consistent) direction. When coding the intended direction of treatments effects, our preference was to draw upon hypotheses presented by the study authors themselves. In cases where hypotheses were not explicitly presented, we made reasonable inferences about intended direction based upon close readings of theoretical sections of the papers; if there was any theoretical ambiguity or if authors were themselves agnostic, we coded predictions as two-sided and recorded the absolute value of the treatment effect. For the secondary analysis, which explores the relative effects of narrative messages compared to overtly persuasive or didactic messages, estimates were recorded as positive if the narrative message had a larger effect than the non-narrative message and negative otherwise.

To verify our coding, we assigned two graduate research assistants to independently replicate the above procedure. Coding was consistent for 363 of the 398 findings, yielding an inter-coder reliability score of 0.907. For the 8.8 percent of findings that differed, the revised coding was accepted if there was an objective mistake such as an arithmetic error or typo or if the original coder failed to identify a finding or hypothesis. If the inconsistency was due to a subjective disagreement, the original coding was retained.

We also coded a host of other descriptive variables at the study and paper level, including location, setting (laboratory, online, or field, inclusive of lab-in-the-field), the number of participants in each study, message topic and domain, and the time between the intervention and the assessment of outcomes for each finding. These variables serve as moderators for our heterogeneous effects analysis.

Statistical Approach

Having obtained a sample of standardized effect sizes and standard errors according to the process outlined in the previous subsection, we conducted our meta-analysis using the 'robumeta' package in R. One potential concern when conducting meta-analyses is that studies with multiple measures of the same outcome may receive disproportionate weight compared to studies with fewer outcome measures. To address this concern, we employed a hierarchical model in 'robumeta' that accounts for potentially correlated outcomes within studies. When pooling all the findings together, each finding is assigned a weight proportional to the inverse of the squared standard error of its estimate, with more precise estimates receiving greater weight.

Our main meta-analysis includes 319 findings drawn from 63 studies (experimental comparisons) collected in 47 papers, and our secondary meta-analysis includes 58 findings drawn from 14 studies within 12 papers.

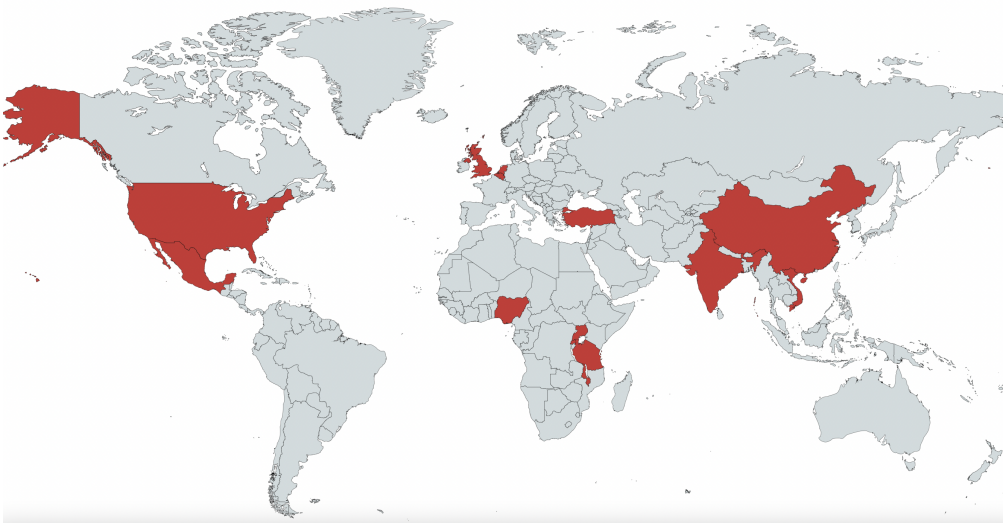
Transparency and openness

We adhere to the MARS guidelines for meta-analytic reporting (Appelbaum et al., 2018). All meta-analytic data, analysis code, and research materials (including our coding scheme) will be available at Dataverse upon publication. Data are analyzed using both Stata 17 and R version 4.2.1 and the R package 'robumeta', version 2.1. This meta-analysis project was not pre-registered.

Sample Characteristics

Of the 57 papers in our sample, 42 (73%) were conducted in the United States. The geographic reach of our sample is nevertheless broad: eight papers took place in Africa (13%; for a total of 10 studies), three in Asia (5%; for a total of 6 studies), three in Western Europe (5%), and one in

Figure 1
Location of Included RCTs

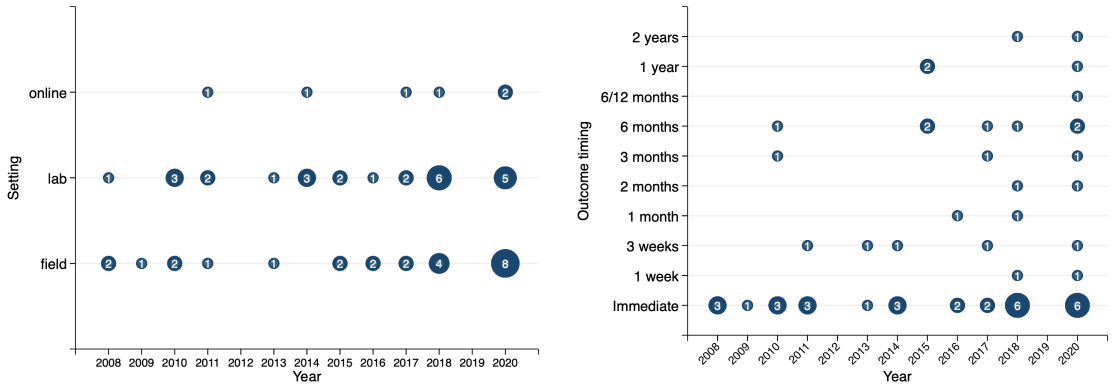


Turkey and one in Mexico (2% each). The geographical diversity of our sample is driven in part by a recent wave of RCTs evaluating the effectiveness of edutainment interventions in the Global South. This trend has largely occurred in the years since the publication of the most recent meta-analysis comparing narrative and control conditions (Braddock & Dillard, 2016); indeed, of the 13 papers in our sample conducted in Africa, Asia, Turkey, and Mexico, 11 were conducted after 2016. Our sample thus allows us to draw upon a rich body of recent experimental work exploring narrative effects beyond the traditional Western university context.

The studies in our sample also span a number of experimental settings. Approximately half of the findings in our analysis were gathered in laboratory settings (49%, reported in 26 papers across 36 studies for a total of 185 unique findings); 44% of the findings came from field experiments (in 28 studies published in 25 papers); and the remaining 7% were gathered online (by 6 papers with 13 studies). All online experiments measured outcomes immediately after exposure to the treatment. More variation is observed among lab and field experiments: these studies measured outcomes anywhere from immediately after exposure to two years later. Thirty percent of the studies measured outcomes at least one month after exposure. As Figure 2 shows, the edutainment literature has been trending away from short-term assessments of interventions conducted in online and lab settings and toward longer-term assessments in field settings.

Figure 2

Distribution of study designs across settings and over time



Reflecting widespread interest in the use of edutainment strategies to instill empathy for out-group members, the plurality of papers explore whether narratives can reduce prejudice and stigma on the basis of ethnicity, geographic origin, employment status, sexual identity, mental health, or physical health (35 percent). About 32 percent of studies are in the field of public health and target outcomes other than stigma reduction, including encouraging cancer and STI screening, increasing vaccine uptake, promoting exercise and healthy eating, and reducing high-risk sexual behaviors. The remaining interventions span a number of social and political domains, including promoting climate change adaptation and mitigation, addressing gender-based violence (GBV), reducing prejudice against social out-groups, shifting policy-related attitudes, and encouraging local political participation.

The narrative messages themselves include radio dramas, podcasts, short video vignettes, TV shows, and full-length feature films. Unlike prior meta-analyses that include only narrative interventions specifically designed to inform, persuade, or spur action, our study also considers the incidental effects of mass media entertainment. For instance, Jones & Paris (2018) explore how popular dystopian films like *The Hunger Games* shape political attitudes and support for radical forms of political action; Perciful & Meyer (2017) examine the effect of fictional film portrayals of schizophrenic characters on viewers' stigma toward mentally ill people; Nera, Pantazi, & Klein (2018) investigate whether conspiracy-themed fiction leads to endorsement of conspiracy theo-

ries; and several studies consider how portrayals of alcohol on television affect real-world alcohol consumption behavior (e.g. Kim, Lee, & Macias 2014). At the same time, our study attends to practitioners' growing interest in purposive edutainment interventions to achieve policy outcomes. Examples include a television sitcom designed to reduce prejudice toward Arabs and Muslims (Murrar & Brauer, 2018), a radio program to reduce violence against women (Arias, 2019), and narrative videos to promote varicella vaccination (Hu, Li, & Chen, 2018) and HPV vaccination (Hopfer, 2012) in vulnerable communities.

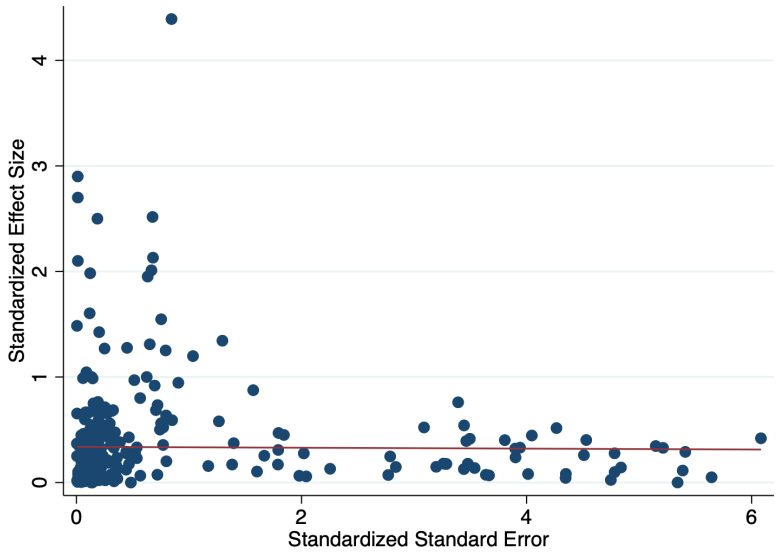
Testing for Publication Bias

One potential threat to the interpretation of meta-analytic estimates is the possibility of publication bias. If studies with significant findings are more likely to be published than studies with non-significant findings, meta-analyses are more likely to locate and include studies with large effect sizes. One common diagnostic test for publication bias is to visually inspect the relationship between effect size and study size, operationalized by the standard error of the estimated treatment effect. A well-known symptom of publication bias is a tendency for smaller studies to produce larger effects (Kühberger, Fritz, & Scherndl, 2014), as would be the case if studies were published only if they showed statistically significant results.

Figure 3 reports this diagnostic test for the 377 findings in our sample. The regression line has a slope close to zero (b= -.004, SE= 0.019, p= 0.830), indicating essentially no correlation between study size and effect size. Thus, publication bias does not appear to be a concern in this collection of studies.[6]

[6]All data and materials have been posted to the Open Science Foundation (OSF) dataverse: [Redacted]

Figure 3
Diagnostic Test for Publication Bias



Results

Narrative Messages vs. Pure and Placebo Control: Main Effects

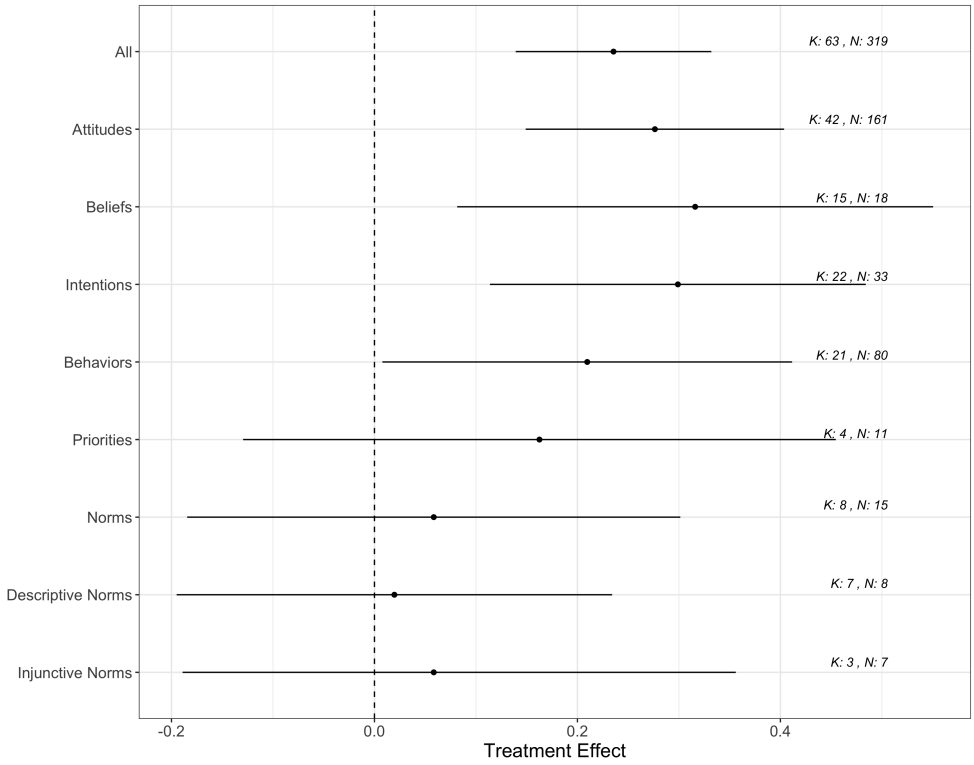
Our first analysis examines the persuasive effects of narrative entertainment relative to pure control or placebo control conditions. We illustrate our main results in Figure 4, which presents a coefficient plot summarizing the meta-analytic estimates for each outcome type, as well as the overall estimate pooled over all outcome types. These estimates are obtained by averaging treatment effects across all findings (N) using a hierarchical model, which accounts for correlation of findings within the same experimental comparisons (K). In Appendix A we show the coefficient retrieved for each finding using hierarchical forest plots such that readers can examine the variation of the estimates across findings and across studies more precisely.

Looking across all outcome types, the overall estimate of the effect of narrative entertainment is positive and statistically robust ($\beta = 0.236$, SE = 0.046, CI [0.139, 0.332], $p < 0.001$). Moreover, we observe positive estimated effects for all six of the outcome types, with only two of these estimates (priorities and norms) falling below conventional levels of significance.

Next, we partition the studies into the six outcome categories: attitudes, beliefs, behavioral

Figure 4

Summary of Main Results: Narrative Message vs No Message/Placebo Message



Note. N reports the total number of observations used in the analysis, where each observation is a finding within each of the K studies or experimental comparisons.

intentions, behaviors, priorities, and norms. We begin with an estimate of the effect of narrative messages on attitudes, the most common outcome. The overall estimate is 0.276 (SE = 0.062) with a 95% confidence interval of [0.190, 0.428]. Substantively, the result indicates that, on average, narrative messages have a meaningful positive effect on audiences' attitudes. Likewise, the overall estimate for beliefs and intentions are 0.316 (SE = 0.107; CI [0.082, 0.550]) and 0.299 (SE = 0.088; CI [0.114, 0.484]), respectively, indicating noteworthy positive effects.

Clearly, narrative entertainment changes many of the most central psychological outcomes: attitudes, beliefs, and intentions. Do narrative messages also shift audiences' behaviors? Prior work has questioned whether the effects of narratives on behavioral intentions translate into real-world behaviors. Our results indicate that they do: the estimated effect of narratives on behavioral measures is positive and statistically significant (β = 0.21, SE = 0.083; CI [0.008, 0.411]).

In contrast to literatures that find attitude change without concomitant behavioral change, the literature on narrative media effects suggests that attitudes, intentions, and actions all move together.[7]

The meta-analytic results are more ambiguous when it comes to two categories of outcomes: priorities – the subjective importance that audience members assign to a given topic or issue – and perceived social norms. With only four studies that measure priorities and eight studies that measure perceived social norms, we cannot draw precise conclusions. Although the apparent effect for priorities is positive ($\beta = 0.163$), the 95% confidence interval overlaps with zero [-0.129, 0.455], as the standardized coefficients reported across studies range from 0.035 (SE = 0.175) to 0.686 (SE = 0.326). By comparison, the estimate for norms is positive but relatively modest in size and not statistically significant. The pooled estimate for norms is 0.058 (SE = 0.054), with a confidence interval of [-0.185, 0.301]. In short, we do not find evidence that edutainment affects priorities or norms, although we are unable to determine whether these null effects arise from a dearth of studies or whether they reflect the "true" effect of edutainment on these outcomes.

What happens when we further divide the norms outcomes into two subsets: those measuring descriptive norms, or perceptions about what others tend to do, and those measuring injunctive norms, or perceptions about what others believe ought to be done? The overall estimate for descriptive norms is 0.0196 (SE = 0.083; CI [-0.195, 0.234]), while the estimate for injunctive norms is 0.0835 (SE = 0.031; CI [-0.189, 0.356]). On the whole, these estimates suggest small positive effects that are perhaps larger for injunctive norms, but the confidence intervals are wide and overlap zero. Whether narrative messages indeed shift audiences' perceptions of social norms remains an open question.

Narrative Messages vs. Pure or Placebo Control: Heterogeneous Effects

Next, we partition our main sample into subgroups to explore potential patterns of treatment effect heterogeneity. Once again, we use the sample of $N = 319$ findings across $K = 63$ studies

[7] We hasten to add that the experimental literature offers few examples of narratives that produce broad changes in audiences' value orientations. The attitude change that occurs instead tends to be specific to the issues that are discussed or modeled in the narrative.

drawn from 47 papers, and we examine the effectiveness of a narrative message compared to either a pure control or a placebo message.

One question of interest is whether narrative messages have larger effects in certain substantive domains than others. Because narrative formats are thought to promote identification with the characters depicted in the story, edutainment interventions often target outcomes related to out-group stigma and prejudice. Edutainment interventions are also quite common in the field of public health. Does the prevalence of edutainment interventions in these domains imply that edutainment is especially effective at shifting outcomes related to prejudice and health, or poorly suited to shifting outcomes in other domains? Partitioning our findings into those with prejudice-related outcomes,[8] health-related outcomes,[9] and all others, we find equivocal evidence of treatment effect heterogeneity. The overall estimate of the effect of narrative messages on outcomes related to prejudice reduction is 0.254 (SE = 0.068, CI [0.111; 0.398], $p < 0.01$). The overall estimate of the effect of narratives on health-related outcomes is quite similar: 0.292 (SE = 0.040, CI [0.201, 0.383], $p < 0.01$). Although the overall effect on all other outcomes is somewhat smaller ($\beta = 0.172$, SE = 0.033, CI [0.0854; 0.259], $p < 0.01$), it is not significantly so; moreover, this latter effect is still positive and statistically distinguishable from zero. The results of this analysis suggest that the influence of edutainment is not limited to prejudice reduction and public health, but rather extends across a range of substantive domains.

Another longstanding question is whether and to what extent the effects of narrative messages persist over time. To explore this question, we partition results based on the time between the intervention and the assessment of study outcomes. Specifically, we grouped findings depending on whether outcomes were measured immediately following the intervention or after a delay of over one day.[10] Perhaps surprisingly, the overall estimate for outcomes measured immediately after exposure ($\beta = 0.260$, SE = 0.043, CI [0.173; 0.348]) is not significantly different from

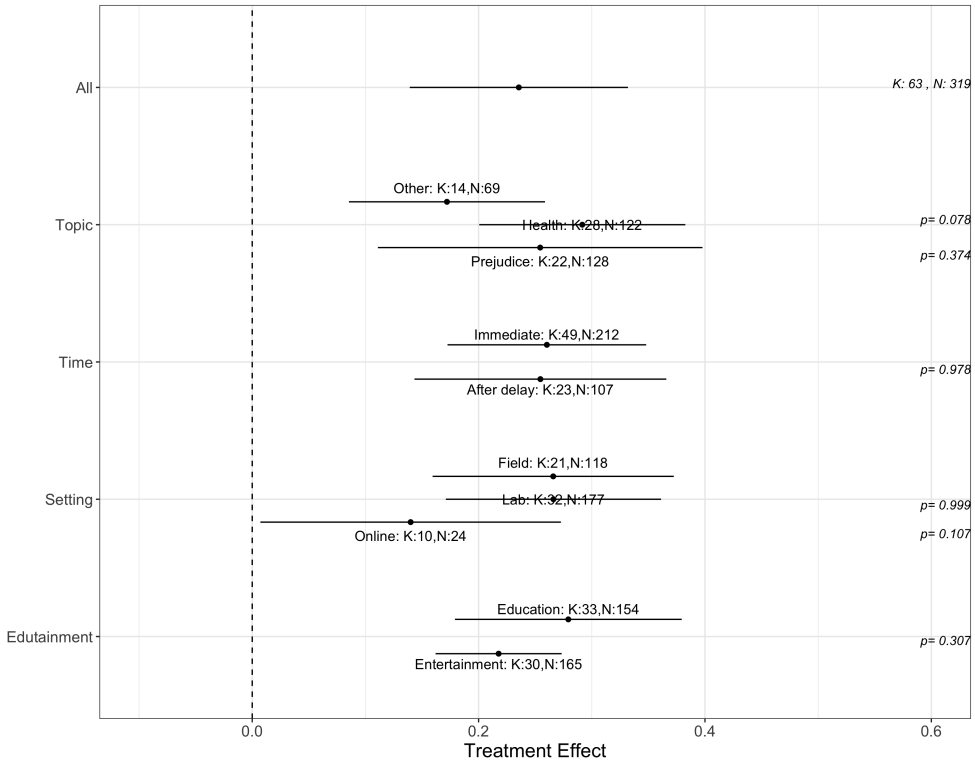
[8] Targeted out-groups include ethnic minorities, sexual minorities, migrant workers, individuals suffering from mental health issues, and HIV positive individuals.

[9] Outcomes include encouraging cancer and STI screening, increasing vaccine uptake, reducing HIV/AIDS and mental health stigma, promoting exercise and nutrition, and reducing high-risk behaviors.

[10] Assessment times in this latter group range from one week to two years. Because 66% of the findings used in this analysis present short-term outcomes, we group medium- and long-term measures into a single subgroup.

Figure 5

Summary of Heterogeneous Effects: Narrative Message vs. No Message/Placebo Message



Note. N reports the total number of observations used in the analysis, where each observation is a finding within each of the K studies or experimental comparisons. The p-value reported refers to the estimate provided by the hierarchical model of the difference between the meta-estimates of the subgroup considered compared to the baseline group (the "Field" group in the Settings analysis, the "Other" group in the Topics analysis, and to the single other available group in all other cases).

the estimate for outcomes measured after a delay (β = 0.255, SE = 0.047, CI [0.143; 0.366]). The positive and statistically significant effect for the delayed-measurement subsample suggests that edutainment effects are not ephemeral and can persist months or even years after initial exposure. On the face of it, the findings also appear to imply a surprising lack of decay in treatment effects over time. That said, our between-studies design is less than ideal for this kind of investigation, since studies that measure outcomes immediately after exposure might differ systematically from those that do so after a delay.[11] Clearer evidence of the persistence of treatment effects comes from individual studies that track outcomes over time (Semakula et al., 2020). Although such

[11]For instance, online experiments almost never employ long-term measures; as a result, the immediate-measurement subsample is much more likely to encompass online experiments and the delayed-measurement sample to contain lab and field experiments.

studies sometimes demonstrate sustained effects more than one year after the media intervention, a pattern of declining effects over time emerges in almost all studies that measure both short- and long-term effects, including recently published studies that appeared after we gathered the literature for our meta-analysis (Green, Groves, Manda, Montano, & Rahmani, 2023).

We also explore whether estimates of persuasive effects vary depending on study design. We divide studies into three groups based on the setting in which treatments were administered and outcomes were recorded: laboratory experiments,[12] online experiments, and field experiments, including lab-in-the-field experiments. We find that treatment effects are typically smaller in online experiments ($\beta = 0.14$, SE = 0.054, CI [0.007; 0.273]) than lab experiments ($\beta = 0.266$, SE = 0.045, CI [0.171, 0.361]) and field experiments ($\beta = 0.266$, SE = 0.046, CI [0.159, 0.372]), the latter two of which scarcely differ. These results have implications for how scholars go about evaluating the effects of media messages in general and narrative messages in particular. On the one hand, it appears that studies conducted online tend to yield significantly smaller effects than in-person studies ($p < 0.10$), perhaps suggesting that participants do not pay close attention to media messages administered in online settings. On the other hand, the fact that the average estimated effect size is the same in field experiments and laboratory experiments is striking, suggesting that experiments employing relatively unobtrusive treatments in naturalistic settings can generate similar effects to those conducted in supervised exposure settings. However, as with the previous analysis, such conclusions must be seen as suggestive. Studies that randomly assign respondents to consume narrative messages in different settings are the gold standard when it comes to investigating heterogeneous effects based on study design and method of intervention (Wilke et al., 2022).

Lastly, we note that research on narrative persuasion may be classified according to the source of the narrative content. On the one hand are studies that measure the effects of edutainment interventions explicitly designed by researchers or practitioners to address social, economic, or political issues – what we call "education-first" treatments. On the other hand are studies that

[12] Laboratory experiments are defined as those performed with a convenience sample in a laboratory-like setting, including undergraduate students on a university campus or patients in a research hospital.

consider the potential effects of existing fictional films, TV shows, and radio programs, which, although they may carry socially-relevant messages, are primarily intended as entertainment ("entertainment-first" treatments). Which messages are more effective at changing minds and behaviors: education-first or entertainment-first narratives?

To explore this question, we coded findings based on whether or not the treatment is a purpose-built edutainment intervention that has been designed, developed, produced, or commissioned with the explicit goal of shifting a set of outcomes. The alternative entertainment-first category comprises narratives that were not commissioned with a pedagogic purpose. The sample of findings is split quite evenly between education-first and entertainment-first messages (46 percent and 53 percent, respectively). We find the average effect of education-first treatments ($\beta = 0.279$, SE = 0.045, CI [0.179, 0.379], $p < 0.001$) is positive and statistically significant, as is the average effect of the entertainment-first treatments ($\beta = 0.218$, SE = 0.027, CI [0.162, 0.273], $p < 0.001$). Our analysis finds no significant difference in effect sizes between the two types of messages ($p = 0.307$). Thus, we find little evidence to suggest that researchers and practitioners are better (or worse) at shifting attitudinal and behavioral outcomes than those working in the entertainment space. The results suggest that researchers would be remiss in not considering the potential persuasive effects of existing films, radio programs, and TV shows.

Again, we hasten to note that there are systematic differences between education-first and entertainment-first studies that may confound this comparison. Education-first treatments are much more likely to be tested in the field and entertainment-first treatments in the lab. Moreover, there is little overlap in the topics they cover; for instance, almost all health-related studies involve explicit edutainment interventions, while almost all prejudice reduction studies draw on existing entertainment programs. From a theoretical standpoint, the former set of studies define a target outcome and then develop an intervention to affect that outcome, whereas the latter do the opposite, selecting outcomes based on an existing treatment found in the real world. It is unclear a priori which of these constitutes the easier test. Comparing the effects of explicit edutainment and mass entertainment thus requires a more rigorous head-to-head comparison. Future research

might, for example, randomize respondents to view or listen to purpose-built edutainment or an existing entertainment program on the same topic.

Narrative Versus Non-Narrative Messages

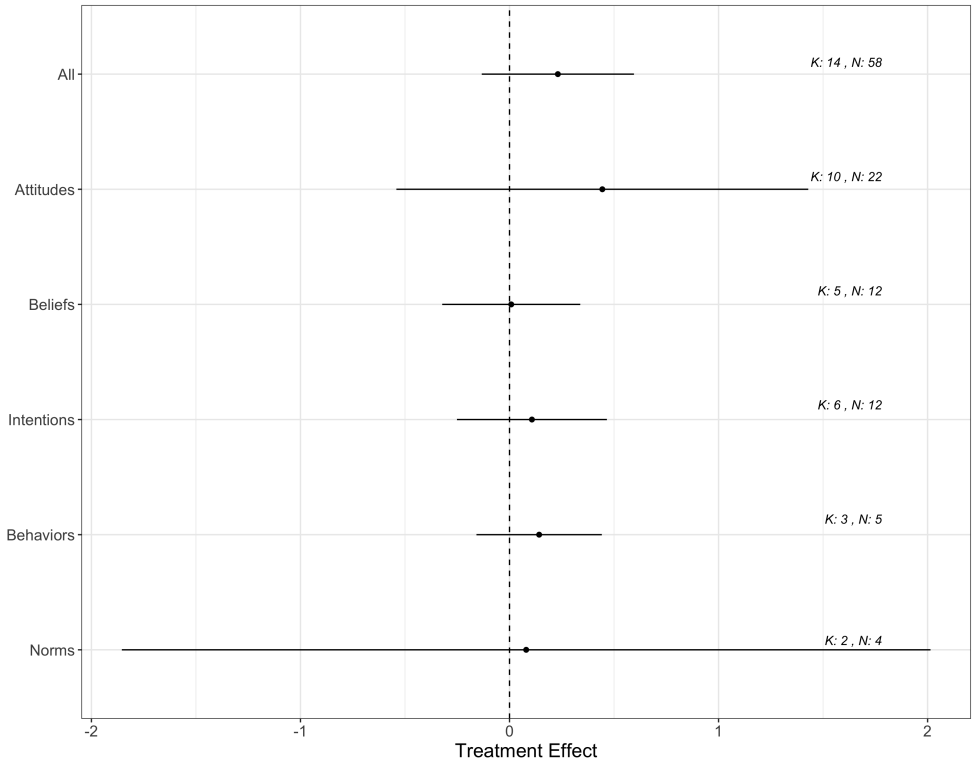
Our main analysis found that, on average, exposure to narrative messages shifts attitudes, beliefs, intentions, and behaviors. We now turn our attention to the relative efficacy of narrative messaging strategies compared to overtly persuasive or didactic forms of communication. Are narrative messages more persuasive than non-narrative messages, as theories of narrative persuasion maintain?

For this analysis, we restrict our attention to experimental comparisons between narrative treatments and information-equivalent non-narrative treatments. The sample of studies is smaller here than in the main analysis: we identified only 58 direct comparisons among 14 studies, collected over 12 papers. The sample becomes smaller once one partitions the findings based on outcome type – in several cases, too small to produce reliable conclusions. Thus, in addition to presenting results by outcome type below, we present results that aggregate all outcome types into a single meta-analytic estimate; this aggregated approach lacks nuance but has sufficient degrees of freedom to produce a meaningful estimate. Figure 6 presents the results, and Appendix B depicts the estimates graphically for each study and finding.

We begin by presenting the results for attitudes, the subgroup with the largest number of inputs. The overall estimate for attitudes is 0.444 with a 95% confidence interval of [-0.541, 1.429]. While the coefficient is large and positively signed (implying that narrative entertainment moves attitudes further in the expected direction), it is imprecisely estimated and cannot be distinguished from zero. Although our best guess is that narratives are more effective at shifting attitudes than non-narrative messages, the evidence is far from decisive, and both types of messages may actually be equally effective. When it comes to beliefs, intentions, behaviors, and norms, a dearth of studies renders statistically ambiguous results, but the point estimates no longer look as promising for narrative entertainment. Estimates tend to be relatively close to zero: 0.008 [-0.322, 0.339] for beliefs, 0.107 [-0.251, 0.466] for intentions, 0.142 [-0.158, 0.442] for

Figure 6

Summary of Relative Results: Narrative Message vs Non-Narrative Message



Note. N reports the total number of observations used in the analysis, where each observation is a finding within each of the K studies or experimental comparisons.

behaviors, and 0.080 [-1.855, 2.014] for norms. We found no studies that compared the effects of narrative vs. non-narrative messages on priorities.

Even for the pooled model that provides the meta-analytic estimate of the effects of narrative entertainment on all six outcomes, we do not observe a statistically significant positive effect: the overall estimate is 0.231 (SE = 0.1423) with a confidence interval that overlaps with zero [-0.133, 0.595]. What should we make of these results? One interpretation is that 0.231 remains our best guess of the relative effectiveness of narratives compared to similar non-narrative messages. A more cautious interpretation is that the relative advantage of narrative messages is as yet unproven by the collection of studies conducted to date. Although the literature offers some suggestive evidence about the superiority of narratives, further research is needed to determine more conclusively whether narratives are indeed more persuasive than non-narrative messages.

Conclusion

Narrative entertainment is one of the most prevalent forms of mass communication globally. Fictional television series, radio soap operas, podcast serials, short films, and feature films reach vast swathes of the world's population. Recognizing the potential influence of these creative channels, policy-makers and NGOs have increasingly embraced narrative messages as a vehicle for achieving policy objectives. To what extent, and under what conditions, does narrative entertainment change beliefs, attitudes, priorities, and behaviors? The present study attempts to take stock of recent experimental discoveries, conducting the largest and most comprehensive meta-analysis to date of RCTs measuring the effects of narrative messages.

Our principal finding is that narrative entertainment has broad-ranging and substantively meaningful effects on audiences' attitudes, beliefs, intentions, and behaviors. The results provide compelling evidence that narrative entertainment can convey real-world information, shift attitudes, and change behaviors. Consistent with recent work suggesting that narratives in interpersonal communication can promote empathy and perspective-taking (Kalla & Broockman, 2023), we find that edutainment effectively reduces stigma and prejudice toward a range of out-groups. We also find that the emphasis of public health practitioners on edutainment interventions is well placed, as these interventions exert significant effects on indicators of mental and physical health and well-being on average. Yet our overarching conclusion is that edutainment is effective across issue domains, including those that have not traditionally been the focus of research on narrative persuasion: encouraging political participation, shaping political culture, shifting policy views, encouraging gender-equal attitudes and behaviors, promoting environmentalism, and combating misinformation, among others. The generality of edutainment effects says something important about the generality of human responsiveness to narratives and the messages that they convey.

The apparent magnitude and breadth of edutainment effects are potentially important both to policy practitioners and to scholars of political communication and behavioral economics – fields that have traditionally paid closer attention to overt forms of communication like hard news, political advertisements, and public service announcements. Taken together, the results

suggest a role for narrative entertainment in theories of how individuals come to their beliefs, attitudes, and habits.

By contrast, we find equivocal evidence that narrative messages shift priorities and perceived norms. In part, our ambiguous results reflect the dearth of studies that explore these important outcomes. The research agenda would thus benefit from continued exploration of the potential agenda-setting effect of narrative entertainment. Moreover, further research is needed to substantiate the claim that edutainment shifts attitudes primarily via its effect on perceived social norms (Arias, 2019); on the contrary, we find that attitudes, beliefs, intentions, and behaviors can shift substantially in the wake of narrative interventions, even as norms remain largely unchanged.

Regarding the question of whether narrative messages have unique persuasive effects, our evidence is equivocal. Our point estimates, especially for attitude change, are positive in sign, suggesting that narrative messaging may be more effective, on average. However, the evidence is thin, and we do not detect significant differences between narratives and non-narratives when it comes to shifting beliefs, intentions, behaviors, or norms. A skeptic embracing the null hypothesis of no difference between the two forms of messaging might conclude that these results challenge the Extended Elaboration Likelihood Model (Slater & Rouner, 2002) and Social Cognitive Theory (Bandura, 2004a), which posit a unique capability of edutainment to persuade. However, given the small number of studies that compare narrative and non-narrative messages, such conclusions must remain tentative for now. As researchers continue to investigate the relative persuasive effects of narrative versus non-narrative messages, future meta-analyses might be better equipped to explore whether narrative entertainment represents a unique persuasive technology. With that said, the absence of negatively-signed estimates in our secondary analysis is potentially informative, suggesting that narrative messages are, at the very least, no less persuasive than non-narrative messages. Such results stand in contrast to skeptical claims that narrative messages are too distracting or too subtle to convey information to audiences (Kruvand & Bryant, 2015).

Our heterogeneous effects analysis sheds some light on questions about the persistence of

media effects. We observe similar effects of narrative entertainment when outcomes are measured a few weeks or even months after exposure compared to when they are measured immediately after exposure. These findings suggest that edutainment can exert long-lasting effects on audiences' attitudes, beliefs, and behaviors, contrary to the notion that effects are short-lived. That said, studies that employ repeated outcome measurement are better positioned to assess the speed with which treatment effects decay over time. The importance of charting decaying effects underscores an important deficiency in the literature: the fact that more than half of all studies examine outcomes at just one point in time – immediately after the treatment is administered. Future research should explore the persistence of media effects more systematically by tracking study outcomes over longer periods.

Another potentially informative finding is the apparently similar effects of mass media entertainment and purpose-built edutainment interventions. We see this analysis as a first step in bridging the gap between two often disparate research agendas, one of which tends to focus on the incidental effects of fictional films, radio programs, and TV shows on audiences' attitudes and behaviors, and the other of which seeks to evaluate the effects of targeted narrative messages that are designed to change the way audiences think and act in specific domains. Whether explicit edutainment interventions are more persuasive than narrative messages that audiences would encounter in daily life, or whether the pedagogic approach serves to alienate audience members, is a question that warrants further exploration. Future research might break new ground by conducting head-to-head tests of entertainment-first and education-first treatments.

Perhaps the most fruitful direction for future research is addressing the potential for entertainment to overcome selective exposure. Indeed, while the studies in our sample explore the persuasive effects of narrative messages *given that* audiences sit down to view or listen to them, they do not explore the first-order question of whether narrative messages draw in audience members who might otherwise have avoided a message. Given the results from our secondary analysis comparing narrative and non-narrative treatments, an intriguing possibility is that the main advantage of narrative entertainment lies not in its unique capacity to persuade but rather

its ability to draw large and diverse audiences. Whether narrative entertainment is more likely to capture and sustain audience attention than other forms of communication remains an important open question.

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Appendix

A Meta-Analytic Estimates: Narratives vs. Pure and Placebo Control

Here we show the coefficient retrieved for each finding using hierarchical forest plots. Study names appear in bold text. Outcome measure or measures for each study are listed in regular text.

For each study, black squares represent the standardized effect size for a given finding with 95% confidence intervals. The weight assigned to each estimate is depicted graphically by the size of the black square corresponding to the standardized effect size.

The clear diamond at the bottom of each plot aggregates all the findings presented in each plot, and its width corresponds to the 95% confidence interval. This represents the main finding of the meta-analysis for each outcome type (different plots) and it is equivalent to the coefficient plotted in the main text in Figure 4.

Figure A1

Effect of Narratives on Attitudes (Compared to Control), Part 1

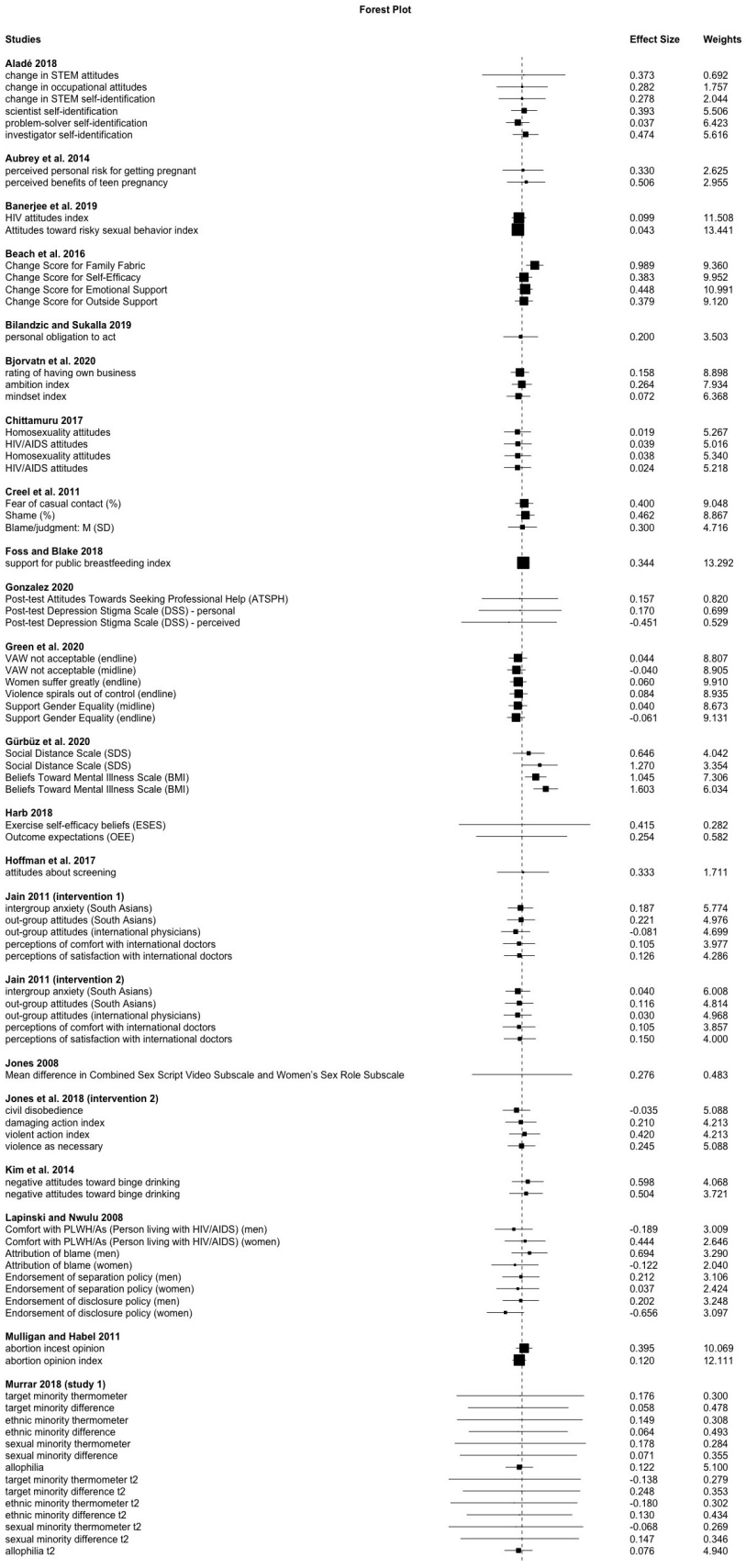


Figure A2

Effect of Narratives on Attitudes (Compared to Control, Part 2)

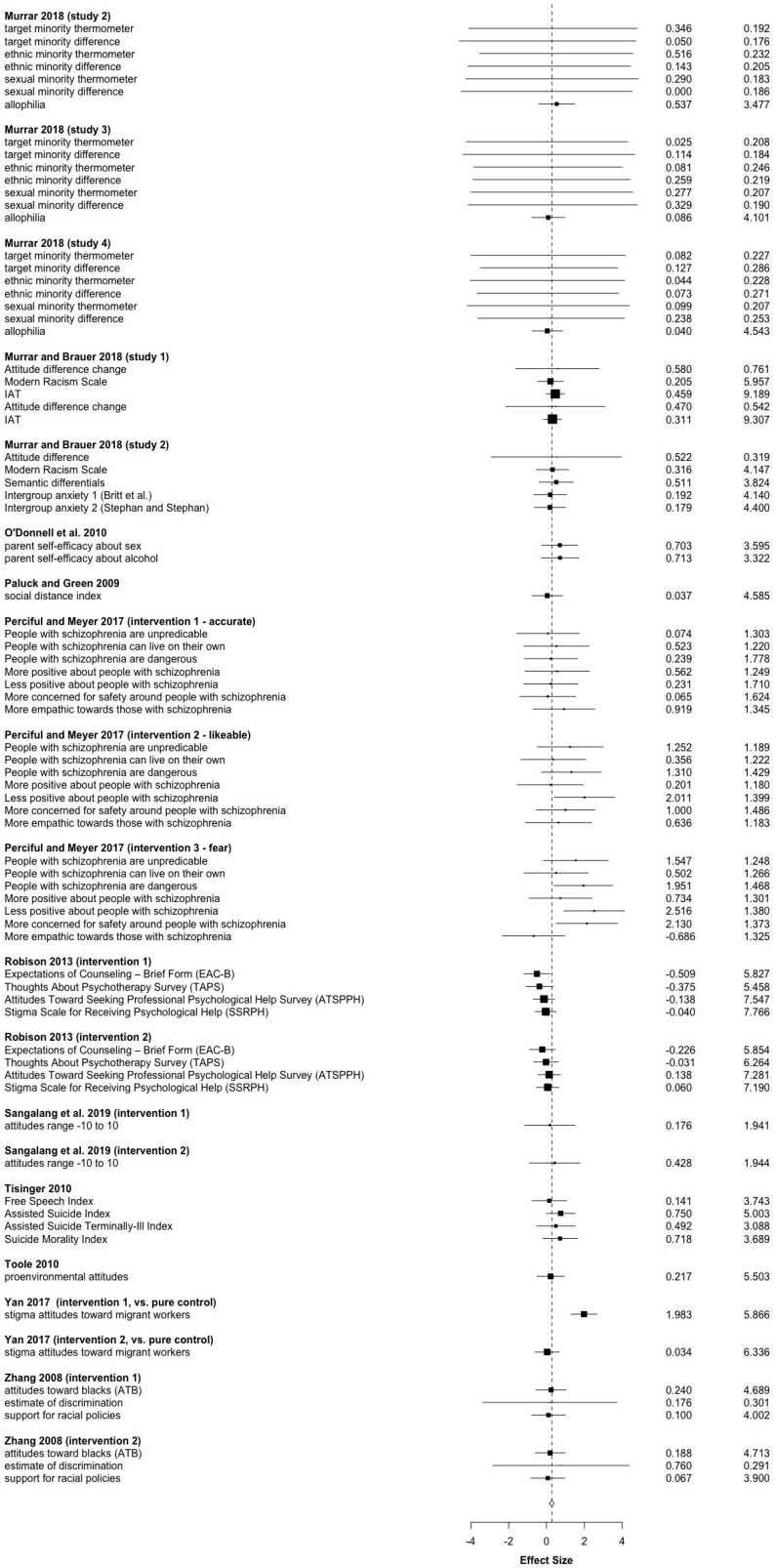


Figure A3

Effect of Narratives on Beliefs (Compared to Control)

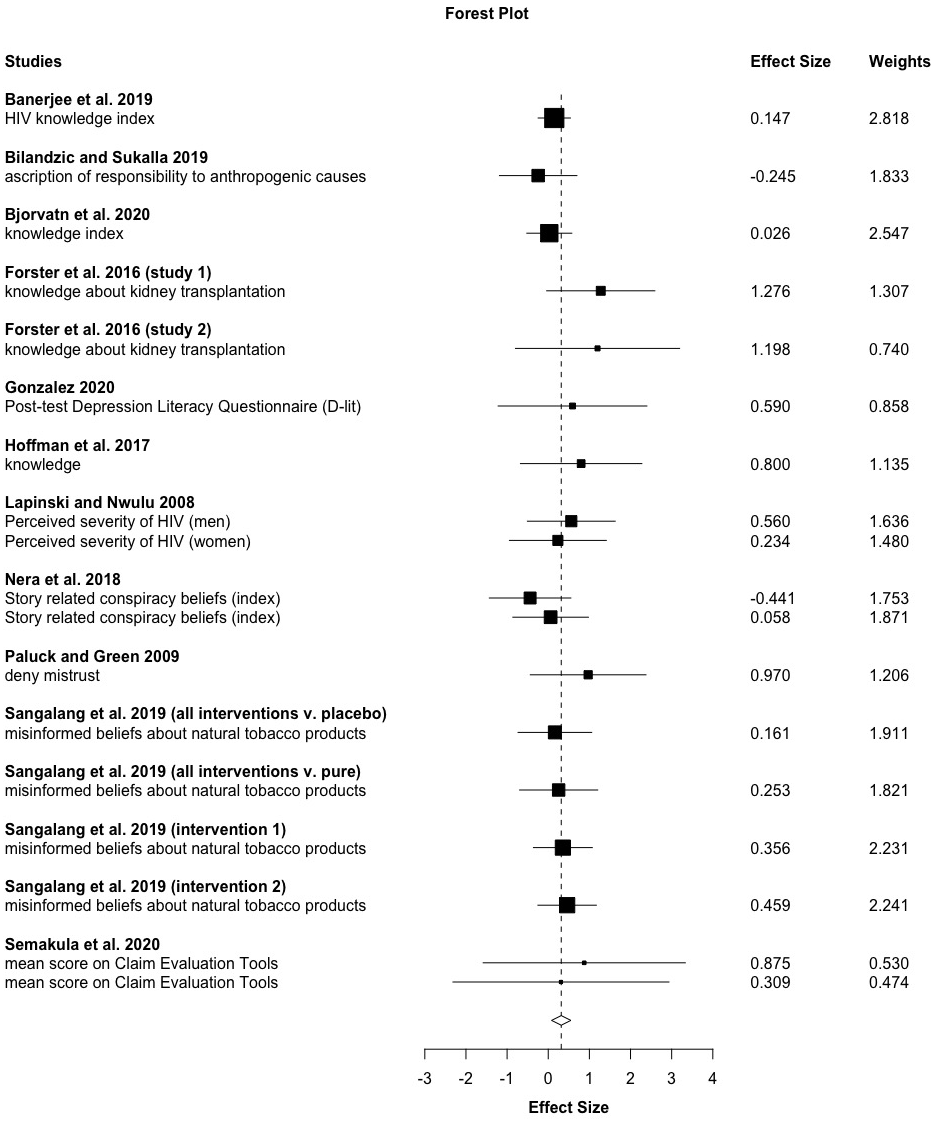


Figure A4

Effect of Narratives on Behavioral Intentions (Compared to Control)

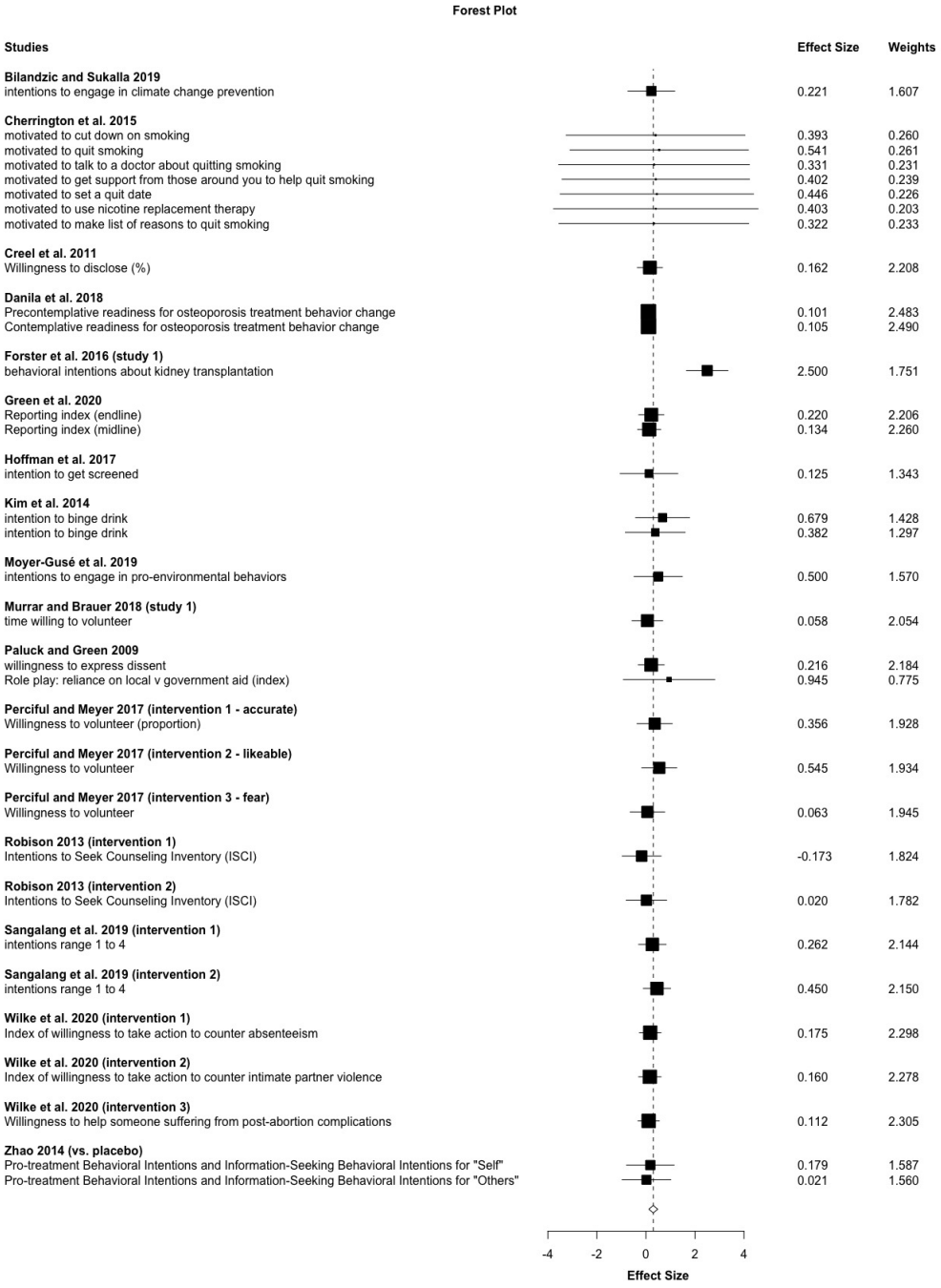


Figure A5

Effect of Narratives on Behaviors (Compared to Control)

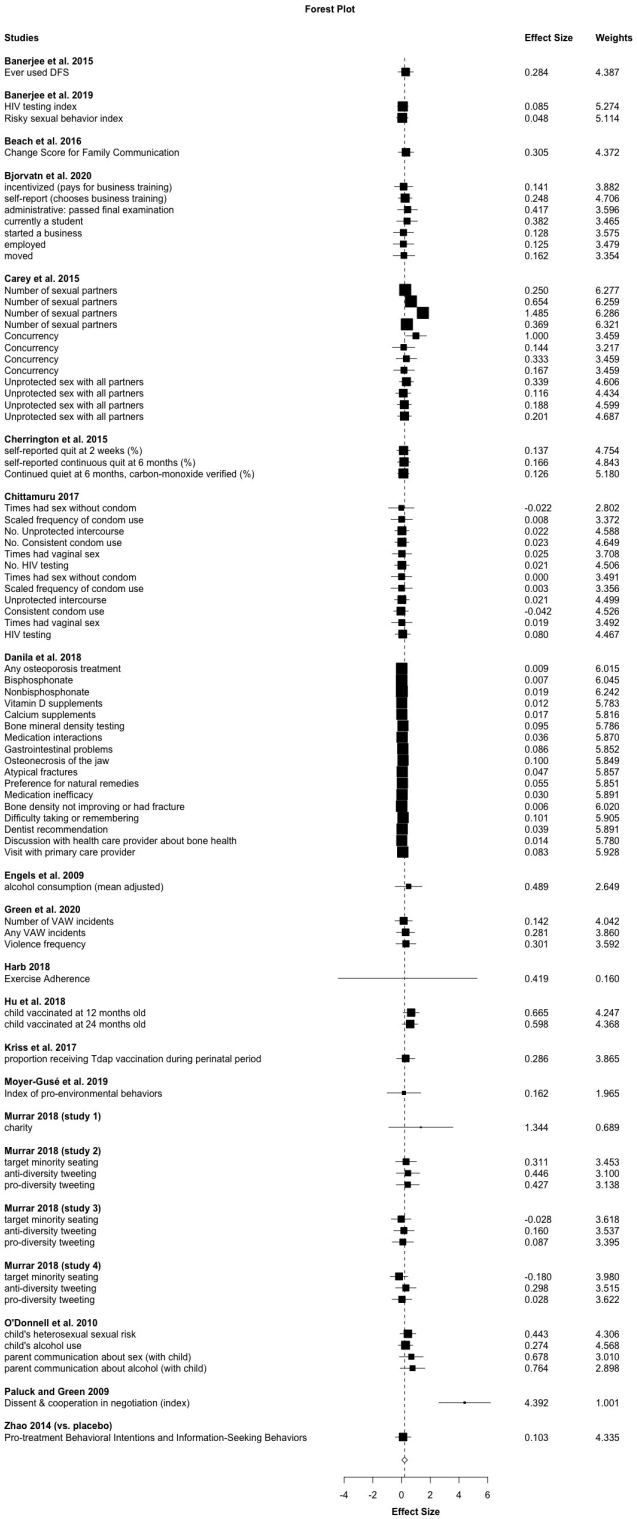


Figure A6

Effect of Narratives on Priorities (Compared to Control)

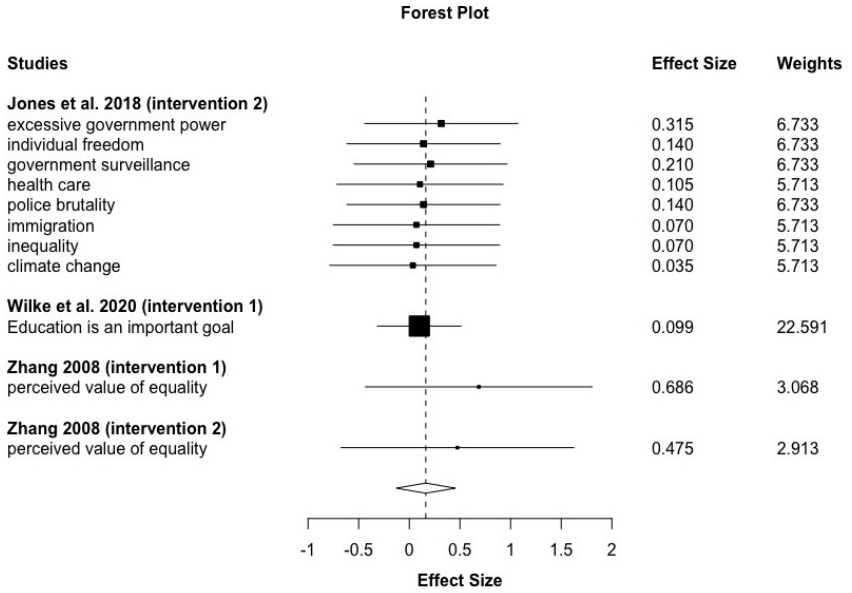


Figure A7

Effect of Narratives on All Norms (Compared to Control)

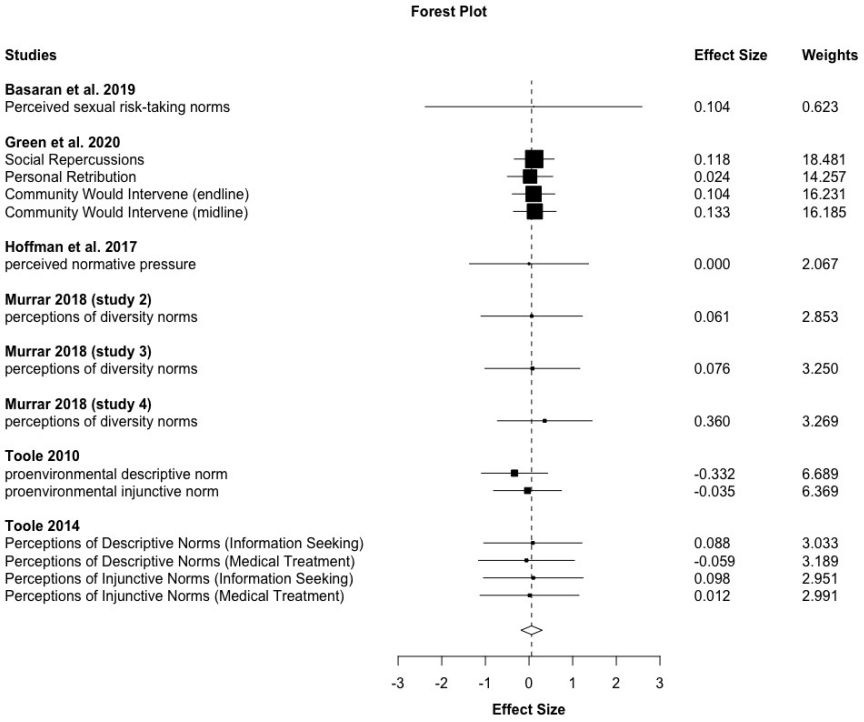


Figure A8

Effect of Narratives on Descriptive Norms (Compared to Control)

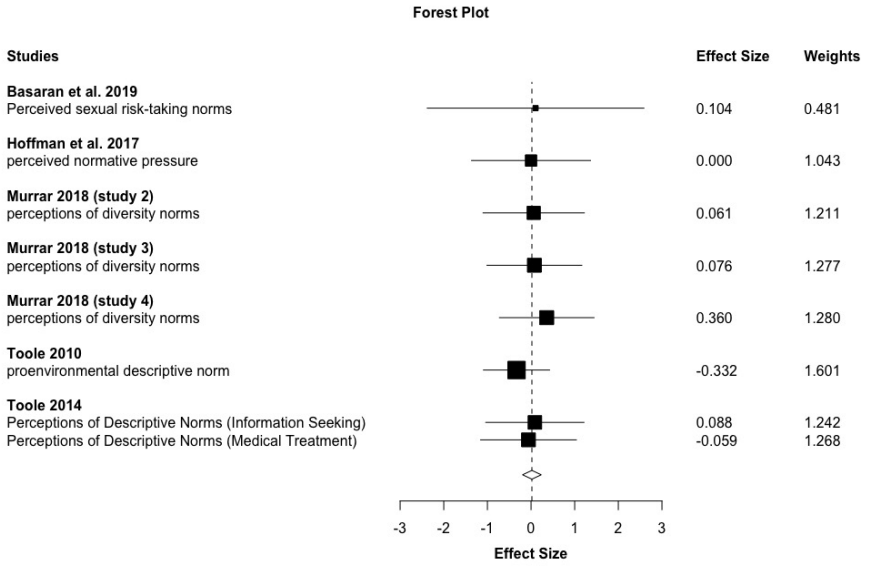
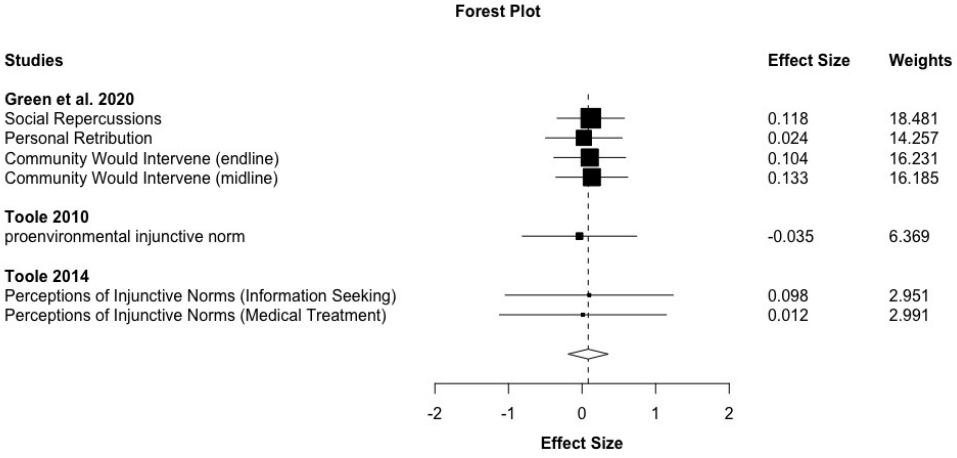


Figure A9

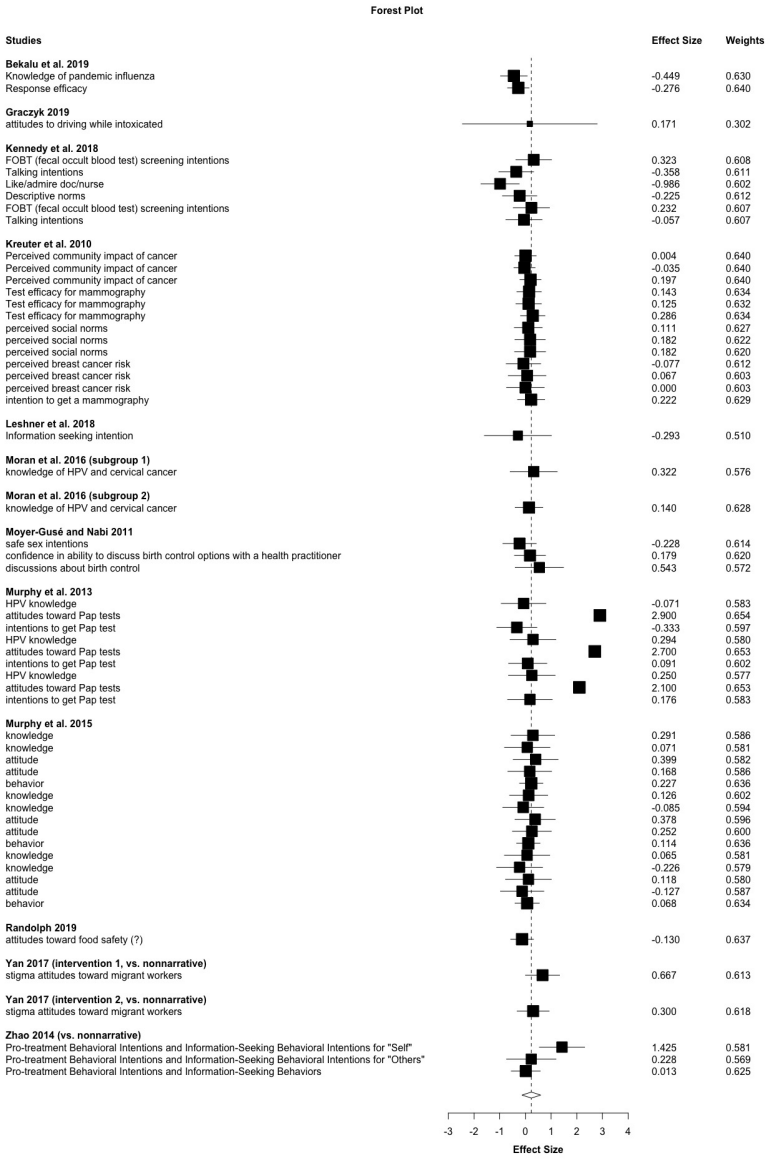
Effect of Narratives on Injunctive Norms (Compared to Control)



B Meta-Analytic Estimates: Narrative vs Non-Narrative Message

Figure B1

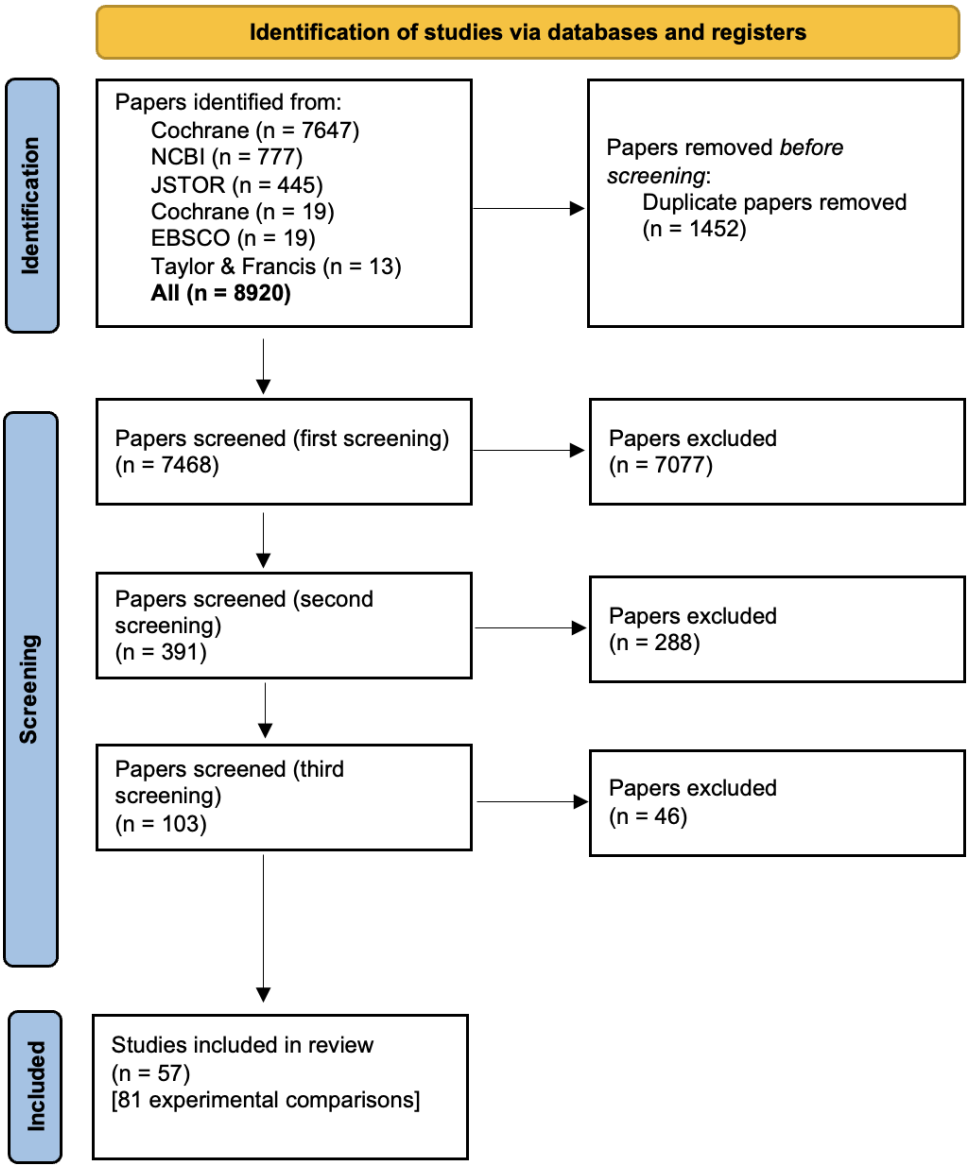
Effect of Narrative Messages on All Outcomes (Compared to Non-Narrative Messages)



C PRISMA Guidelines

Figure C1

PRISMA Flow Diagram Outlining Meta-Analytic Search Procedure



D Included Studies

Paper	Site	Issue area	Outcomes						RCT Description
			Norms	Beliefs	Priorities	Attitudes	Behavioral intentions	Behaviors	
Aladé (2018)	Field: USA	Diversity in STEM				X			48 students were assigned to either (1) a no-message control condition or (2) a treatment condition in which they watched an episode of a TV show depicting diversity in the STEM fields.
Arias (2018)	Field: Mexico	Violence against women		X			X	X	340 rural Mexican participants were randomized to either (1) be invited to listen to an audio soap-opera designed to challenge gender role norms and discourage violence against women or (2) not be invited (control). Depending on quasi-random variation in broadcast access, the treatment group either received the intervention in a naturalistic community setting or through a CD intervention in their homes.
Aubrey et al. (2014)	Field: USA	Teen pregnancy				X			110 adoloscent girls either viewed (1) an episode of a reality show depicting teen pregnancy or (2) a placebo control video.
Banerjee et al. (2015)	Field: India	Nutrition						X	A cluster randomized-controlled trial randomly assigned 64 of 200 villages in India (19,993 people total) to receive an edutainment video advocating the use of iron-fortified salt. The treatment increased usage by 5.5 percentage points.
Banerjee et al. (2019)	Field: Nigeria	HIV/AIDS		X		X		X	4986 participants in urban Nigeria were randomized to either (1) a placebo control, (2) watching the Shuga TV drama in two screenings of four 22-minutes episodes each, (2) watching the drama followed by video-clips containing information on beliefs and values of peers in other communities who had watched Shuga, or (3) watching the drama with the option of bringing up to two friends to the screening.
Basaran et al. (2019)	Lab: USA	Sexual risk reduction	X						540 Black, Hispanic, and White MSM were randomly assigned to either (1) a control condition, or to one of three narrative videos tailored to (2) Black, (3) Hispanic, and/or (4) White MSM.
Beach et al. (2016)	Lab: USA	Cancer				X		X	1006 American adults from one of four sites were assigned to one of two conditions: (1) a treatment condition in which participants viewed "When Cancer Calls," a narrative "documentary" film about a family undergoing a cancer diagnosis and treatment, or (2) a placebo control condition in which participants watched an unrelated nonnarrative video about nutritional choices for controlling cancer. 669 participants completed a 30-day follow-up survey.
Bekalu et al. (2018)	Online: USA	Pandemic influenza prevention		X		X			627 online respondents were randomly selected to view an narrative edutainment message about influenza (clips of Contagion) or a non-narrative informational message.
Bilandzic and Sukalla (2019)	Lab: USA	Environmentalism		X		X	X		257 university students were assigned to a no-message control group or one of six treatment groups consisting of edited versions of German post-apocalyptic film Hell: 2 (high vs. low narrative engagement) x 3 (human responsibility frame vs. temperature frame vs. no frame).
Bjorvatn et al. (2020)	Field: Tanzania	Entrepreneurship		X		X		X	Over 2,132 stuents from 43 secondary schools in Tanzania participated in an ecouragement design and were randomly assigned to (1) the first season of Ruka Juu, 11 weekly episodes built around 6 entrepreneurs or (2) a week-end movie that airs at the same time as the TV show. Post-test measures were drawn from lab-games, administrative data, and follow-up surveys of a random sub-sample. The show made viewers more interested in entrepreneurship and business, and had a particularly large effect on females. However, it discouraged investment in schooling.
Carey et al. (2015)	Field: USA	STI reduction						X	1010 patients were randomly assigned to one of four conditions formed by crossing pre-treatment assessment condition (i.e., sexual health vs. general health) with one of two interventions: (1) a mixed narrative and didactic video about sexual risk reduction and (2) a similar video about general health, which serves as a placebo control.
Cherrington et al. (2014)	Lab: USA	Smoking					X	X	300 low-income, low-literacy African American smokers with chronic illnesses were assigned to watch one of two vidoes: (1) a DVD-delivered, culturally-tailored intervention consisting of current and former smokers discussing smoking cessation or (2) an attention-control DVD consisting of five non-narrative health-related mini-lectures.
Chittamuru (2017)	Field: USA	HIV prevention				X		X	203 African American youth watched either (1) an episode of a serial drama about safe sex and STI transmission and testing or (2) a placebo control video.
Creel et al. (2011)	Field: Malawi	HIV stigma				X	X		300 Malawians were randomly assigned to (1) listen to a radio drama featuring destigmatizing stories about HIV-positive people, (2) listen to the same drama and then take part in a discussion, or (3) listen a radio program of similar length but with a storyline unrelated to HIV stigma.
Danila et al. (2018)	Field: USA	Osteoporosis					X	X	2684 women above 45 years of age and with self-reported fracture history were randomized to receive either (1) a tailored, direct-to-patient, video intervention or (2) usual care.
Engels et al. (2009)	Lab: Netherlands	Alcohol consumption						X	80 Dutch male students were invited to a naturalistic bar-type setting and were assigned to watch one of four films according to a 2 (type of movie: many versus few alcohol portrayals) x 2 (commercials: alcohol commercials present or not) factorial design.
Forster et al. (2016)	Lab: USA	Renal disease		X			X		334 patients and 94 family members/caregivers were assigned to either (1) watch a telenovela ("Fixing Paco," a bilingual health education film) and receive standard of care at a transplant center or at a dialysis clinic or (2) only receive standard of care minus the telenovela.
Foss and Blake (2018)	Field: USA	Breastfeeding stigma				X			375 students watched either (1) a prime-time television clip that depicted public breastfeeding or (2) an unrelated narrative placebo control video.
Gonzalez (2020)	Lab: USA	Mental health literacy and stigma		X		X			115 adults were randomized to either (1) a no-message control condition or (2) a treatment condition in which they watched a four-minute E-E video designed to increase awareness of mental health resources and reduce stigma.
Graczyk (2019)	Lab: USA	Drunk driving				X			60 students were assigned to watch one of three videos about driving under the influence of alcoholic energy drinks: (1) a fear- and humor-based narrative video, (2) a similar humor-only narrative video, or (3) an information-only, non-narrative placebo control video.
Green et al. (2020)	Field: Uganda	Violence against women	X	X		X	X	X	10,000 rural Ugandans were cluster-randomized to receive (1) a control condition involving just attending a film screening, or one of three treatments in which vignettes were interspersed in the films. Each of the vignettes focused on a different social issue facing rural Ugandans: (2) teacher absenteeism, (3) stigma against those who seek abortions, and (4) violence against women.
Gürbüz et al. (2020)	Lab: Turkey	OCD stigma				X			197 Turkish participants viewed either (1) a video-based anti-stigma intervention program for OCD or (2) a similar program about MS (placebo control).
Harb (2018)	Lab: USA	Exercise adherence				X		X	128 cardiovascular patients were randomly assigned to either an experimental or control group. The participants in both groups received traditional educational printouts about cardiovascular rehabilitation programs; only participants in the experimental group received the study intervention of success stories in the form of 10-minute DVD about CRP.
Hoffman et al. (2017)	Lab: USA	Cancer	X	X		X	X		80 African American patients due for a colorectal cancer screening were randomly selected to receive (1) a culturally-tailored edutainment message about patient self-advocacy or (2) a control video about hypertension.
Hu et al. (2018)	Field: China	Varicella vaccination						X	200 pregnant women were randomly assigned to one of three conditions: (1) a control group, (2) a treatment group in which participants viewed an affective messaging video about VarV vaccination, and (3) a treatment group in which participants received an information-equivalent nonnarrative booklet.
Jain (2011), Study 1	Lab: USA	Prejudice reduction				X			251 participants were randomized to view (1) an edited episode of the show ER featuring a South Asian female physician character who is portrayed positively, (2) an edited episode in which the character is portrayed negatively, or (3) a placebo control episode that does not contain the character.
Jain (2011), Study 2	Lab: USA	Prejudice reduction				X			233 participants were randomized to view (1) an edited episode of the show ER featuring a South Asian female physician character who is portrayed positively, (2) an edited episode in which the character is portrayed negatively, or (3) a placebo control episode that does not contain the character.
Jones (2008)	Lab: USA	HIV risk reduction				X			76 urban women were randomly assigned to (1) an experimental condition in which they viewed a soap opera video about HIV risk or (2) a placebo control condition.
Jones and Paris (2018), Study 1	Lab: USA	Political participation (violent and non-violent); political values			X	X			272 American adults were randomly assigned to one of three groups: a no-media control group, or one of two dystopian treatment groups, each with a different film containing examples of radical political action (Hunger Games and Divergent).
Jones and Paris (2018), Study 2	Lab: USA	Political participation (violent and non-violent); political values			X	X			408 undergraduates were randomly assigned to one of three groups: (1) the Hunger Games dystopian treatment, (2) a no-media control, or (3) a comparison media treatment drawn from another blockbuster fiction franchise, The Fast and the Furious, which serves as a placebo control.
Jones and Paris (2018), Study 3	Lab: USA	Political participation (violent and non-violent); political values			X	X			293 undergraduates were randomly assigned to one of three groups: (1) the Hunger Games dystopian treatment, (2) a no-media control, or (3) a real news footage treatment that depicts political conflict in Thailand, which serves as a placebo control.
Kennedy et al. (2018)	Field: USA	Cancer	X			X	X		442 African American women in face-to-face listening groups in African American churches were randomized to listen to either (1) a culturally tailored fictional narrative about colorectal cancer or (2) an information-equivalent non-narrative control in the form of an expert interview.

Kim et al. (2014)	Online: USA	Alcohol consumption					X	X		163 subjects watched a 4-minute video clip from the TV show E.R., which either (1) contained a brief initial scene about a doctor making a mistake under the influence of alcohol or (2) did not contain the scene.
Kreuter et al. (2010)	Field: USA	Cancer	X			X	X	X		489 African American women were randomly assigned to watch (1) a narrative video comprised of stories from African American breast cancer survivors (Living Proof) or (2) a content-equivalent informational video using a more expository and didactic approach (Facts for Life).
Kriss et al. (2017)	Lab: USA	Tdap vaccination							X	106 pregnant African American women were randomly assigned to (1) a narrative treatment condition in which participants received an affective messaging video related to Tdap, (2) a non-narrative treatment condition in which participants received a cognitive messaging iBook, or (3) a no-message control condition.
Lapinski and Nwulu (2008)	Field: Nigeria	HIV stigma			X		X			100 Nigerians were randomly assigned to either (1) a treatment condition in which they viewed a film about HIV stigma or (2) a no-message control condition.
Leshner et al. (2018)	Lab: USA	Breast cancer						X		46 African American women aged 40 or older viewed one of six audiovisual messages from breast cancer survivors according to a 2 (narrative/nonnarrative) x 3 (emotional valence: pleasant/unpleasant/mixed) factorial design.
Moran et al. (2016)	Field: USA	Cancer			X					774 African American, Korean American, Mexican American, and non-Hispanic white women in Los Angeles between 25 and 45 years old were interviewed by phone, mailed one of two DVDs, and interviewed again. The two 11-minute movies relayed information about PAP tests, HPV, the HPV vaccine, and cervical cancer, but were either (1) a narrative story or (2) an interview with a doctor.
Moyer-Gusé and Nabi (2011)	Lab: USA	Sex safety					X	X	X	437 undergraduates were assigned to (1) watch an edutainment program about safe sex behavior, (2) an education-only condition, or (3) an entertainment-only placebo control condition.
Moyer-Gusé et al. (2019)	Lab: USA	Environmentalism						X	X	179 undergraduates at a large Midwestern university in the United States were randomized to one of three conditions: (1) a placebo control consisting of an unrelated episode of 30 Rock, (2) an episode of 30 Rock dealing with climate change, or (3) the climate change-related episode plus a PSA that suggested specific actions viewers could take in order to help conserve natural resources and help the environment.
Mulligan and Habel (2011)	Lab: USA	Abortion					X			194 university students were randomized to one of three conditions: (1) watching a pro-choice fictional film (The Cider House Rules), (2) watching the same film but being told they would later be quizzed on its content, or (2) not watching any film.
Murphy et al. (2013)	Field: USA	HPV prevention			X		X	X		758 women of varying racial backgrounds viewed either (1) a narrative cervical cancer-related film or (2) an informative equivalent non-narrative control film.
Murphy et al. (2015)	Field: USA	PAP testing			X		X		X	774 African American, Korean American, Mexican American, and non-Hispanic white women in Los Angeles between 25 and 45 years old were interviewed by phone, mailed one of two DVDs, and interviewed again. The two 11-minute movies relayed information about PAP tests, HPV, the HPV vaccine, and cervical cancer, but were either (1) a narrative story or (2) an interview with a doctor.
Murrar (2018), Study 1	Lab: USA	Prejudice reduction	X				X		X	154 students were randomly assigned to either (1) a pro-diversity social norms condition, (2) an inter-group friendship placebo control condition, or (3) a counter-stereotypicality placebo control condition. Those in the treatment condition were randomly assigned to watch two episodes of one of the three TV shows depicting social diversity.
Murrar (2018), Study 2	Online: USA	Prejudice reduction	X				X		X	359 students were randomly assigned to either (1) a pro-diversity social norms condition or (2) a no-message control condition. Within each condition, subjects were randomly assigned to watch two episodes of one of the three TV shows depicting social diversity, however between-show effects were not compared.
Murrar and Bauer (2018), Study 1	Lab: USA	Prejudice reduction					X	X		193 participants were randomly assigned to receive (1) a series of episodes of Little Mosque on the Prarie written to increase understanding of Western Muslims, or (2) a series of episodes of Friends, which serves as a placebo control condition.
Murrar and Bauer (2018), Study 2	Online: USA	Prejudice reduction					X	X		310 respondents were randomly assigned to receive (1) a music video promoting tolerance of Western Muslims, (2) an imagined contact treatment, (3) a group malleability treatment, or (4) control condition.
Nera et al. (2018), Study 1	Online: Belgium	Conspiracy beliefs			X					81 Belgian participants were assigned to either (1) a treatment condition in which they watched an X-Files episode conveying a conspiracist worldview or (2) a control condition in which they watched an unrelated video.
Nera et al. (2018), Study 2	Online: UK	Conspiracy beliefs			X					216 UK participants either (1) watched the last 8 minutes of the aforementioned X-Files episode or (2) watched an unrelated video.
O'Donnell et al. (2010)	Field: USA	Alcohol use					X		X	268 low-income families with a daughter in an NYC public school were either (1) given a set of four audio CDs containing dramatic, role-model stories that dealt with possible reasons for daughters' exposure to alcohol, (2) given information booklets on similar topics mailed at the same interval, or (3) assigned to a control in which no materials were mailed.
Paluck and Green (2009)	Field: Rwanda	Political culture			X		X	X	X	556 Rwandans were cluster-randomized to listen to four 20-minute episodes of a radio drama each month for one year. Participants in the treatment group listened to a radio drama about ethnic reconciliation, while those in the placebo control group listened to a comparable drama about an unrelated topic, reproductive health and HIV.
Perciful and Meyer (2017)	Lab: USA	Schizophrenia stigma					X	X		106 undergraduates either watched (1) a placebo control film or one of several fictional films depicting schizophrenia: (2) Me, Myself, and Irene (Likeable – Inaccurate), (3) Donnie Darko (Fear-Based - Inaccurate), or (4) The Brush, the Pen, and Recovery (Educational – Accurate).
Randolph (2019)	Online: USA	Food safety					X			712 adults were randomly assigned to view one of six videos about food safety practices according to a 2 (type of media: narrative and analytical) x 3 (length of media: short, medium, and long) factorial design.
Robison (2013)	Lab: USA	Therapy					X	X		208 university students were randomly assigned to view (1) an episode of In Treatment featuring a "positive" storyline about therapy, (2) an episode of In Treatment featuring a "negative" storyline about therapy, (3) an unrelated episode of In Treatment with a storyline unrelated to therapy (placebo control).
Sangalang et al. (2019), Study 1	Online: USA	Misinformation correction			X					385 smokers were randomly assigned to watch (1) a no-emotion misinformation-correction video, (2) an emotional correction videos with either anger, happy, sad, or fear endings, or (3) a no misinformation-correction control video.
Sangalang et al. (2019), Study 2	Online: USA	Misinformation correction			X		X	X		586 smokers were randomly assigned to watch (1) a no-emotion misinformation-correction video, (2) an emotional correction videos with negative-emotional endings, or (3) a no misinformation-correction control video.
Semakula et al. (2020)	Field: Uganda	Health literacy			X					675 Ugandans parents were randomly allocated to listen to either (1) the Informed Health Choices podcast (narrative intervention) or (2) a typical public service announcements about health issues (control) over 7–10 weeks.
Tisinger (2010)	Lab: USA	Assisted suicide					X			130 participants were randomly assigned to watch an episode of Law & Order: SVU about assisted suicide that either contained or did not contain a persuasive intent label and that either contained a fiction label or reality-based label (2x2), or to watch an hour-long taped history lecture on the Enlightenment (placebo control).
Toole (2010)	Lab: USA	Environmentalism	X				X			156 undergraduates were exposed to one of four narrative television show clips: For Rent with proenvironmental messages (treatment), For Rent without proenvironmental messages (control), Design on a Dime with proenvironmental messages (treatment), or Design on a Dime without proenvironmental messages (control).
Toole (2014), Study 1	Lab: USA	Sex safety	X							106 university students were randomly assigned to view (1) an episode of the TV show Girls that included discussion of safe-sex behaviors and educational information on STI prevention or (2) an episode from the same season that contained the same main characters but did not discuss condoms, safe sex, STIs, AIDS, or AIDS testing (placebo control).
Toole (2014), Study 2	Lab: USA	Sex safety	X							140 university students were randomly assigned to view (1) an episode of the TV show Sex and the City that included discussion of safe-sex behaviors and STI testing as well as an injunctive norms cue, (2) the same episode but without a norms cue, or (3) a different episode of the same show that does not discuss safe-sex behavior or STI testing (placebo control).
Wilke et al. (2020)	Field: Uganda	Violence against women; abortion stigma; teacher absenteeism				X		X		10,000 rural Ugandans were cluster-randomized to receive (1) a control condition involving just attending a film screening, or one of three treatments in which vignettes were interspersed in the films. Each of the vignettes focused on a different social issue facing rural Ugandans: (2) teacher absenteeism, (3) stigma against those who seek abortions, and (4) violence against women.
Yan (2017)	Online: China	Migrant worker stigma					X			305 college students in Tianjin and Beijing, China were randomly assigned to one of four messages related to stigma toward migrant workers or a no-message control condition. The treatment messages proceeded according to a 2 (message valence: positive or negative) × 2 (message type: narrative or non-narrative) factorial design.
Zhang (2008)	Lab: USA	Prejudice reduction				X	X			196 university students were randomly assigned to (1) one of three experimental conditions in which they watched an episode of Law and Order or Without a Trace that touches on issues of racial justice, or (2) a placebo control condition in which they watched an episode of CSI with no racial justice content.
Zhao (2014)	Lab: USA	Bipolar disorder						X	X	176 university students were randomly assigned to one of three message conditions: (1) a bipolar disorder PSA plus a video of 90210 excerpts without a bipolar disorder storyline (nonarrative treatment), (2) an EPA Stormwater PSA with a video of 90210 excerpts with a bipolar disorder storyline (narrative treatment), and (3) the EPA Stormwater PSA followed by the video of 90210 excerpts without the bipolar disorder storyline (control).