



# Transportation into an Entertainment Narrative about the MMR Vaccine: An Investigation of Self-Referencing and Issue-Related Thoughts in Narrative Persuasion

EMILY MOYER-GUSÉ <sup>1</sup>, KARA RADER <sup>2</sup>, and SIMON LAVIS<sup>3</sup>

<sup>1</sup>*School of Communication, The Ohio State University, 43210-1339, Columbus, Ohio, USA*

<sup>2</sup>*NORC, The University of Chicago, 60637, Chicago, Illinois, USA*

<sup>3</sup>*Centre for Excellence in Learning and Teaching, University of Suffolk, Ipswich, UK*

## ABSTRACT

The current study considers how an entertainment narrative about childhood vaccination influences related attitudes. We consider the role of counterarguing in narrative persuasion by integrating extant research and theory to test cognitive mechanisms of narrative persuasion, namely self-referencing and positive issue-related thoughts. Results of this experiment show that exposure to a television narrative depicting the importance of the measles, mumps, and rubella (MMR) vaccine led to more favorable attitudes toward childhood vaccination as compared to a control group. As expected by narrative persuasion theorizing, transportation into the narrative predicted vaccine attitudes. In contrast to typical theorizing and some empirical results, counterarguing did not mediate that relationship, however, self-referencing and positive issue-related thinking did. Theoretical contributions and suggestions for future research expanding our understanding of issue-related thoughts are discussed.

A growing body of literature has begun to consider the role of vaccine hesitancy in the resurgence of vaccine preventable diseases, like measles (Kennedy, 2020). Indeed, recent years have seen an increase in the number of parents who have chosen not to follow the recommended childhood vaccination schedule for non-medical reasons, with just 68% of children under age three receiving all the CDC recommended vaccinations on time (Hargreaves et al., 2020). As a result, the US has seen an escalation in measles outbreaks (Olive, Hotez, Damania, & Nolan, 2018). In 2019 the CDC reported 1,282 cases of measles across 31 states—the highest number of cases in the US since 1992, with most of these infections occurring among people who had not received the measles vaccine (CDC, 2022). As a result, health communication literature has taken up the question of how best to address this issue (Horne et al., 2015).

The present study advances this effort by considering an entertainment narrative that depicts the negative consequences of not vaccinating a child against measles. We focus not on persuading those with strong attitudes against vaccination; indeed, this is a tall order and one that would likely require much more than one narrative-based exposure. Rather, we consider the effect of an entertainment narrative among those who do not currently hold extremely negative attitudes toward vaccination. Among this population—those less likely to be resistant—we ask how an entertainment narrative might be well-poised to influence attitudes. Addressing a general population, including those who are not currently making vaccination decisions for a child, is important as it can contribute to an overall climate of greater acceptance of vaccination as a safe and responsible behavior. Indeed, research on vaccine advocacy behaviors notes that members of the lay public play a significant role in vaccination rates via social influence and policy support (Luong & Moyer-Gusé, 2021).

Meta-analyses have shown that narratives can shape beliefs and attitudes about a whole host of topics (Braddock & Dillard, 2016), particularly when viewers become swept up into the story world (Van Laer, de Ruyter, Visconti, & Wetzels, 2014). Much of the extant theorizing and research on narratives considers their ability to reduce common forms of resistance to persuasion—often in the form of reducing counterarguing (Moyer-Gusé, 2008; Slater & Rouner, 2002). Counterarguing refers to an argument against or resistance to the presented

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Address correspondence to Emily Moyer-Gusé, School of Communication, The Ohio State University, 3068 Derby Hall, 154 North Oval Mall, Columbus, Ohio 43210-1339.

E-mail: [moyer-guse.1@osu.edu](mailto:moyer-guse.1@osu.edu)

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message (Ivanov, Pfau, & Parker, 2009; Kreuter et al., 2010; McQueen, Kreuter, Kalesan, & Alcaraz, 2011). However, narratives may also influence audience members who are less prone to counterarguing. This likely occurs through other mechanisms such as prompting them to reflect on how the story connects to their own life and to generate positive issue-related thoughts they might not otherwise have considered. Here positive issue-related thoughts refer to those about the overall importance and significance of the underlying issue being depicted in the narrative (i.e., vaccination). Thus, in this study we aim to examine the potential for an entertainment narrative to influence attitudes toward childhood vaccination. Second, we consider two additional forms of issue-related thoughts that are relevant to a narrative context and offer these as mechanisms through which a narrative can exert persuasive effects—self-referencing and positive issue-related thoughts. Together, these two aims help expand our understanding of narrative persuasion in this context beyond merely considering the role of reducing message resistance.

### Effects of Narratives on Vaccine Attitudes and Intentions

A narrative can be defined as a “... cohesive and 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” (Hinyard & Kreuter, 2007, p. 778). Prior research suggests that a narrative message can influence vaccine-related attitudes and intentions. For example, Betsch and colleagues (2011) showed that narrative testimonials increased disease risk perceptions and vaccine intentions. In a study of older adults, Pratia, Pietrantoni, and Zani (2012) found that a narrative about the flu vaccine led to greater risk perceptions and vaccine efficacy perceptions (Pratia et al., 2012). Like these two examples, research in this area has largely looked at messages created specifically for an experiment (i.e., written testimonials or short stories). A growing body of research shows that these contrived narratives can indeed lead to narrative-consistent outcomes in the context of vaccine hesitancy, but little systematic research has examined whether a true entertainment narrative program would operate in the same way in the context of vaccination attitudes. This is important to understand given key differences in the overall purpose of a purely entertainment television program (designed primarily for entertainment, not persuasion) versus a typical testimonial or entertainment-education campaign (designed with the purpose of informing and/or influencing an audience). These different purposes may alter the quality and accuracy of the information therein as well as how they are processed by audience members, particularly with respect to narrative engagement (Slater, 1997; Slater & Rouner, 2002). Building on this work, the present study will consider exposure to a television medical drama.

Research has investigated the role of engagement with entertainment narratives as a mechanism of narrative persuasion. We use the term engagement here as a catch-all for a handful of related constructs essentially referring to the unique way in which viewers become engrossed in a story world (e.g., narrative engagement,

absorption, immersion, transportation). Research has been consistent in demonstrating that this process of being swept up into a narrative—where one temporarily focuses a greater degree of attention on the unfolding story events and less attention on their present reality—is a key component of narrative influence. A recent meta-analysis revealed that indeed, relative to non-narrative messages, narratives are more likely to reduce resistance to persuasion and this resistance is predicted by level of “engagement” with the narrative (Ratcliff & Sun, 2020). One common form of engagement studied in theories of narrative persuasion is transportation—“a convergent process, where all mental systems and capacities become focused on events occurring in the narrative” (Green & Brock, 2000, p. 701). The transportation imagery model (TIM; Green & Brock, 2000), extended elaboration likelihood model (E-ELM; Slater & Rouner, 2002) and entertainment overcoming resistance model (EORM; Moyer-Gusé, 2008) all posit that the extent to which a viewer becomes transported is important for persuasion. Across all these models, transportation into a narrative is expected to reduce counterarguing because viewers of entertainment content are motivated to maintain the enjoyable and immersive process of transportation rather than disrupt the viewing experience to generate counterarguments.

As noted above, several theories of narrative persuasion posit the suppression of counterarguing as a key mechanism accounting for effects (Green & Brock, 2000; Moyer-Gusé, 2008; Slater & Rouner, 2002) and a good deal of research has supported this notion (Banerjee & Greene, 2012, 2013; Green & Brock, 2000; Ma, 2019). However, some studies have found exceptions to this (De Graaf & van Leeuwen, 2017; Igartua & Casanova, 2016; Moyer-Gusé & Nabi, 2010; Quintero Johnson & Sangalang, 2017; Van Leeuwen, Van Den Putte, Renes, & Leeuwis, 2017). For example, counterarguing with a binge drinking storyline in an entertainment-education television program did not mediate the effect of narrative engagement on alcohol-related beliefs and attitudes (Van Leeuwen et al., 2017). In another study, transportation into a TV drama about the difficulties of teen pregnancy was associated with *more* counterarguing rather than less (Moyer-Gusé & Nabi, 2010).

Taken together, the extant body of literature shows that narratives can shape attitudes toward vaccination. Moreover, research shows that transportation into a narrative predicts story-consistent attitudes and beliefs (e.g., Escalas, 2004; Green, 2004; Green & Brock, 2000; Slater, Rouner, & Long, 2006; Wang & Calder, 2006). The role of counterarguing as a mediator in this process is less clear, perhaps given that in some cases audience members are not particularly resistant and thus not predisposed to generate counterarguments in the first place. Thus, based on the theorizing and empirical work reviewed above, we expect:

**Hypothesis 1:** Participants exposed to a television narrative depicting the importance of the childhood MMR vaccine will report more favorable attitudes toward childhood vaccination than will participants exposed to a control narrative.

The mediating role of counterarguing as the key mechanism in the narrative persuasion process, while often supported, has sometimes been elusive. Because of the conflicting evidence regarding the link between transportation and counterarguing in

a narrative context, and because we are considering a population among which we do not expect strong negative attitudes toward vaccination—and thus would not expect to generate a great deal of counterarguing in the first place, we query this indirect relationship with a research question.

**RQ1:** Will counterarguing mediate the relationship between transportation into an entertainment narrative depicting the importance of the MMR vaccine and related attitudes?

One reasonable expectation regarding counterarguing is that it will only mediate the effect of transportation on story consistent attitudes among viewers who we might expect to counterargue in the first place. Specifically, it is when prior attitudes toward a topic are more negative that counterarguing is most likely to occur and therefore, it is among those for whom the underlying content about vaccination is counterattitudinal where we would expect to see that transportation would be most likely to reduce counterarguing (Slater & Rouner, 2002). This is based on the logic of the extended elaboration likelihood model that, when the program does not contain anything with which the viewer is likely to counterargue, transportation may not reduce counterarguing because there are few counterarguments to suppress. Indeed, narrative persuasion theories acknowledge that narratives likely work by reducing motivation and ability to counterargue and therefore should be most effective for those who are especially skeptical in the first place (e.g., Moyer-Gusé, 2008). Thus, we ask the following research question.

**RQ2:** Will counterarguing differentially mediate the relationship between transportation into an entertainment narrative depicting the importance of the MMR vaccine and related attitudes among individuals who hold more negative attitudes toward the MMR vaccine and those who hold more favorable attitudes?

### Beyond Counterarguing: Other Issue-Related Thoughts

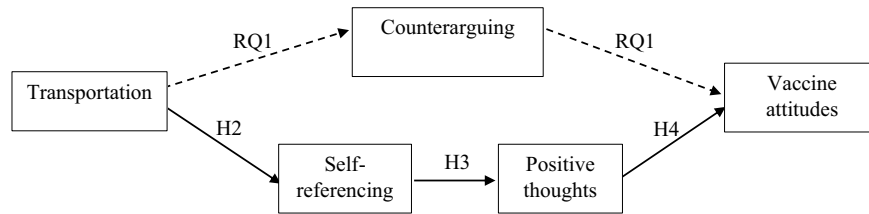
There is a clear need to expand our understanding of the ways in which viewers elaborate upon the content they are exposed to when transported into a narrative. In order to more fully understand why transportation enhances narrative persuasion, we should consider not only how viewers generate thoughts *against* the message (i.e., counterarguing) but also forms of issue-related thoughts that support or expand upon the key narrative themes in a positive way (Hoeken & Fikkers, 2014; Niederdeppe, Kim, Lundell, Fazili, & Frazier, 2012). To this end, the present study considers additional issue-related thoughts that may be important to understanding how an MMR narrative will lead to story consistent attitudes. We propose a test of two such mechanisms—self-referencing and positive issue-related thoughts.

Self-referencing refers to the process of relating message components to the self, where individuals connect incoming information to their own complex structure of memories (Burnkrant & Unnava, 1989, 1995). Several studies investigating self-referencing have shown that it can facilitate narrative persuasion in the context of health beliefs and intentions as well as risk perceptions (Chen, Bell, & Taylor, 2016, 2017; Dunlop,

Wakefield, & Kashima, 2010). Research on advertisements has found that self-referencing is associated with more positive attitudes and positive cognitive responses to a message (Burnkrant & Unnava, 1989; Debevec & Iyer, 1988; Sujjan, Bettman, & Baumgartner, 1993). In a traditional analytical context, self-referencing is thought to persuade through increased elaboration. However, in a narrative context, self-referencing is instead associated with greater transportation and with more positive feelings and fewer negative feelings as one becomes engaged with their own mental simulation of a related memory (Escalas, 2007).

Understanding the role of self-referencing in narrative persuasion involves something of a paradox in that the absorption associated with transportation necessitates a steep reduction of self-awareness. Viewers who are highly transported, temporarily experience less access to their own thoughts, identity, and surroundings as “all mental systems and capacities become focused on events occurring in the narrative” (Green & Brock, 2000, p. 701). On the surface then, self-referencing may seem to be at odds with this process given its focus on thinking about the self. However, viewers likely oscillate between periods of higher and lower transportation while viewing, allowing for alternating intervals of absorption into the narrative followed by reflection and absorption into one’s related memory (Bezdek & Gerrig, 2017; Moyer-Gusé, 2015). This would explain why transportation has been associated with an increase in self-referencing. Relatedly, in their work on deictic shift theory, Hamby, Brinberg, and Jaccard (2017) argue that the extant models of narrative persuasion fail to fully consider what happens after transportation (Hamby et al., 2017). Namely, deictic shift theory posits that narrative effects are partially due to the experience of reflection that follows absorption, wherein viewers create meaning from the narrative by linking it to their own life and the real world. Here reflection is defined as, “a process by which the story receiver interprets and links the story message to their own world” (Hamby et al., 2017, p. 6). This is akin to the process of self-referencing described above.

Another important piece of this reflection, according to deictic shift theory, is the way in which self-reflection can cause the viewer to reinterpret or reframe past events or beliefs so that they are consistent with the overall theme of the story (Hamby et al., 2017; Larsen & Seilman, 1988). This suggests that self-referencing may lead to more positive thoughts about the underlying themes or issues contained within a narrative. Thus, generating positive thoughts related to these underlying issues depicted in the narrative is another way in which transportation may indirectly influence attitudes (Slater et al., 2006). These positive issue-related thoughts are notably different from elaboration in a traditional persuasion context. In their description of the extended elaboration likelihood model, Slater and Rouner (2002) explain that narratives foster a qualitatively different form of elaboration than do traditional persuasive messages. They note that, “involvement with the topic of a persuasive message and engagement with a narrative are qualitatively different, in ways that should profoundly influence the elaboration that takes place in response to persuasive content in such messages” (Slater & Rouner, 2002, pp. 178–179). That is to say that viewers may engage very deeply with the



**Figure 1.** Hypothesized model.

real-world themes depicted in a narrative, but they do so in a way that is focused not on the logical arguments being advanced but rather the unfolding story. As a result, viewers may also find themselves elaborating on the overall importance and significance of the underlying issue being depicted—positive issue-related thoughts.

Based on the above reasoning, we expect that self-referencing will be most prevalent among viewers who report high transportation. This is consistent with literature looking at the effects of narrative-based advertisements (Escalas, 2007). Based on the logic above regarding self-referencing and deictic shift theory, we also expect that self-referencing will promote more positive issue-related thoughts. These processes should, in turn, lead to more favorable vaccine-related attitudes. Thus, we advance the following: (See Figure 1 for a graphical representation of the hypothesized model).

**H2-H4:** Transportation into a television narrative depicting the importance of the childhood MMR vaccine will be associated with greater self-referencing (H2) which will, in turn, predict more positive issue-related thoughts (H3) and more favorable attitudes toward childhood vaccination (H4).

## Method

### Participants and Procedure

Undergraduates at a large Midwestern university ( $N = 145$ ) took part in this experiment in exchange for course credit. Participants ranged in age from 18–57 years old ( $M = 20.96$ ,  $SD = 4.67$ ; 61.4% female). At least 24-hours before exposure to the stimulus, participants undertook a pretest survey in which they answered demographic questions and filled out baseline belief measures. Participants later attended a lab session and viewed an assigned stimulus on a computer screen with headphones. In a between-subjects experiment, participants were randomly assigned to view a narrative depicting the importance of measles vaccination in childhood or a comparison narrative about a neutral topic. After exposure, participants completed a posttest questionnaire on their computer. All data were collected prior to the COVID-19 pandemic.

### Stimuli

#### Experimental Episode

Participants in the experimental condition watched an episode of the medical drama, *Private Practice* (“Contamination,”

season two, episode 11). The episode depicts a family whose oldest son is autistic, which the mother falsely believes was caused by his having received the MMR vaccine. Consequently, her two youngest children have not been vaccinated which has led to one of them contracting measles. That child is hospitalized, and his condition worsens as the doctor tries to talk the mother into vaccinating her youngest child, which she refuses. After the infected child dies, the doctor vaccinates the youngest child against the mother’s wishes. Secondary storylines involve the practice being shut down by the CDC due to exposure to the measles virus, a patient who is struggling with infertility, and various scenes concerning the doctors’ personal lives. The episode is 42 minutes and 25 seconds in length.

#### Control Episode

Participants in the control condition watched an episode of the medical drama *Grey’s Anatomy* (“Flight,” season eight, episode 24) that depicts the aftermath of a plane crash that leaves many main characters stranded in the wilderness, struggling to survive with various injuries and one who dies. Thus, both this and the experimental narrative depict the death of one character. Back at the hospital, the other doctors do not realize that the plane has crashed. They are going on with their lives as one doctor plans a goodbye dinner for graduating residents, and another considers whether to accept a job at a different hospital. The episode was selected because it does not contain any child patients or references to vaccination but does include the death of a character, other medical issues, as well as a depiction of doctors’ personal lives. The episode was 42 minutes and 24 seconds long.

#### Measures

Attitudes toward childhood vaccination were measured at the pretest and posttest with four items such as, “All children should be required to be vaccinated” and “vaccines prevent dangerous diseases” ( $1 = strongly disagree$ ;  $7 = strongly agree$ ). These items were measured at the pretest ( $M = 5.55$ ,  $SD = .98$ ,  $\alpha = .82$ ) and posttest ( $M = 5.79$ ,  $SD = .97$ ,  $\alpha = .82$ ). Prior false belief in the link between the MMR vaccine and autism was also measured at the pretest with the statement, “The MMR vaccine causes autism in healthy children” ( $1 = strongly disagree$ ,  $7 = strongly agree$ ;  $M = 2.90$ ,  $SD = 1.44$ ).

Eleven established items were used to measure transportation (Green & Brock, 2000). These items were adapted to apply to an audiovisual rather than a written narrative. Sample items include, “While viewing, I felt as if I was part of the action” and “I could picture myself in the events portrayed in the show”

(1 = *strongly disagree*, 7 = *strongly agree*;  $M = 4.59$ ,  $SD = .99$ ,  $\alpha = .84$ ).

Counterarguing was measured at posttest with five items adapted from previous research (Moyer-Gusé & Nabi, 2010; Nabi, Moyer-Gusé, & Byrne, 2007). Sample items include, “I sometimes found myself thinking of ways I disagreed with what was being presented by the show” and “I found myself looking for flaws in the program” (1 = *strongly disagree*, 7 = *strongly agree*;  $M = 2.09$ ,  $SD = .75$ ,  $\alpha = .82$ ).

Positive issue-related thinking was measured at posttest with three items assessing the extent to which viewers agreed with the underlying issues depicted in the episode. Again, using a 7-point scale, participants indicated their level of agreement with the statements, “I found myself really agreeing with the underlying themes depicted in this episode,” “I had a lot of thoughts in favor of things that were said in the program” and “I felt like the show was depicting a very important message.” These three items were averaged to form the positive issue-related thinking index ( $M = 4.77$ ,  $SD = 1.19$ ,  $\alpha = .83$ ).

Self-referencing was measured at posttest with four items adapted from Hamby et al., (2017) that were designed to capture the extent to which participants linked the events in the narrative to their own lives and/or experiences in the real world. Using a 7-point scale (1 = “*strongly disagree*,” 7 = “*strongly agree*”) sample items include, “Parts of the episode made me think about my own life” and “While watching the show I was reminded of my own experiences” ( $M = 2.12$ ,  $SD = .76$ ,  $\alpha = .84$ ).

## Results

Hypothesis one predicted that exposure to the vaccine narrative would increase support for vaccine-related policies relative to the control condition. Results of an ANOVA demonstrate a pattern of means consistent with that expectation such that those in the vaccine narrative condition reported significantly more favorable attitudes toward MMR vaccination ( $M = 5.97$ ,  $SD = .91$ ) than did those in the control condition ( $M = 5.62$ ,  $SD = 1.00$ ;  $F(1, 143) = 4.70$ ,  $p = .03$ ,  $\eta^2 = .03$ ). Thus, H1 was supported. In a subsequent, post hoc analysis we also considered whether prior false beliefs moderated the effect of the vaccine narrative on attitudes toward MMR vaccination. Using the PROCESS macro with SPSS (Hayes, 2018; model 1), results revealed no significant condition by prior belief interaction ( $b = .01$ ,  $p = .89$ , 95% CI:  $-.08$  to  $.09$ ).

RQ1 asked, due to conflicting past research, whether the relationship between transportation and vaccine-related attitudes would be mediated by counterarguing. Because this question dealt with the expected process within the treatment condition, only participants in that condition were included in this analysis. The data were analyzed using the PROCESS macro with SPSS (Hayes, 2018; model 4). Results revealed that transportation was not associated with counterarguing ( $b = -.19$ ,  $p = .16$ ) nor was counterarguing associated with posttest vaccine attitudes ( $b = .05$ ,  $p = .64$ ). Thus, we did not find evidence to support an indirect relationship between transportation and vaccine attitudes, mediated by counterarguing.

RQ2 asked whether there may be a moderated mediation whereby transportation would differentially predict counterarguing among those who held less favorable attitudes toward childhood vaccination at pretest. Here the data were again analyzed using the PROCESS macro (Hayes, 2018; model 7). Results revealed that prior attitudes did not moderate the relationship between transportation and counterarguing in this model ( $b = -.09$ ,  $p = .22$ ). Taken together, results of RQ1 and RQ2 indicate that counterarguing did not mediate the relationship between transportation and vaccine attitudes overall or when taking into account prior attitudes.

H2-H4 advanced a parallel mediation model whereby the effect of transportation on vaccine attitudes would be mediated by self-referencing and positive issue-related thoughts. Before testing this model, we first conducted an exploratory factor analysis with the items used to measure counterarguing, self-referencing, and positive issue-related thoughts. Results of this analysis indicated that these did indeed represent three distinct constructs (Table 1).

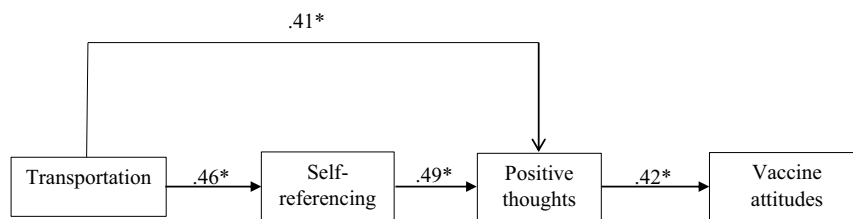
The data were then analyzed using PROCESS with SPSS (Hayes, 2018, model 6). As expected, transportation into the vaccine narrative predicted increased self-referencing ( $b = .46$ ,  $p < .001$ ), offering support for H2. Also as expected, self-referencing was associated with an increase in positive issue-related thoughts ( $b = .49$ ,  $p = .02$ ), which in turn predicted more favorable vaccine attitudes ( $b = .42$ ,  $p < .001$ ). These results support H3 and H4. Though not hypothesized, an additional significant path was revealed—that between transportation and positive issue-related thoughts ( $b = .41$ ,  $p = .01$ ; see Figure 2). A bootstrap estimate of the full model of the indirect effect of transportation on attitudes was generated with 5000 samples and indicated support for the complete model ( $b = .09$ , 95% CI:  $.02$  to  $.20$ ). Taken together, these results demonstrate that transportation indirectly predicted vaccine attitudes and this relationship was mediated by self-referencing and positive issue-related thoughts.

## Discussion

The purpose of this study was twofold. First, we aimed to examine the potential for an entertainment narrative to shape attitudes toward MMR vaccination. Second, we aimed to better understand the narrative persuasion process by considering the role of self-referencing and positive issue related thoughts in addition to counterarguing. Overall, the results suggest several main conclusions. First, the vaccine narrative was effective at influencing attitudes toward the childhood MMR vaccine, relative to a comparison episode. This was hypothesized in H1 as it is consistent with narrative persuasion theory and past research. Importantly though, the narrative used in the present study is a popular entertainment television show rather than one constructed specifically to change attitudes or for research purposes. This finding is important because it suggests that even a relatively imperfect narrative—one with multiple storylines intersecting, featuring a character who endorses the false belief that vaccination causes autism in children—can lead to story-consistent attitudes. Of note, prior endorsement of the false belief that the MMR vaccine leads to autism did not moderate

**Table 1.** Factor loadings from the principal factor extraction with varimax rotation

	Factor		
	1	2	3
<b>Self-Referencing</b>			
Parts of the episode made me think about my own life.	<b>.84</b>	-.03	.21
I thought about what it would be like if the events in the episode happened to me.	<b>.60</b>	-.06	.32
I could personally relate to the things going on in the show.	<b>.82</b>	-.07	.17
While watching the show I was reminded of my own experiences.	<b>.84</b>	-.05	.10
<b>Positive Issue-Related Thoughts</b>			
I felt like the show was depicting a very important message.	.28	-.12	<b>.79</b>
I found myself really agreeing with the underlying themes depicted in this episode.	.28	-.16	<b>.81</b>
I had a lot of thoughts in favor of things that were said in the program.	.22	-.12	<b>.79</b>
<b>Counterarguing</b>			
I sometimes felt like I wanted to “argue back” with what was being depicted onscreen.	-.11	<b>.63</b>	.39
I sometimes found myself thinking of ways I disagreed with what was being presented by the show.	.02	<b>.82</b>	-.07
I couldn’t help thinking about how elements of the show were inaccurate.	-.09	<b>.72</b>	-.16
I found myself looking for flaws in the program.	-.16	<b>.72</b>	-.14
While watching, I felt skeptical of the position the filmmakers seemed to be advocating.	.10	<b>.72</b>	-.29

**Figure 2.** Model of the indirect effect of transportation on vaccine attitudes \* =  $p < .05$ .

this effect. This study offers a tough test of the narrative influence process and the results of our model testing shed additional light on the nature of that process.

Results further revealed that counterarguing did not mediate the relationship between transportation and vaccine attitudes. This is an important finding given that models of narrative persuasion converge to posit counterarguing as a key mechanism of narrative persuasion (Green & Brock, 2000; Moyer-Gusé, 2008; Slater & Rouner, 2002). While we are mindful of the pitfalls associated with making too much of a null result, several other studies have also failed to find support for this relationship (e.g., Igartua & Casanova, 2016; Moyer-Gusé & Nabi, 2010; Van Leeuwen et al., 2017). Conversely, some research has shown that transportation does indeed lead to story consistent beliefs via counterarguing (e.g., Banerjee & Greene, 2012, 2013; Green & Brock, 2000). While the present null findings certainly do not imply that the theoretical relationship between transportation, counterarguing, and attitudes is without merit, they do highlight the importance of future research to better understand the boundaries and nuance of this process. That is, under what conditions can we expect counterarguing to mediate the relationship between transportation into a narrative and story consistent attitudes? In the present study we may not expect counterarguing to be a key part of the narrative persuasion process given that we were not dealing

with a particularly counter-attitudinal population. Indeed, a variety of factors could theoretically be important here such as the story topic, the level of audience involvement, or the degree to which the message is counter-attitudinal and therefore likely to induce message resistance in the first place. In the present study, prior attitudes did not moderate this relationship, however we suspect these results may likely differ among a sample where greater polarization was present.

The current study tested the role of two additional cognitive mechanisms to advance our understanding of issue-related thoughts in the narrative persuasion process—self-referencing and positive issue-related thoughts. Both mediated the relationship between transportation and story-consistent attitudes. Viewers who experienced greater transportation related the story more to their own lives and generated more supportive thoughts about the issue. These findings are important because they contribute to our growing understanding of the specific mechanisms of narrative influence. More broadly, these results also offer some evidence that transportation does not necessarily limit one’s access to their own thoughts and experiences during the entire course of a narrative. That is, the results underscore a unique paradox of transportation—that highly transported viewers, by definition, should temporarily experience less access to their own thoughts and identity. At the same time, those who were more transported also reported more self-

referencing. It has been suggested that this paradox may be explained by the notion that viewers fluctuate between periods of greater absorption into the narrative followed by periods of reflection (Bezdek & Gerrig, 2017; Moyer-Gusé, 2015). Our findings are consistent with this explanation, showing that the more participants were transported, the more likely they were to experience these periods of reflection (i.e., self-referencing). This also has important implications for deictic shift theory, suggesting that narrative reflection may indeed be an important part of the narrative influence process, as suggested by the theory (Hamby et al., 2017).

Although this study offers a number of new insights regarding narrative persuasion and issue-related thoughts, the data are also constrained by several limitations. One such limitation concerns our use of measured transportation instead of manipulating levels of transportation between participants. This approach, of course, leads to ambiguity in establishing the causal direction from transportation to outcomes. That said, post hoc analyses in the present study show that transportation into the MMR narrative was not significantly correlated with prior attitudes toward childhood vaccination ( $r = .11, p = .39$ ). This casts significant doubt on the alternative explanation that transportation is merely a proxy for pretest levels of support for childhood vaccination.

Although this study showed that the MMR narrative affected vaccine-related attitudes, future research could benefit from a behavioral measure with a broader sample of the population. Moreover, clarifying how these results hold up across a variety of stimuli featuring different characters, situations, and genres would better identify any potential boundary conditions that may exist. As a next step, it would be useful to examine the extent to which an entertainment narrative could motivate parents of young children to have their child vaccinated if the choice were in front of them. Future research should examine such behavioral measures using immediate and delayed posttests.

In summary, this research has advanced our understanding of the potential persuasive effects of an entertainment narrative. Moreover, this work has taken steps toward improving our understanding of the mechanisms of narrative persuasion and answers the call to consider other types of issue-related thoughts within a narrative context beyond counterarguing and further demonstrate the value in doing so (De Graaf & van Leeuwen, 2017; Hoeken & Fikkers, 2014; Niederdeppe et al., 2012). This more nuanced understanding of the role of positive thoughts and self-referencing helps to create a more complete picture of the way individuals experience persuasion in a narrative context and offer evidence of how real-world entertainment narratives can shape attitudes about childhood vaccination.

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## ORCID

Emily Moyer-Gusé  <http://orcid.org/0000-0001-7971-0934>  
Kara Rader  <http://orcid.org/0000-0001-8947-9035>

## References

- Banerjee, S. C., & Greene, K. (2012). Role of transportation in the persuasion process: Cognitive and affective responses to antidrug narratives. *Journal of Health Communication, 17*(5), 564–581. doi:10.1080/10810730.2011.635779
- Banerjee, S. C., & Greene, K. (2013). Examining narrative transportation to anti-alcohol narratives. *Journal of Substance Use, 18*, 196–210.
- Betsch, C., Ulshofer, C., Renkewitz, F., & Betsch, T. (2011). The influence of narrative v. statistical information on perceiving vaccination risks. *Medical Decision Making, 31*(5), 742–753. doi:10.1177/0272989X11400419
- Bezdek, M. A., & Gerrig, R. J. (2017). When narrative transportation narrows attention: Changes in attentional focus during suspenseful film viewing. *Media Psychology, 20*, 60–89. doi:10.1080/15213269.2015.1121830
- Braddock, K., & Dillard, J. P. (2016). Meta-analytic evidence for the persuasive effects of narratives on beliefs, attitudes, intentions, and behaviors. *Communication Monographs, 83*, 446–467. doi:10.1080/03637751.2015.1128555
- Burnkrant, R. E., & Unnava, H. R. (1989). Self-referencing: A strategy for increasing processing of message content. *Personality & Social Psychology Bulletin, 15*, 628–638. doi:10.1177/0146167289154015
- Burnkrant, R. E., & Unnava, H. R. (1995). Effects of self-referencing on persuasion. *Journal of Consumer Research, 22*, 17–26. doi:10.1086/209432
- CDC (2022). Measles (Rubeola): Cases and outbreaks. Center for disease control and prevention. Retrieved January 25, 2022 from <https://www.cdc.gov/measles/cases-outbreaks.html>
- Chen, M., Bell, R. A., & Taylor, L. D. (2016). Narrator point of view and persuasion in health narratives: The role of protagonist-reader similarity, identification, and self-referencing. *Journal of Health Communication, 21*(8), 908–918. doi:10.1080/10810730.2016.1177147
- Chen, M., Bell, R. A., & Taylor, L. D. (2017). Persuasive effects of point of view, protagonist competence, and similarity in a health narrative about type 2 diabetes. *Journal of Health Communication, 22*(8), 702–712. doi:10.1080/10810730.2017.1341568
- Debevec, K., & Iyer, E. (1988). Self-referencing as a mediator of the effectiveness of sex-role portrayals in advertising. *Psychology and Marketing, 5*, 71–84. doi:10.1002/mar.4220050106
- De Graaf, A., & van Leeuwen, L. (2017). The role of absorption processes in narrative health communication. In M. M. Kuijpers, E. S. Tan, K. Bálint, & M. M. Doicaru (Eds.), *Narrative absorption* (pp. 177–198). Amsterdam, The Netherlands: John Benjamins Publishing Company.
- Dunlop, S. M., Wakefield, M., & Kashima, Y. (2010). Pathways to persuasion: Cognitive and experimental responses to health-promoting mass media messages. *Communication Research, 37*(1), 133–164. doi:10.1177/0093650209351912
- Escalas, J. E. (2004). Imagine yourself in the product: Mental simulation, narrative transportation, and persuasion. *Journal of Advertising, 33*(2), 37–48. doi:10.1080/00913367.2004.10639163
- Escalas, J. E. (2007). Self-referencing and persuasion: Narrative transportation versus analytical elaboration. *Journal of Consumer Research, 33*, 421–429.
- Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes, 38*, 247–266. doi:10.1207/s15326950dp3802\_5
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*, 701–721. doi:10.1037/0022-3514.79.5.701

- Hamby, A., Brinberg, D., & Jaccard, J. (2017). A conceptual framework of narrative persuasion. *Journal of Media Psychology, 30*, 113–124. doi:10.1027/1864-1105/a000187
- Hargreaves, A. L., Nowak, G., Frew, P. M., Hinman, A. R., Orenstein, W. A., Mendel, J., ... Bednarczyk, R. A. (2020). Adherence to timely vaccinations in the United States. *Pediatrics, 145*(3), e20190783. doi:10.1542/peds.2019-0783
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). New York, N.Y.: Guilford.
- Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior, 34*, 777–792. doi:10.1177/1090198106291963
- Hoeken, H., & Flikkers, K. M. (2014). Issue-relevant thinking and identification as mechanisms of narrative persuasion. *Poetics, 44*, 84–99. doi:10.1016/j.poetic.2014.05.001
- Horne, Z., Powell, D., Hummel, J. E., & Holyoak, K. J. (2015). Countering antivaccination attitudes. Proceedings of the National Academy of Sciences, USA, 112, 10321–10324. doi:10.1073/pnas.1504019112
- Igartua, J. J., & Casanova, J. V. (2016). Identification with characters, elaboration, and counterarguing in entertainment-education interventions through audiovisual fiction. *Journal of Health Communication, 21*, 293–300. doi:10.1080/10810730.2015.1064494
- Ivanov, B., Pfau, M., & Parker, K. A. (2009). Can inoculation withstand multiple attacks? An examination of the effectiveness of the inoculation strategy compared to the supportive and restoration strategies. *Communication Research, 36*(5), 655–676. doi:10.1177/0093650209338909
- Kennedy, J. (2020). Vaccine hesitancy: A growing concern. *Pediatric Drugs, 22*, 105–111.
- Kreuter, M. W., Holmes, K., Alcaraz, K., Kalesan, B., Rath, S., Richert, M., ... Clark, E. M. (2010). Comparing narrative and informational videos to increase mammography in low-income African American women. *Patient Education and Counseling, 81*, 6–14. doi:10.1016/j.pec.2010.09.008
- Larsen, S. F., & Seilman, U. (1988). Personal reminders while reading literature. *Text-Interdisciplinary Journal for the Study of Discourse, 8*, 411–430. doi:10.1515/text.1.1988.8.4.411
- Luong, K. T., & Moyer-Gusé, E. (2021). Can altruistic emotions promote vaccine advocacy? Examining the use of empathy and elevation in vaccine messages. *Journal of Health Communication*. doi:10.1080/10810730.2021.2002981
- Ma, Z. (2019). Effects of immersive stories on prosocial attitudes and willingness to help: Testing psychological mechanisms. *Media Psychology*. doi:10.1080/15213269.2019.1651655
- McQueen, A., Kreuter, M. W., Kalesan, B., & Alcaraz, K. I. (2011). Understanding narrative effects: The impact of breast cancer survivor stories on message processing, attitudes, and beliefs among African American women. *Health Psychology, 30*, 674–682. doi:10.1037/a0025395
- Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. *Communication Theory, 18*, 407–425. doi:10.1111/j.1468-2885.2008.00328.x
- Moyer-Gusé, E. (2015). Extending the examination of audience involvement with media personae: Response to brown. *Communication Theory, 25*, 284–289. doi:10.1111/comt.12071
- Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research, 36*, 26–52. doi:10.1111/j.1468-2958.2009.01367.x
- Nabi, R. L., Moyer-Gusé, E., & Byrne, S. (2007). All joking aside: A serious investigation into the persuasive effect of funny social issue messages. *Communication Monographs, 74*, 29–54. doi:10.1080/03637750701196896
- Niederdeppe, J., Kim, H. K., Lundell, H., Fazili, F., & Frazier, B. (2012). Beyond counterarguing: Simple elaboration, complex integration, and counterelaboration in response to variations in narrative focus and sidedness. *Journal of Communication, 62*, 758–777. doi:10.1111/j.1460-2466.2012.01671.x
- Olive, J. K., Hotez, P. J., Damania, A., & Nolan, M. S. (2018). The state of the antivaccine movement in the United States: A focused examination of nonmedical exemptions in states and counties. *PLoS medicine, 15*(6), e1002578. doi:10.1371/journal.pmed.1002578
- Pratia, G., Pietrantonio, L., & Zani, B. (2012). Influenza vaccination: The persuasiveness of messages among people aged 65 years and older. *Health Communication, 27*(5), 413–420. doi:10.1080/10410236.2011.606523
- Quintero Johnson, J. M., & Sangalang, A. (2017). Testing the explanatory power of two measures of narrative involvement: An investigation of the influence of transportation and narrative engagement on the process of narrative persuasion. *Media Psychology, 20*, 144–173.
- Ratcliff, C. L., & Sun, Y. (2020). Overcoming resistance through narratives: Findings from a meta-analytic review. *Human Communication Research*. doi:10.1093/hcr/hqz017
- Slater, M. D. (1997). Persuasion processes across receiver goals and message genres. *Communication Theory, 7*, 125–148.
- Slater, M. D., & Rouner, D. (2002). Entertainment—education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory, 12*, 173–191. doi:10.1111/j.1468-2885.2002.tb00265.x
- Slater, M. D., Rouner, D., & Long, M. (2006). Television dramas and support for controversial public policies: Effects and mechanisms. *Journal of Communication, 56*, 235–252. doi:10.1111/j.1460-2466.2006.00017.x
- Sujan, M., Bettman, J. R., & Baumgartner, H. (1993). Influencing consumer judgments using autobiographical memories: A self-referencing perspective. *Journal of Marketing Research, 30*, 422–436. doi:10.2307/3172688
- Van Laer, T., de Ruyter, K., Visconti, L. M., & Wetzels, M. (2014). The extended transportation-imagery model: A meta-analysis of the antecedents and consequences of consumers' narrative transportation. *Journal of Consumer Research, 40*, 797–817. doi:10.1086/673383
- Van Leeuwen, L., Van Den Putte, B., Renes, R. J., & Leeuwis, C. (2017). Do narrative engagement and recipients' thoughts explain the impact of an entertainment-education narrative on discouraging binge drinking? *Media Psychology, 20*, 194–220. doi:10.1080/15213269.2016.1142379
- Wang, J., & Calder, B. J. (2006). Media transportation and advertising. *Journal of Consumer Research, 33*, 151–162. doi:10.1086/506296