Credible narrators and misinformed readers

Kenneth J. Houghton[1] · Rachel C. Poirier[2] · Celia M. Klin[2]

Abstract

Stories have a powerful ability to shape our beliefs, attitudes, opinions, and knowledge about the world. In the current work, we ask how readers evaluate the truth of facts embedded in fiction. In three experiments, we investigate the influence of the credibility of the story's narrator on the likelihood that readers encode and recall misinformation contained in the narrative. Participants read stories containing accurate real-world facts and misleading lures. The stories were narrated by either a credible or a non-credible narrator. Following the stories, participants were tested for the critical story information with a free response test of their general knowledge (Experiments 1 and 2) or with a speeded true-false test (Experiment 3). Overall, narrator credibility had no influence on readers' memory for accurate information. However, readers were more likely to reproduce and affirm misinformation when it was delivered by a credible than a non-credible narrator. The current studies suggest that the credibility and the expertise of the source of the information are critical in determining what readers remember and believe.

Keywords Discourse processing · Reading · Text comprehension · Memory · Inaccurate information

Introduction

Stories have a powerful ability to shape our beliefs, our attitudes, and our opinions as well as our knowledge about the world. Even fictional stories often include facts from the real world, especially in genres where the plot and setting are realistic. Fictional characters are often described as living in actual places – eating a bagel and lox at Sarge's deli on 3rd avenue in NYC, or living during specific historical periods – struggling to feed one's family during the Great Depression. Some of these facts are true in the real world whereas many are not. Most fictional works are written to entertain rather than to teach readers a lesson about geography, history, or science. The question is how readers evaluate facts embedded in fictional works.

It has long been known by educators, as well as those in politics, the news media, and advertising, that people's attitudes and beliefs about the actual world can be strongly influenced by stories; this includes stories that are read, heard, or viewed as videos, as well as across genres. Sesame Street uses characters such as a giant yellow bird – clearly fictional even to the young children who watch – to teach real-world lessons about numbers, letters, and friendship. The parents who fought to keep the Harry Potter books out of their children's schools believed that these clearly fictional works might influence their children's beliefs and values (e.g., DelFattore, 2002; Green et al., 2004).

Empirical studies have confirmed the intuition that fictional stories can influence attitudes and behaviors (e.g., Appel & Richter, 2010, 2013; Green & Brock, 2000; Gerrig & Prentice, 1991). For example, watching violence on television can cause people to become more fearful of being victimized (Shanahan & Morgan, 1999). Strange and Leung (1999) found that a narrative was just as persuasive when it was labeled as fiction as when it was labeled as news. Prentice et al. (1997) found that people accepted false assertions, such as "aerobic exercise weakens your heart and lungs" and "mental illness is contagious," if those assertions were embedded in fictional narratives. Appel and Richter (2007) found that these effects were persistent and even increasing after a 2-week delay. Fictional information is not only

✉ Kenneth J. Houghton
khoughton@ut.edu

1 Psychology Department, The University of Tampa, Tampa, FL, USA

2 Department of Psychology, Binghamton University, Binghamton, NY, USA

treated as true in the real world at the moment of reading, but these beliefs can be integrated into readers' long-term memory representation.

Readers' ability to evaluate story information has been studied by asking how readers evaluate facts – both true and false in the real world – embedded in a fictional narrative (e.g., Eslick et al., 2011; Marsh, 2004; Rapp & Braasch, 2014; Rapp, 2016). In a typical study, participants read a series of short narratives. A set of facts is embedded into the narratives. The facts are accurate, misleading, or uninformative. For example, in an accurate condition a story might include a sentence describing a character's desire to "cross the Pacific, the world's largest ocean." In a misleading condition the story character shares misinformation: "One day I want to cross the Atlantic, the world's largest ocean." The uninformative, or neutral, condition is a baseline condition in which the story character simply describes her intention to "cross the world's largest ocean" without directly naming the ocean. After reading the set of narratives, readers are asked a series of general knowledge questions, some of which address the critical information from the passages and some of which address information unrelated to the passages. Across a number of studies (e.g., Fazio et al., 2013; Marsh et al., 2003), readers were more likely to provide the wrong answer if the misleading information was included in the story. Even if readers may have known the correct information before reading, and even though the misinformation was embedded in a narrative that was clearly fictional, the inaccurate story information influenced readers' answers.

These findings have been well replicated (Appel & Richter, 2007; Butler et al., 2012; Fazio et al., 2013; Eslick et al., 2011; Jacovina et al., 2014; Hinze et al., 2014; Marsh, 2004; Marsh & Fazio, 2006; Marsh et al., 2003, 2005; Rapp & Braasch, 2014; Rapp, 2008), demonstrating that readers' tendency to encode and reproduce misinformation from fiction is robust. Misinformation has a prolonged effect on readers' memory, even after subsequent corrections (Johnson & Seifert, 1994). Moreover, Appel and Richter (2007) found that the persuasiveness of the false statements in a fictional narrative increased with a 2-week delay. Readers' acceptance of the false information is also difficult to distinguish. This is the case even with interventions that have been successful in reducing false beliefs in other episodic memory tasks. For example, when the presentation rate of the story was slowed (Fazio & Marsh, 2008), allowing readers more time to assess the truthfulness of the information, not only did this not reduce participants' reproduction of inaccurate information, it increased the number of errors. Similarly, Marsh and Fazio (2006) found that readers made errors on a general knowledge test even when they received a warning that the stories contained inaccurate information (see also, Eslick et al., 2011). Finally, readers reproduced inaccurate

information even when they had prior knowledge about the topic (Green, 2004; Rapp & Braasch, 2014).

The robustness of readers' belief in inaccurate information is in some ways unsurprising. Readers of fiction are often deeply engaged, being psychologically transported into the fictional world (e.g., Gerrig, 1993; Green & Brock, 2002). Readers see what the character sees (Green, 2004), hear what the character hears (Gunraj & Klin, 2012; Gunraj et al., 2014; Klin & Drumm, 2010), and experience the character's emotions, essentially taking a mental journal into the story world. When readers experience this kind of deep involvement in the story world, they are more likely to blend the details of the story world with the real world (Appel & Richter, 2007). Green et al. (2004) have argued that fictional communications are persuasive both because of readers' lack of careful scrutiny of the narrative and because of their transportation into the story world.

Readers' tendency to blur the lines between fact and fiction can be explained with basic memory processes that are at work during reading (e.g., Myers & O'Brien, 1998). When people learn something new – from a movie, a conversation with a friend, or a story – the information is not encoded into a compartmentalized representation (e.g., Johnson et al., 1993). That is, rather than being encoded in a detailed episodic representation (e.g., Henkel & Mattson, 2011), information is most often stored in a general semantic representation (Tulving, 1972) without source information. Given this, at least some of the time and under some circumstances, information learned from a fictional narrative should be integrated with the reader's prior knowledge. And, when answering general knowledge questions after reading a fictional narrative, readers simply retrieve the information that is the most easily accessible in memory (Benjamin et al., 1998) based on factors such as repetition and recency rather than source.

Although readers are often persuaded by fictional communications, there are certainly conditions under which they accurately attribute the source of the information. For example, Marsh et al. (2003) found that readers were able to correctly attribute information learned in a story to the story. However, despite the accuracy of their source monitoring, readers often believed that the facts were also part of their prior knowledge. This occurred even for misleading information, which was unlikely to have been encountered before.

Accuracy in source monitoring has been found to increase when the fictional context is unrealistic, making the story context and the real-world context distinct. Rapp et al. (2014) embedded general world information – accurate and misleading – into stories with unrealistic settings, such as those found in fantasy and science fiction novels. In contrast with stories with real-world settings, when the settings and plots were unrealistic, the use of misinformation was reduced. Rapp et al. (2014) suggested that the reduction

in reliance on story information might have resulted from increased epistemic evaluations: When the context and characters were distinct from the real world, readers more successfully kept track of the source of the story information. They relied less on story information to answer questions.

Like story genre, the credibility of the source of fictional information might influence source monitoring. A non-believable source may also increase source monitoring and epistemic evaluation. Although not examined directly, there is evidence from non-fiction that the credibility of the source of the information is important. For example, misleading news headlines have been shown to decrease readers' memory for the factual information in the article. Readers' initial impression of the reliability of the information influenced how likely they were to remember that information (Ecker et al., 2014). Likewise, studies have shown that readers can be "inoculated" against misinformation if they are warned ahead of time that the forthcoming information might be inaccurate and if they are given credible contradictory information prior to reading the misinformation (Cook, et al., 2017).

Although the influence of source credibility on readers' beliefs has not been examined for fictional narratives, Sparks and Rapp (2011) investigated the influence of source credibility on readers' comprehension more generally. Participants read narratives in which a reporter described an interview with an informant. Critically, in a preface statement, readers were told whether the informant was trustworthy or untrustworthy. Sparks and Rapp examined the degree to which readers generated a trait inference about a character described by the informant (2011). In three out of four experiments, the probability of drawing a trait inference was not influenced by the credibility of the informant. That is, readers expected characters to behave in trait-consistent ways regardless of the credibility of the person providing the character descriptions. This was found even when participants were encouraged to attend to the credibility of the source. Only when readers were encouraged to both attend to the credibility of the source and make explicit evaluations about the characters did the credibility of the informant have an effect.

Based on these findings, Rapp (2016) concluded that "source evaluation requires substantial motivation, indicating the need for explicit instructional guidance and support to help people avoid the allure of inaccuracies conveyed by unreliable informants" (p. 284). Indeed, Salovich and Rapp (2020) found that if readers are explicitly instructed to reflect on their general susceptibility to inaccurate information prior to reading stories, they were less likely to be influenced by inaccuracies embedded in those stories. Perhaps the credibility of the source is powerful, as Sparks and Rapp (2011) suspected, but the traits of the informant in their materials were simply not salient enough to

capture readers' attention without explicit guidance. After all, the informant was not the primary character in the narrative. Further, information about the informant's trustworthiness was provided in a preface to the story rather than integrated into the story: "Quentin Carter has been the River Village fire chief…Quentin is hardworking and willing to help…Residents know that Quentin is honest and trustworthy." We ask if the lack of trustworthiness or credibility of a more central character, such as the protagonist, might be salient enough to lead readers to evaluate the source of the information, and result in reduced susceptibility to inaccurate information.

In contrast with minor or secondary story characters, story protagonists have a powerful influence on readers' beliefs. Especially when readers are transported into the story world, protagonists are salient and powerful in shaping a reader's understanding (e.g., Morrow, 1985). Given an embodied, or grounded, cognition framework (e.g., Barsalou, 1999; Barsalou, 2008; Fischer & Zwaan, 2008; Gibbs et al., 2006; Zwaan, 1999), a reader's understanding of the narrative world involves forming sensorimotor simulations of the actions and events described in the text, often from the perspective of the protagonist (e.g., Barsalou, 2008; Klin & Drumm, 2010; Yao et al., 2011). A number of dimensions of the protagonist's experience have been shown to influence readers' comprehension, including the character's movement through time (e.g., Gerrig, 1993; Zwaan, 1996) and space (Levine & Klin, 2001), goals (Houghton & Klin, 2019), their motor movements (e.g., Glenberg & Kashak, 2002; Zwaan et al., 2010), and features of their voices, such as emotion (Scherer et al.,1991) and speaking rate (Alexander & Nygaard, 2008; Gunraj et al., 2014). Given this, might their credibility also influence comprehension?

In the current experiments, the protagonist is also the story's narrator. Narrators have an especially powerful influence on comprehension (Dixon & Bortolussi, 1996, 2019; Mullins & Dixon, 2007). According to Dixon and Bortolussi (1996), "[readers] cooperate with the narrator by interpreting the characters and events of the described world in a way that makes the narrator's stance rational and justified" (p. 405). Mullins and Dixon (2007) found that when information was marked as important by the narrator, it was better remembered. This occurred when the narrator was a first-person narrator, present in the story, as well as when the narrator was a third-person narrator, absent from the story.

In a series of experiments, we ask if the credibility of the narrator influences readers' comprehension of facts embedded in fictional narratives. More specifically, we ask if readers' tendency to incorporate misinformation from a fictional narrative into their general knowledge is affected by the traits of the narrator. Are readers more likely to reproduce misinformation, and treat it as true in the real

world, when the information is provided by a reliable than an unreliable narrator?

Experiment 1

In Experiment 1, participants read two stories – one that was narrated by a reliable narrator and one that was narrated by an unreliable narrator. A set of facts was embedded in each story and appeared in one of three frames – Accurate, Misleading, or Neutral (e.g., Marsh, 2004). Following the stories, readers were given a general knowledge test that included a series of free-response questions. The critical questions addressed information that was included in the stories. If readers' comprehension is influenced by the reliability of the narrator, readers should be more likely to reproduce information, including misinformation, from a story narrated by a reliable character.

Method

Participants

Seventy-two native English-speaking undergraduates participated in the experiment in exchange for course credit. Assuming a medium effect size, power is approximately 90% (Cohen, 1988; G*Power; Faul et al., 2007).

Materials and design

Two stories from Marsh (2004), "The Doctor Game" and "Ocean Voyage," were modified to create a Reliable and Unreliable version of each. See excerpts in Appendix A. To manipulate narrator reliability, introductory paragraphs were added to each story to frame the narrators as being reliable or unreliable. These paragraphs were presented in the narrators' voice. The narrators in the Reliable condition were described as having a good memory for events and being responsible and serious. The narrators in the Unreliable version were described as having memory troubles and being irresponsible and undependable. For example, the Reliable version of "The Doctor Game" included details of the narrator's excellent memory and studiousness (e.g., "I remember every detail of this story…"). In the Unreliable version, the narrator was described as forgetful (e.g., "I don't remember every detail of this story…"). In addition to the narrator information in the introduction, details throughout the story were consistent with these traits: for example, "I studied hard in high school…" or "I barely paid attention in high school…" For complete stories, please see the Online

Supplementary Materials (OSM) via the Open Science Framework at osf.io/qg62j.

Twenty-four fact statements from Marsh et al. (2003) appeared across the two stories, with 12 statements in each story. These statements were based on normed facts from Nelson and Narens (1980) and appeared in one of three possible frames: Accurate, Misleading, or Neutral. Facts in the Accurate frame contained the correct information; for example, "He explained that one day he wanted to cross the *Pacific*, the world's largest ocean." Facts in the Misleading frame contained inaccurate, but plausible information; for example, "He explained that one day he wanted to cross the *Atlantic*, the world's largest ocean." Finally, facts in the Neutral frame described the critical information without directly naming the target answer; for example, "He explained that one day he wanted to cross the world's largest ocean."

The 12 statements in each of the two stories were counterbalanced so that there were four statements in each story in each of the three frames. All statements appeared in each possible frame across participants. After reading each story, participants took a general knowledge test with 52 questions: Twenty-four questions addressed the 24 critical statements embedded in the stories; 28 filler questions addressed information unrelated to the stories. To discourage guessing, participants were instructed to leave a question blank if they did not know the answer.

Finally, participants answered two survey questions. The first measured participants' sense of the narrators' trustworthiness: "Every day we are presented with information from both trustworthy and untrustworthy sources. This is indeed the case with things that we read. We are interested in finding out how much you TRUSTED the narrators of each of the stories that you read. How much did you trust the narrator of <STORY TITLE>? Please circle a number on a scale from 1 (Did not trust at all) to 7 (Trusted very much)." The second survey question measured how believable participants found the facts: "Each of the stories that you read contained several real-world facts. Maybe you noticed some. For example, in "The Doctor Game" there were several facts related to medicine or the human body. Likewise, in "Ocean Voyage" there were several facts related to boating. Overall, how BELIEVABLE did you find the facts in <STORY TITLE>? Please circle a number on a scale from 1 (Not at all believable) to 7 (Very believable)."

Procedure

Participants received all experimental materials on paper. Each participant read two stories – one in a Reliable version and one in an Unreliable version. An equal number of participants read each story in each of the two versions and in each of two orders. Participants had an unlimited amount of time to read. After reading the first story, participants completed

Table 1 Mean Proportion of Responses as a Function of Fact Frame and Narrator Reliability (Experiment 1)

	Misinformation Responses			
	Reliable Narrator	Unreliable Narrator	Mean	Mean Difference
Accurate	.035	.035	.035	.000
Neutral	.042	.049	.046	-.007
Misleading	.406	.323	.365	.083*
Mean	.161	.136		
	Correct Responses			
	Reliable Narrator	Unreliable Narrator	Mean	Mean Difference
Accurate	.486	.542	.514	-.056
Neutral	.312	.299	.306	.013
Misleading	.208	.215	.212	-.007
Mean	.335	.352		

* $p < .05$

a distractor task in which they arranged sets of five numbers (e.g., 42801) in numerical order for 5 min. After reading the second story, they completed a different distractor task in which they arranged sets of letters in alphabetical order for 5 min. These distractor tasks were used so that the information from the stories was not in readers' working memory when they took the general knowledge tests. After each distractor task, participants took a general knowledge test. The test began with the following instructions: "Please answer each of the following questions. Please do not guess. If you do not know an answer, please leave it blank." Participants answered a total of 52 general knowledge questions with paper and pencil. Following the general knowledge test, participants completed the two survey questions.

Results

Blank responses

Participants were not more likely to leave a filler question blank (41.62% of filler questions) than to leave a question blank that pertained to a fact they had seen in the story (42.19% of critical questions), $p = .72$. For the critical questions, reliability had no effect: Participants were about equally likely to leave a question blank when the information came from a story with a reliable narrator (19.97%) than from a story with an unreliable narrator (22.22%), $p = .10$.

Misinformation answers

To examine the misinformation and correct answers, we ran two mixed-effect logistic regressions (Bates et al., 2015) where the outcome variable was binarized as misinformation versus other (collapsing over correct and incorrect responses) in the first model and correct versus other (collapsing over misinformation responses and incorrect

responses) in the second. For both models, fact framing (Misleading, Accurate, Neutral), narrator reliability (Unreliable, Reliable) and their interaction were specified as fixed effects, while participant and fact were specified as random intercepts.

The first model revealed that, not surprisingly, participants were more likely to produce misinformation when presented with a Misleading frame ($M = .365$) than when presented with an Accurate frame ($M = .035$), regardless of the reliability of the narrative; Misleading versus Accurate for Reliable narrator: $\beta = 3.063$, $SE = .348$, $p < .001$; and for Unreliable narrator: $\beta = 2.677$, $SE = .349$, $p < .001$. Participants were also more likely to provide misinformation answers when presented with the Misleading frame than the Neutral frame ($M = .046$), again, regardless of the reliability of the narrative; Misleading versus Neutral for Reliable narrator: $\beta = 2.869$, $SE = .323$, $p < .001$; and for Unreliable narrator: $\beta = 2.319$, $SE = .305$, $p < .001$. The difference in the number of misinformation responses between the accurate and neutral frames was not significant (see Table 1).

To address our primary question, we compared the frequency with which participants provided a misinformation answer after having read a Misleading frame, as a function of the reliability of the narrator. As predicted, when presented with misinformation in the story, participants were more likely to reproduce it with a misinformation response – over either a correct or incorrect response – if the narrator was reliable ($M = .406$) than if the narrator was unreliable ($M = .323$; $\beta = .386$, $SE = .179$, $p = .031$). The reliability of the narrator influenced readers' belief in misinformation.

Correct answers

Not surprisingly, participants were more likely to produce a correct response after reading information presented in the Accurate frame ($M = .514$) in the story compared to when

they were presented with the Misleading frame ($M = .212$), and occurred regardless of the reliability of the narrator; Reliable narrator: $\beta = 1.719$, $SE = .217$, $p < .001$; Unreliable narrator: $\beta = 1.964$, $SE = .217$, $p < .001$. Participants were also more likely to produce a correct response when presented with an Accurate frame than when presented with a Neutral frame ($M = .306$), again, regardless of the reliability of the narrator; Reliable: $\beta = 1.015$, $SE = .202$, $p < .001$; Unreliable: $\beta = 1.402$, $SE = .205$, $p < .001$. Finally, participants were more likely to produce a correct response when the framing was neutral than when it was misleading, as misleading information sometimes led them to produce a misinformation answer. The increase in correct responses for the neutral frame compared with the Misleading frame occurred regardless of the reliability of the narrator; Reliable: $\beta = .703$, $SE = .22$, $p = .001$; Unreliable: $\beta = .562$, $SE = .219$, $p = .01$. Narrator reliability did not influence correct responses, regardless of the type of framing.

Trust and believability self-report

The responses to the two survey questions indicate that the manipulation of narrator reliability was successful. When asked, "How much do you believe the facts that you read?" participants provided higher ratings when the facts were provided by a Reliable narrator ($M = 5.18$) than by an Unreliable narrator ($M = 4.40$); $t(71) = 3.46$, $SEM = .26$, $p < .01$, $d = .50$. Further, when asked, "How much did you trust the narrator?" participants indicated that they trusted reliable narrators ($M = 4.83$) more than unreliable narrators ($M = 3.61$); $t(71) = 5.42$, $SEM = .27$, $p < .001$, $d = .76$.

Discussion

The results from Experiment 1 indicate that narrator reliability influences readers' comprehension. Although narrator reliability did not influence responses when accurate information was included in the story, readers were more likely to reproduce misinformation included in the story when it was shared by a reliable narrator. Further, the reliability effect was larger when the story contained misinformation than when it contained facts in an Accurate or Neutral frame.

When contrasting the data for the two different experimental stories it is interesting to note that there was a greater reliability effect in the Doctor than the Ocean story. Although there are not enough data points for a meaningful analysis, the 8.3% reliability effect (misinformation answers in the Reliable vs. Unreliable version) was primarily driven by the Doctor Story. Participants provided 13.9% more misinformation answers after reading the Reliable version than the Unreliable version. In contrast, the reliability effect was almost nonexistent for the Ocean story; readers provided

2.8% more misinformation answers after reading the Reliable than the Unreliable version. These different effect sizes suggest that reliability may have been different in fundamental ways in the two experimental stories, resulting in a manipulation that was more variable than we intended.

Consider the vigorous debate in the literature about the nature of unreliable narrators. Cognitive narratologists treat this category as broad – differing across genre and media, the reader's cultural framework, the relationship between the narrator and the author, and so on. Nunning (2008) has argued that "the concept of the unreliable narrator needs to be rethought because, as currently defined, it is terminologically imprecise and theoretically inadequate" (p. 30). Although it is beyond the scope of the current paper to grapple with all the complexities and categories of narrator reliability, it is important to at least consider the nature of the unreliability built into the stories in Experiment 1, especially given the different effect sizes for the two stories.

Although there are a number of ways to divide the broad landscape of narrator reliability, Appel and Mara's (2013) division of source credibility into the categories of expertise and trustworthiness might be helpful in thinking about the materials in Experiment 1. According to Appel and Mara, expertise is the "extent to which a speaker is perceived to be capable of making correct assertions" (p. 915). This seems to align closely with the Doctor story, where the reliable narrator was described as a studious and strong medical student with an excellent memory – an expert. In the Unreliable version she was an inattentive and careless student with a poor memory for detail – a nonexpert. In contrast, trustworthiness "refers to the degree to which an audience perceives the assertions made by the communicator to be ones that the speaker considers valid" (Pornpitakpan, 2004, p. 244, as quoted in Appel and Mara). This seems to be a better description of the manipulation of reliability in the Ocean story, where the focus was less on how knowledgeable the narrator was and more on her personality. In the Reliable version, the narrator was described as thoughtful and kind. In the Unreliable version she was described as an oddball. Perhaps this better describes an untrustworthy character than one who is a nonexpert who lacks credibility. In Experiment 2, we refine our definition and highlight the narrator's expertise. We use only a single story to focus on credibility and reduce potential carry-over effects based on the influence of readers' perceptions of one narrator on their perceptions of a second.

Experiment 2

In Experiment 2 we ask again if comprehension of real-world facts is influenced by traits of the narrator of a fictional story. However, so as to not inadvertently study two

different narrator traits, we focused on credibility and, specifically, expertise. A new passage was written that was similar in length and structure to the passages used in Experiment 1. However, the passage emphasized the narrator's expertise. Wanda, the narrator, was described in the Credible version as possessing a great deal of information about the topic and having an excellent memory. In the Non-credible version, Wanda was described as investing minimal time in learning about the topic and having a poor memory for the events of the day.

In addition to focusing on only one type of narrator trait, the story began with a full-page introduction of the narrator. Readers were told that "we are interested in what people think about storytellers." These changes should increase readers' focus on the narrator's expertise for the events she is about to describe. In addition, the critical statements appeared only in an Accurate or Misleading frame. The Neutral frame was eliminated, as results did not differ in interesting ways for the Neutral and Accurate frames in Experiment 1. And finally, to address the concern about carry-over effects, readers read a single story in either the Credible or Non-credible version.

Method

Participants

Fifty-two native English-speaking undergraduates participated in the experiment in exchange for course credit.

Materials and design

Readers read either the Credible or Non-credible version of a single passage. This story was similar in length to the stories from Experiment 1; however, the structure differed in several ways. First, a full-page introduction preceded the story. See Appendix B. The introduction directed the reader to think about the narrator of the story: "In this study, we are interested in what people think about storytellers…." In the Credible version, the narrator is described as being thoughtful and intelligent with an excellent memory. In the Noncredible version, she is described as having a poor memory, and being an absent-minded person with a tendency to leave out or invent details. Throughout the passage, Wanda's credibility or non-credibility was emphasized. For example, in the Credible version Wanda states, "My excellent memory would come in handy for remembering all these cool facts." In the Non-credible version Wanda states, "My poor memory would come in handy for once, letting me forget these useless facts."

A total of 14 statements (Marsh, 2004) appeared in the story. Each statement was presented in the Accurate or Misleading frame. Statements were counterbalanced so that there were seven statements in each frame. There were two versions of the Credible and Non-credible passages, with each statement appearing in each of the two frames an equal number of times across participants.

A general knowledge test included questions about the 14 critical statements plus 26 filler questions unrelated to the story. The test instructions were identical to those in Experiment 1.

Finally, as in Experiment 1, a two-question Likert-type survey assessed participants' trust of the narrator and belief in the facts included in the story.

Procedure

The procedure was similar to Experiment 1. However, because there was only one story, participants read either the Credible or Non-credible version. After reading the story, participants completed a distractor task for 5 min and took the general knowledge test. Finally, participants answered the two-question survey.

Results

Blank responses

Unlike in Experiment 1, participants were more likely to leave filler questions blank (36.14%) than questions pertaining to facts they had seen in the story (30.05%), $\chi^2(1, N = 721) = 7.96$, $p < .01$. For critical questions, participants were about equally likely to leave a question blank when it came from a story with a Credible narrator (15.90%) than if it came from a story with a Non-credible narrator (14.15%), $p = .34$.

As before, we analyze these data with the use of two mixed-effect logistic regressions (Bates et al., 2015) – one each for binarized versions of correct and misinformation responses. The model structure (i.e., fixed, random effects) was the same as that specified in Experiment 1.

Misinformation answers

Participants were more likely to reproduce misinformation when presented with a Misleading frame ($M = .464$) than an Accurate frame ($M = .022$; Credible narrator: $\beta = 4.219$, $SE = .542$, $p < .001$; Non-credible narrator: $\beta = 3.507$, $SE = .539$, $p < .001$). We also replicated our key finding: Participants were more likely to produce misinformation when the narrator was Credible ($M = .534$) than when she was Non-credible ($M = .394$); $\beta = .634$, $SE = .246$, $p = .009$.

Table 2 Mean Proportion of Responses as a Function of Fact Frame and Narrator Credibility (Experiment 2)

| | Misinformation Responses | | | |
	Credible Narrator	Non-credible Narrator	Mean	Mean Difference
Accurate	.021	.022	.022	-.001
Misleading	.534	.394	.464	0.140**
Mean	.278	.208		
	Correct Responses			
	Credible Narrator	Non-credible Narrator	Mean	Mean Difference
Accurate	.524	.531	.528	-.007
Misleading	.132	.251	.192	-.119**
Mean	.328	.391		

** $p < .01$

Narrator credibility only affected responses when misinformation was included in the passage. There was no difference in the number of misinformation answers for the Credible and Non-credible narrator in the Accurate frame; $\beta = -.077$, $SE = .724$, $p = .914$ (see Table 2).

Correct answers

The second model showed that participants were more likely to produce correct information when presented with an Accurate frame ($M = .528$) as compared to a Misleading frame ($M = .192$); Credible narrator: $\beta = 2.765$, $SE = .328$, $p < .001$; Non-credible narrator: $\beta = 1.745$, $SE = .293$, $p < .001$. Of note, participants were more likely to provide correct answers after reading a Misleading frame if the narrator was Non-credible ($M = .251$) than Credible ($M = .132$; $\beta = .964$, $SE = .376$, $p = .01$). This did not occur when the frame was Accurate ($\beta = -.055$, $SE = .315$, $p > .8$). This tells us that readers reproduced less misinformation when the narrator was Non-credible (and, thus, produced more correct answers). In other words, readers were more likely to reject misinformation that was provided by the Non-credible narrator. Equally important to the hypothesis is the number of correct answers provided when the misleading fact was presented in the passage. In this situation, participants provided a correct answer more often when the narrator was Non-credible than when she was Credible. Again, readers were more likely to rely on their prior, correct, knowledge and disregard the misleading story information when the narrator was Non-credible.

Trust and believability self-report

When asked "How much do you believe the facts that you read?" participants were more likely to find the facts believable when they came from a Credible narrator (M = 5.68) than an Non-credible narrator ($M = 4.04$), $t(52) = 4.41$, $SEM = .38$, $p < .001$, $d = 1.20$. Similarly, when asked, "How much did you trust the narrator?" participants indicated that they trusted Credible narrators ($M = 5.11$) more than the Non-credible narrators ($M = 3.27$), $t(52) = 5.25$, SEM = .35, $p < .001$, $d = 1.44$.

Discussion

Readers were again more likely to reproduce misinformation when it was provided by a Credible than a Non-credible narrator. In contrast with Experiment 1, the manipulation of narrator credibility focused on the character's expertise rather than her trustworthiness. Readers also read just one story, eliminating the possibility of carryover effects. Although this narrows the generalizability of the results, it also allows for a more precise set of conclusions. If we take seriously the idea that "the concept of the unreliable narrator...is terminologically imprecise and theoretically inadequate" (Nunning, 2008), encompassing a number of discrete categories of character traits, more precision is needed in the empirical study of the influence of the traits of the narrator on readers' processing of misinformation.

In the current experiment, a number of manipulations were included with the goal of increasing the salience of the traits of the narrator. First, the narrator's credibility, or lack of credibility, was revisited throughout the story with self-reflective comments made by the narrator, such as "I've always been the type of person who actually read all of my textbooks and optional readings." These comments should have deepened the reader's sense of the narrator as well as served as a regular reminder of the influence of the narrator's expertise. In addition, we added a description of the traits of the narrator in an introductory paragraph that described relevant characteristics of the narrator's personality as well as encouraged the readers to pay attention to the qualities of "storytellers." All of these manipulations likely increased the

salience of the narrator and, specifically, her credibility. This was effective in guiding readers to attend to the narrator's expertise and to use that lens when encoding the information provided in the story. The current findings supplement those of Sparks and Rapp (2011), who found that explicit instructions and reminders to attend to the traits of peripheral characters led to a credibility effect on comprehension.

Because offline measures were used in Experiments 1 and 2, participants' responses may have been influenced by demand characteristics, especially because they had no time constraints for reading the narrative or answering the free-response questions. This may have led readers to focus strongly on the qualities of the narrator because they had time for reflection. In Experiment 3, we again examined the influence of a story's narrator on the comprehension of real-world facts. However, this was done online, under speeded conditions.

Experiment 3

The results of Experiment 2 demonstrated that readers are sensitive to qualities of a story's narrator. However, because an offline measure was used, without any time constraints, participants' responses may have been influenced by the demand characteristics of task. Further, readers spent as much time as they desired reading the narrative, which may have included rereading previous sections. This may have increased the likelihood that they reflected on the qualities of the narrator and the impact of the narrator's expertise on the information embedded in the story.

To address these issues, a number of changes were made to the experimental procedure. First, participants read the stories on a computer monitor, one line at a time. Thus, they could not go back and reread the story. Second, instead of providing responses to general knowledge questions (e.g., *What is the world's largest ocean?)*, with paper and pencil in an untimed test, statements were presented on the computer monitor (e.g., *The world's largest ocean is the Atlantic*) and participants provided speeded validity judgments (i.e., true or false responses).

We expect that readers will respond *true* more often to a misinformation statement (e.g., *The world's largest ocean is the Atlantic*) when the misinformation was previously encountered in the story. More importantly, if the expertise of the narrator influences comprehension and memory, participants should respond *true* more often when the misinformation was provided by a Credible (expert) than a Non-credible (non-expert) narrator.

Salovich et al. (2021) found that inaccurate information in stories influenced readers' knowledge as well as their confidence in that knowledge. Generally, readers were more confident in their judgments if they had previously read the information in a story, regardless of whether the information was accurate or inaccurate. We observed something similar in Experiment 2, with readers being more likely to leave blank a filler question (i.e., questions pertaining to information not contained in the story) than to leave blank an experimental question (i.e., questions pertaining to information contained in the story). However, although we did not observe different rates of non-responses as a function of the narrator's credibility, confidence might influence the speed at which readers respond to questions. In addition to being more likely to respond *true* when misinformation is provided by a Credible than a Non-credible narrator, readers' confidence in the narrator may increase the speed at which they answer, with faster responses to statements in the Credible condition.

Method

Participants

One hundred and five native English-speaking undergraduates participated in the experiment in exchange for course credit. For 90% power, this is the sample size that was needed, assuming the effect size from Experiment 2 (G*Power, Faul, et al., 2007).

Materials and design

The stories were identical to those used in Experiment 2. However, this experiment was conducted online. There was a short introduction, the same across conditions, to familiarize participants with the procedure of reading one line at a line. Participants read a single story: Half read the Credible version and half the Non-credible version. The story was divided into 235 lines of 45–63 characters (M = 54.75 characters). In contrast with Experiment 2, facts were presented in either the Accurate or the Misleading frame regardless of the story version to increase power without adding more facts. Eight facts appeared in the Accurate frame and eight facts appeared in the Misleading frame for all participants. Critical facts were presented on a single lines so that reading times could be measured (e.g. "…He knew much more than most people about / Lindbergh, the first person to fly across the Atlantic.").

For the testing phase, each general knowledge fact was presented as an assertion and participants judged its validity. For example, "Indicate whether this statement is true or false: The first person to fly across the Atlantic was Lindbergh." The length of the statements ranged from 43 to 53 characters (9–12 words). The test phase contained 32 items. Sixteen facts were unrelated to the story; eight were true and eight were false. There were also the 16

critical statements based on facts from the story. Eight had been presented in an Accurate frame and, thus, the correct answer was true. Eight had been presented in a Misleading frame and, thus, the correct answer was false.

Procedure

Reading was self-paced. The passages were presented on a computer monitor one line at a time. Participants controlled the presentation of the text with the keyboard. Each key press caused the current line of text to be erased and the next line to be presented. Participants were instructed to read at a pace that felt natural. Once they finished reading the story, on-screen instructions told them that they would be taking a true/false test. Participants were instructed to respond true or false by hitting a response key as quickly as possible without sacrificing accuracy.

Fact norming Because all participants received one set of facts in the Accurate frame and one set of facts in the Misinformation frame, a norming test was run to determine if there were differences in participants' prior knowledge about the two sets of facts. Forty-eight native English-speaking undergraduates did not read the story but took the 32-item true/false test. The proportion of times participants responded *true* to the Set 1 facts did not differ from the proportion of times participants responded *true* to the Set 2 facts, $p > .4$.[1]

Results

Fact reading times

To examine reading times of story lines containing critical facts, we built a linear mixed model (Bates et al., 2015) with both participants and items as random intercepts. Means were calculated after discarding outliers (Tukey, 1977). This eliminated 4.0% of the data. We observed no significant differences in reading times across levels of credibility or fact frame, all $ps > .25$. Neither narrator credibility nor the manner in which facts were framed had an influence on the speed at which participants read the facts.

Validity judgements

We first examined differences between the filler and target test items. We built a mixed-effect logistic regression (Bates et al., 2015) with both participant and fact as random intercepts. We predicted the likelihood of a participant responding *true* depended on the type of test item – a previously read fact or a filler item being encountered for the first time at test

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[1] Due to a coding error, one fact was excluded from set 1.

Table 3 Mean Proportion of Affirmative Responses as a Function of Fact Frame and Narrator Credibility (Experiment 3)

	Credible Narrator	Non-credible Narrator	Mean	Mean Difference
Accurate	.904	.880	.892	.024
Misleading	.709	.576	.643	0.133**
Mean	.807	.728		

** $p < .01$

(see Table 3). Participants were significantly more likely to respond *true* to misinformation when it had been previously read in the narrative ($M = .576$) than if it was a filler item ($M = .419$; $\beta = 1.427$, $SE = .611$, $p = .019$). In contrast, no difference was found in the likelihood of responding *true* to accurate information: The number of true responses was similar to accurate information that had been previously read in the narrative ($M = .892$) than to filler items that were encountered for the first time at test ($M = .883$; $\beta = -.289$, $SE = .667$, $p > .6$).

We next built a model predicting affirmative responses using fact framing, narrator credibility, and their interaction as predictors. Random intercepts remained the same as in prior models. For test statements that addressed information presented in the story, not surprisingly, readers were more likely to respond *true* when the fact framing was accurate ($M = .892$) than when it was misleading ($M = .643$), regardless of narrator credibility (Credible: $\beta = 2.184$, $SE = .495$, $p < .001$; Non-credible: $\beta = 1.664$, $SE = .498$, $p < .001$).

Critically, as was found in the previous experiments, the credibility of the narrator influenced readers' tendency to believe misinformation. When misleading information was included in the story, participants were more likely to respond *true* to the corresponding false test statement if the misinformation had been provided by a Credible narrator ($M = .709$) than if it had been provided a Non-credible narrator ($M = .576$; $\beta = .792$, $SE = .291$, $p < .01$). In contrast, there was no effect of narrator credibility when the framing was accurate. Participants responded *true* to the accurate test statement at roughly the same rate when the information was provided by a Credible narrator ($M = .904$) or a Non-credible narrator ($M = .880$); $\beta = .272$, $SE = .338$, $p > .4$. No significant interactions were observed (all $ps > .07$). In summary, the effect of narrator credibility was consistent with Experiment 2. The traits of the narrator influenced responding only for misleading facts.

Response times

A third model was built with a similar structure as the prior models but with affirmative responses (and its interactions with the other terms) being a predictor, and response time

(RT) as the outcome variable. Means were calculated after discarding outliers. This amounted to less than 1% of the data. To reduce strategic processing, participants were encouraged to respond quickly to the test statements. Average times, including reading a line of approximately 50 characters (9–12 words) and responding *true* or *false*, was just under 3 s. Thus, a general conclusion that we can draw from the RTs is that responding was fast. More specifically, RTs did not differ in systematic ways across conditions. When considering only the misinformation statements, although readers were faster to respond *false* when the narrator was Credible ($M = 3{,}193$ ms) than when the narrator was Non-credible ($M = 3{,}322$ ms), this difference was not significant (Misleading framing: $\beta = -18.236$, $SE = 49.679$, $p > .7$). Similarly, the time for *true* responses did not differ depending on the traits of the narrator: Non-credible ($M = 2611$ ms) vs. Credible narrator ($M = 2634$ ms; Misleading framing: $\beta = -4.915$, $SE = 41.503$, $p > .9$). No significant interactions were observed ($ps > .6$).

Discussion

In Experiment 2, readers provided a misinformation response to a general knowledge question more often when the misinformation in the story had been provided by a Credible than a Non-credible narrator. Because the dependent measure was question answering, this allowed readers to engage in slow and deliberate processing and to focus strongly on the qualities of the narrator. In the current experiment, readers provided speeded validity judgments. Examining judgment times, there were no differences as a function of the credibility of the narrator. Perhaps the instructions to participants to respond as quickly as possible overrode any effects. Alternatively, time to make validity judgments may not be a sensitive measure for our specific question. In contrast, the influence of the narrator's credibility on susceptibility to endorsing misinformation was replicated: Participants were more likely to respond *true* to inaccurate statements if the misinformation had been provided by a Credible than a Non-credible narrator. Although the number of *true* responses was not as high as it was to the accurate information, readers were more likely to endorse misinformation embedded in a story, even though it was clearly fictional, when the fictional narrator seemed knowledgeable and credible. This is despite the story being much less engaging that an actual novel where readers are often fully transported and invested in the story characters. Even though the narrator was not a fully developed character, her credibility mattered.

General discussion

Fact and fiction are intertwined in stories. Readers sometimes change their beliefs about the world because of information they encounter in a work of fiction, either failing to correctly attribute the source of the information to the work of fiction or assuming that the work of fiction provided credible information about the world (e.g., Marsh & Fazio, 2006; Marsh, 2004). The influence of fictional communications is well known by marketers who use product placement in television shows and movies to market their products (e.g., Green et al., 2004): Carrie Bradshaw, from *Sex and the City* (King, 2008), made Manolo Blahnik shoes a household name, despite the $1,000 price tag, and despite, of course, not being a real person. What is the process by which readers evaluate factual information in fiction? And what factors influence readers' attributions and beliefs?

The tendency for readers to rely on inaccurate information is ubiquitous and robust. A large number of factors have been shown to be ineffective in reducing readers' reliance on inaccurate information (Rapp, 2016). These include powerful interventions such as providing readers with explicit warnings that they might encounter inaccurate information (Eslick et al., 2011), presenting the information more slowly so that readers have time to evaluate what they are reading (Fazio & Marsh, 2008; Marsh & Fazio, 2006), and increasing the time between reading and test (Appel & Richter, 2007). Readers continued to rely on misinformation, sometimes increasingly (Fazio & Marsh, 2008), under these conditions. This occurs even when readers have prior knowledge about the topic (Green, 2004; Rapp & Braasch, 2014).

In contrast with the ineffectiveness of aspects of the reading context, readers were less likely to endorse misinformation when it was embedded in stories with unrealistic settings (Rapp et al., 2014). The reduction of readers' reliance on story information was likely due to the distinctiveness of the context and the characters. Rapp et al. concluded that unrealistic settings decreased the fluency of the misinformation and increased the compartmentation of the facts in memory. When the story context was distinct from the real world, source monitoring was simpler.

In the current set of experiments, we asked if readers' reliance on misinformation would also be influenced by qualities of the story's narrator. This is certainly true in non-fiction. The credibility of the source for news stories, for example, influences readers' memory and reliance on that information (e.g., Ecker et al., 2014). Given this, might this be true of fictional stories as well? Story characters, like journalists writing news stories, should play a powerful role in shaping readers' comprehension (e.g., Klin & Drumm, 2010), especially when readers are strongly psychologically transported into the story world. There is abundant evidence that readers form rich representations of the character's world, often as if they themselves are stepping into the narrative (Zwaan, 1999).

Using the paradigm developed by Marsh and colleagues (e.g., Marsh et al., 2003), we asked if traits of the narrator of a fictional story influenced readers' representation of the embedded facts. In three experiments, participants read narratives with a realistic setting and a set of embedded facts that were plausible, even if they were untrue. Critically, the stories were narrated by a Credible or Non-credible character.

In Experiment 1, the general pattern of effects found previously was replicated: Not surprisingly, readers were more likely to provide a misinformation response to a question if they had read the misleading information in the story. More importantly, a misinformation response was provided 40.6% of the time when the narrator was Reliable compared with 32.3% of the time when the narrator was Unreliable. There was also a significant interaction, reflecting the greater influence of the narrator's reliability when the embedded facts were misleading than when they were accurate.

In Experiments 2 and 3, a number of changes were made to the manipulation. First, given the argument that the concept of unreliable narrator, as used in the literature, is "terminologically imprecise and theoretically inadequate" (Nunning, 2008, p. 30), we focused on one particular type of reliability – expertise. We may have inadvertently combined two types of narrator reliability in Experiment 1, expertise in one story and trustworthiness in the other (Appel & Mara, 2013). Second, a single experimental story was read. Perhaps reading one story with a Reliable narrator and one with an Unreliable narrator in Experiment 1 made the manipulation obvious and affected readers' investment in the narrator in an artificial way. And finally, the design was simplified so that facts appeared in one of two conditions, Accurate or Misleading, rather than three, to increase the number of observations and the power of the design.

With these changes, in Experiment 2 the likelihood of reproducing the misleading information was higher when the narrator was an expert than a non-expert. Readers provided the misinformation as a response to a question 53% of the time when the narrator was Credible compared with 39% of the time when the narrator was Non-credible. An effect of narrator credibility was found even though readers were unlikely to have been strongly transported into the story, given that they were in a lab setting, and given that the story was short and bland, at least in comparison to an engaging novel. Even under these impoverished reading conditions, the qualities of the narrator influenced the reproduction of the misinformation from the story.

In Experiment 3, we moved away from a free-response measure to reduce strategic processing. Reading was line by line on the computer and readers provided speeded validity judgments (i.e., true/false responses) to a series of statements. When misinformation was included in the narrative, participants responded *true* more often to the corresponding misinformation test statement when the narrator was Credible (71%) than when she was Non-credible (58%). Readers treated the story's narrator as they might an actual informant. They were more likely to trust an educated, knowledgeable informant, believing her when she said that the largest ocean was the Atlantic.

What mechanisms underlie these findings? The traits of the narrator could have influenced encoding or retrieval (or both). During reading, readers may have been more likely to encode the misinformation as being true in the real world when the narrator was believable and dependable. After reading the misleading sentence, "The world's largest ocean is the Atlantic," readers were more likely to update their existing belief when the narrator was someone with expertise about such matters. In contrast, when the narrator was not an expert, readers were either less likely to encode the misinformation or to encode it as being the character's belief but being untrue in the real world.

Alternatively, readers may have been equally likely to encode the misinformation in the Credible and Non-credible conditions, but at test, when "Atlantic" was retrieved from memory after the free-response question (Experiments 1 and 2) or when it was presented as a true/false statement (Experiment 3), readers were more likely to reject it when the narrator was not credible. Readers may have dismissed the misinformation because they did not trust the narrator, defaulting to their previous knowledge. This, of course, assumes that readers were successful in source monitoring, tagging these memories as coming from the story, even during a speeded task. There is certainly evidence indicating that people are often poor at remembering the origins of their memories (e.g., Lindsay, 2008) and that information exists in a general semantic representation, without episodic details.

Overall, across conditions, the endorsement of the misinformation was relatively high. For example, in Experiment 3, readers replied *true* to misinformation statements 64% of the time when the fact had been embedded in the story and 42% of time when it had not been. The high rate of endorsement was likely influenced by the plausibility of the misinformation. There was a high degree of overlap between the misinformation provided in the story (e.g., the Atlantic is the world's largest ocean) and readers' prior knowledge (e.g., the Pacific is the world's largest ocean, or perhaps, the Atlantic or the Pacific is the largest). Consistent with this, Hinze et al. (2014) found that readers were more likely to rely on inaccuracies embedded in a text when they were plausible, such

as *narcolepsy* versus *insomnia* as an answer to: "What is the name of the inability to sleep?" Had the facts been less plausible, we expect that the effect of narrator reliability may have been weaker, or non-existent. Similarly, the genre of the stories likely contributed to the high endorsement rates for the misinformation. With fantasy or science fiction (e.g., Rapp, et al. 2014), source monitoring may have been more effective.

Although these data provide important information about the role of a story's narrator in readers' tendency to believe misinformation, in future work the findings need to be expanded in a number of ways. First, our conclusions are based on immediate memory tests. For a full understanding of the ways that fiction influences readers' beliefs about the world, we need to know if fictional communications have staying power. Although the tasks we used, free-response questions and true/false statements, did not require the use of information from the previously read narrative, participants may have been aware that the two tasks were related. Further, even without this awareness, the information read in the fictional narrative was recent and salient when participants responded to questions. A delayed test might produce a different pattern of findings, either decreasing or increasing the influence of the qualities of the narrator. If the narrator's credibility did not influence encoding, but had its effect primarily at recall, a delay might decrease the credibility effect. After a delay, the qualities of the narrator might be less available, leading readers to retrieve information that is the most active and accessible based on factors such as repetition and recency, rather than retrieving information about source. Conversely, a delay might increase the credibility effect if the facts provided by the Non-credible narrator were not strongly encoded. The strength of those memory traces might decrease further as time passes, increasing the contrast between misleading information provided by the Credible and Non-credible narrators.

An additional limitation on the generalizability of the findings is that a single type of credibility was examined within a single genre. We examined only one type of narrative fiction – the autobiographical narrative. The influence of the narrator may have been particularly salient in this genre, which included a first-person narrator as well as an explicit description of the qualities of the narrator's knowledge and memory. To expand these conclusions, future research should examine a range of genres.

In addition to focusing on a variety of genres, an understanding of how fictional stories influence people's attitudes and behaviors must include the mechanisms by which readers (or listeners or viewers) draw inferences about narrators. The landscape of narrator type is broad, and broader than what most discourse researchers describe. According to narratologists, credibility includes expertise and trustworthiness, as Appel and Mara (2013) discuss, as well as unreliability based on a narrator's prejudices, ignorance or self-deceptions. Future research should focus on how readers come to understand these different aspects of narrators.

Finally, in the current set of experiments, the traits of the narrator were communicated directly, by describing explicitly whether the character was knowledgeable or had a good memory. In actual literature, there are a vast variety of pragmatic and syntactic cues that might lead readers to understand the nature of the narrator. "There are, for instance, pragmatic indications of unreliability such as frequent occurrences of speaker-oriented and addressee-oriented expressions. One does not need to take a word-count or employ ponderous statistical methods to show that the unreliable narrator of …. Martin Amis' *Money* (1984)…are compulsive monologists as well as egotists. The vast majority of their utterances are indeed speaker-oriented expressions beginning with their favourite word, 'I'" (Nunning, p. 55). Future research might examine some of the boundary conditions and some of these cues: Do the traits of the narrator influence the belief in misinformation in other genres, from the short story to the dramatic monologue to poetry? In second person narrative? When credibility is not explicitly communicated but must be inferred by the reader from the pragmatics, word choice, syntax of the story?

Storytelling is a powerful instrument for teaching, selling, and persuading. Many studies have demonstrated the difficulty of reducing readers' reliance on inaccurate information found within a narrative (e.g., Appel & Richter, 2007; Eslick et al., 2011; Fazio & Marsh, 2008; Green, 2004; Rapp, 2016; Marsh & Fazio, 2006; Rapp & Braasch, 2014). And the power of misinformation is well known. For example, news stories that were later verified as inaccurate were found to spread more quickly and to more people on Twitter than news stories that were verified as accurate (Vosoughi et al., 2018). The impact of false information cannot be overstated on critical issues such as climate change, vaccine acceptance, the economy, and terrorism. Why do people believe misinformation and what factors might ameliorate the damage? The current studies suggest that the qualities of the source of the information might be one of the critical factors in determining what readers believe, for better and for worse.

Appendix A

In the excerpts below, the critical facts are in bold. The first fact is the accurate version, the second is the misleading version, and the "XXXX" is the neutral version, in which the fact is left out. The text in brackets not included in the neutral version.

Excerpts from "The Doctor Game"

Reliable	Unreliable
Let me tell you the story of my first semester of med school and how I got there. I remember every detail of this story mainly because I've told it many times, but also because I'm quite proud of my journey to get to this point. I considered every step an important one. I wish I could live it all over again...	Let me tell you the story of my first semester of med school and how I got there. I don't remember every detail of this story mainly because I've tried my hardest to forget, but also because I'm quite embarrassed of some of my choices along the way. I wish I had payed more attention and took my life more seriously...
...Then she started talking about how I would become just like **Florence Nightingale,/Clara Barton,/XXXX** [who was] the founder of modern nursing…	...Then she started talking about how I would become just like **Florence Nightingale,/Clara Barton,/XXXX** [who I think was] the founder of modern nursing...
...I studied hard throughout high school, spending hours on end every week memorizing facts and studying my textbooks. I took courses to prepare for my SATs and did all I could to fill out my college app to be perfect…	...I barely paid attention in high school, so when my friends started talking about SATs and college apps, I was shocked, seeing as I barely prepared anything, not to mention had no clue what I wanted to do…
...where we learned random topics like **plasma,/platelets,/XXXX** the liquid portion of blood…	...where we learned about important topics like **plasma,/platelets,/XXXX** the liquid portion of blood…
...I was excellent at memorizing material, and at taking tests, but it was much harder for me to find the relevant material for the practical...	...I was barely even able to memorize material out of textbooks, and pass my tests, but how was I supposed to figure out what the relevant material was?...

Excerpts from "Ocean Voyage"

Reliable	Unreliable
Oh, sister, you were right about Frank, I should've believed you. I know you always said you didn't like him, but I didn't understand why until now. It's hard to believe that he turned out to be so odd. I wish I could say I was making it up, but it is the truth...	I have a story about this guy I used to date, Rob. Oh wait, I think his name was Frank. Whatever, this was years ago. Maybe my memory of what happened is a little wrong or exaggerated at this point, but I really do not care…
...He explained that one day he wanted to cross [the] **Pacific,/Atlantic,/XXXX** the world's largest ocean...	...He explained that one day he wanted to cross [the] **Pacific,/Atlantic,/XXXX** the world's largest ocean...
...I remember that [I was plagued with] **insomnia./narcolepsy./XXXX** I just couldn't get to sleep no matter how hard I tried...	...I was so excited that [I was plagued with] **insomnia./narcolepsy./XXXX** I just couldn't get to sleep no matter how hard I tried!...
...Frank was telling me all about how he decided on this boat. I tried to focus as he started telling me about the boat's features…	...Then he started rambling some nonsense, but I was bored the minute he started speaking, so I wasn't really paying attention…
...But instead she's named after [the] **Mayflower,/Godspeed,/XXXX** the pilgrims' boat -- his grandmother chose it, she's a direct descendent, and he couldn't argue with the one who bought the boat for him…	...But instead she was named after [the] **Mayflower,/Godspeed,/XXXX** the pilgrims' boat or whatever -- his grandmother chose it, and she's, like, a direct descendent, which is important for some reason….
...Because I spent most of the day hanging around in cabin, I was wide awake when night fell. I wandered back onto the slimy deck. Having nothing better to do, I decided to make conversation with crazy Frank. At least talking with him would give me something to do besides re-reading the same magazine...	...Because I spent most of the day dozing in the cabin, I, unfortunately, was awake when night fell again. Frank still hadn't re-entered the cabin, or so I assumed considering his loud stomping hadn't woken me up. Bored, and forgetting about my earlier vow of silence, I wandered back onto the slimy deck...

Appendix B

Story from Experiments 2 and 3 (Credible & Non-credible Versions)

In the sample below, the critical facts are in bold. The first of the facts listed is the accurate fact and the second is the misleading version.

<u>Credible</u>

In this study, we are interested in what people think about storytellers. When we hear someone tell a story, or when we read someone's story, we often form impressions of the storyteller. In the current experiment, you will be reading a story written by a college student named Wanda. She is recounting the details of a family trip she took last year. You will be reading some information about Wanda and then you will read her story. After the story, you will be answering some questions.

Wanda is a biology major at the University of Kansas. She's a junior, and after she graduates, she is hoping to attend graduate school somewhere on the east coast, for a masters degree in marine biology. She still has several close friends from her childhood. Some of them are also at the University of Kansas. Wanda also has close friends she met in college. Things she likes to do, when she's not busy with classes, are playing music (she's played the piano since she was 10), and working out. She's a big reader and tries to make time to read for fun, even during a busy semester. She is one of those people who is incredibly knowledgeable about a lot of subjects, and is super curious. She is especially passionate about science, and has the knack of remembering everything she reads.

When asked to describe her, Wanda's friends often use words like quiet, but also thoughtful and intelligent. A couple of friends have mentioned that she has a great memory, which helps her be a super good student. Two friends said that Wanda has the quirk of telling long stories, as she has the odd ability to recount the exact details of things she has done. When she is telling a story, she often goes into painstaking detail about everything that happened, even if it was years ago. Her storytelling may be a bit tedious and long, but her friends don't really mind, because it's just a Wanda thing, and they respect her knowledge.

THE OCEAN VOYAGE

I'd like to tell you about one of the best family vacations I've been on. It was last year, and it holds a lot of memories for me. My memory is normally quite good, but because I was able to finally experience for myself what it is like to be around a boat and the ocean, I made sure to keep track and remember everything that happened. Ever since I was a little kid, I've been fascinated with boats and the ocean. I've always read about it all as much as I possibly could. I could probably figure my way around a sailboat, even though I never had actual experience before. I was so thrilled that my parents thought of my interests when they were planning everything, so I was able to have the best time possible. I was hoping to one day move to a coastline and get my own sailboat, so I had to take this chance to learn as much as I could.

Our family is from the Midwest. The only bodies of water near us are pools. I had never even seen a boat in real life. Which was always such a big disappointment to me. I knew it would be a dream come true. When my parents told us we would be taking a big ocean-side trip, I was thinking of a trip to an island off the coast of **Massachusetts / Maine**, like Nantucket. It would've been really awesome, but that's not where my parents chose. But then, my father told us that our big vacation was going to be to coastal Maryland, and it would include a trip on an actual sailboat. I just knew it would be a fabulous adventure. I was elated. I kept thinking of all the things I could do. I could swim at a beach or bring all my old books about the ocean and sailing to read by the seashore. Or other books, I'm not terribly picky. I've always been the type of person who actually read all of my textbooks and optional readings. It felt like the perfect way to relax and learn.

When we arrived in Maryland, I was super pumped. Everything smelled like a fresh sea breeze. Just knowing what was in store for me made me excited. Listening to the waves crashing in the distance was amazing. Every place we went to eat pushed their world-famous Maryland clam chowder because we were tourists. Unfortunately, I'm allergic to **mollusks / crustaceans**, so I can't eat clams. I always took their next best fish dish that they offered while my family tried every clam chowder they could. We had never had such fresh fish before, and you could really taste it in the dishes.

Our fourth day of the trip was going to be the long-anticipated ocean voyage. The night before, I was plagued with **insomnia / narcolepsy**; I just couldn't get to sleep no matter how hard I tried. I was way too eager about what the coming day would bring, not to mention my brother was snoring pretty loudly. I kept a positive attitude about it all, knowing the thrills of the next day would keep me energetic. The next morning, we walked to the shipyard from our hotel, and just watching the bobbing of the boats in the water got me chattering to my family about all the parts of a sailboat, and what we might encounter while we were out at sea.

We met the captain at the shipyard and he was super engaging. He was dressed in a true, old-fashioned sailor's uniform, which reminded me of Captain **Ahab / Nemo** from *Moby Dick*. How could I not remember that book, as it was always one of my favorite ones to reread. Anyway, he invited us onto the boat. My parents and I boarded without a problem, but my brother slipped as soon as his foot touched the floor of the boat. He landed with such a loud thud, hitting his head like he was **a meteor / an asteroid**, the space rocks that crash and burn into the Earth's atmosphere. Bumping his head quieted him down a bit so we were able to listen to the captain when he was talking to us without interruptions.

I helped lead my brother to lay down on a bench built on the stern of the boat. I watched as the captain started to pull different ropes, tracking what he did and checking it with what I already knew. I got excited when we were ready to sail. He was answering the dozens of questions we asked, with wild expressions and demonstrations to try to explain what he was talking about. He pointed out a device that was attached to the sailboat. I think I almost wiped out trying to get a good look, but I already knew that it was—**an anemometer / barometer**, a device to measure wind speed. I know I had seen a diagram in one of my books.

After a little while, my brother sat up and I pointed out to him that the shore was already long gone. It made me feel blue to think about how we only had a few hours left on the ocean. I thought about how badly I wanted to never return to my landlocked home and keep learning all about this nautical

lifestyle. To distract myself from these discouraging thoughts, I turned all of my attention to listen to the captain's cool story. I already knew it, it was about **Atlantis/ Pompeii**, that mythical city that sank into the sea. We all knew the story already, but it was hard not to listen to him when he was speaking. He made everything he talked about seem so much more interesting. He even had stories about the history of aviation. He knew much more than most people about **Lindbergh / Earhart**, the first person to fly a plane across the Atlantic.

Soon after he was done with the last entertaining story, he launched into a whole bunch of new ones. And these stories were actually personal, about how he decided to become a boat captain. I was fascinated. I wanted to know how he got into it, since getting into sailing was my main goal. What kind of life did someone have to lead to become a boat captain? A highly unusual one, I thought. Apparently, he used to make maps for a living as a **cartographer / geographer**, but didn't really care about being on land enough to map it all out for road atlases. Besides, with evolving GPS technology, it's not as needed anymore. So, one day he decided to just quit his job and start living on his sailboat, offering voyages to tourists. I thought about how amazing it would be to live out on the open sea, nothing keeping you tethered to the earth. The only thing below deck would be hundreds of feet of water. Well, *__fathoms__ / __knots__*, actually, which is the nautical name for measuring depths of water.

It was a beautiful summer day. Perfect for being out at sea, talking with fascinating sea captains, and enjoying the sun. How lucky I was to be as close to my ideal day as possible! The captain explained to us how he uses the sun and the wind to determine which direction to sail. My father, curious as always, asked how he would navigate if he's out sailing at night. The captain was happy to explain, and I immediately started listening in closely again. My excellent memory would come in handy for remembering all these cool facts.

"Just like when I use the sun during the day," he explained, "I use the stars at night. In fact, the North Star is the one I use the most." I was surprised that he didn't refer to the star as **Polaris / Sirius**, the 'scientific' term for the North Star, but I guess he assumed that we wouldn't know the term off the top of our heads. Which was a safe assumption, I suppose. It's not like the rest of my family knows as much about all this ocean stuff as I do. He then started telling us about another instrument called a **sextant / telescope**, which is a tool that's been used for centuries to navigate using the stars. His lesson continues on, about the stars and how he grew up wanting to be an astronomer. He said he almost named his boat after the astronomer and mathematician, **Copernicus / Galileo**, who proposed that the earth revolves around the sun.

All of a sudden, there was a loud beeping coming from somewhere on the boat. My brother started freaking out, thinking that it meant there was something wrong, but I calmly followed the captain as he walked over to where the sound was coming from. He showed us an old-looking monitor and called it sonar. It was really cool to watch the silhouettes of fish going by. When he told the rest of my family, they got all excited and asked if we could go fishing.

The captain took out two fishing poles and gave a demonstration on how to use them, then pulled out the bucket of bait. My brother and I went towards the back of the boat, him taking a turn with the fishing pole as I laid down on the bench and relaxed. He placed the bait, a bucket of little fish, right next to my head. He knew there were no other clean benches for me to lie on, and he thought it would encourage me to get up and join in on the fishing fun. I told him I'd join him later for it; the rocking of the boat was making me sleepy.

Then, he started singing. I laughed as I listened to him recite the entirety of that song, "I'm on a Boat" by **The Lonely Island / LMFAO**, fittingly. I kept my eyes closed for a while, trying to savor the gentle rocking of the waves, so you can imagine my surprise when something heavy and slimy landed on my face. Then, it started *moving*. I lurched up, knocking whatever it was onto the boat deck.

It was a *fish*.

I quickly wiped my face with the bottom of my t-shirt, then looked at my brother. He looked to be on the verge of hysterical laughter. Apparently, he thought it would be funny to drop a fish he caught onto my face to try to rouse me.

I had to admit, it was a good one. And honestly, I didn't really mind. But I couldn't let him get away with it. I made an angry face at him, so he turned and ran to the front of the boat. I gave chase, trying and failing to keep my own laughter in. We circled the boat once when we started sliding. The fish from their catches got a whole lot of seawater and algae on the deck. We both slid forward and rammed into the front railing, then toppled into the water.

The captain was the one who ultimately helped us out, both of us sputtering out seawater and unstoppable giggles. Our parents scolded us for messing around, but the captain just chuckled and told them he was glad we were enjoying ourselves.

"Thank you for letting us join you today," I said.

Within half an hour, we were back on shore. The four of us said our goodbyes and thanks to the captain and headed to the beach. My brother and I continued splashing each other as our parents relaxed on the shore. What an incredible day! When I went to bed that night, I knew I would remember that day for the rest of my life.

<u>Non-credible</u>

In this study, we are interested in what people think about storytellers. When we hear someone tell a story, or when we read someone's story, we often form impressions of the storyteller. In the current experiment, you will be reading a story

written by a college student named Wanda. She is recounting the details of a family trip she took last year. You will be reading some information about Wanda and then you will read her story. After the story, you will be answering some questions.

Wanda attends the University of Kansas. Although she's a junior, she has not yet declared her major. She is not sure what she wants to do after she graduates, but is hoping things will work out for her. She still has several close friends from her childhood. Some of them are also at the University of Kansas. Wanda also has close friends she met in college. Things she likes to do, when she's not busy with classes, are hanging out with friends, often at the downtown bars on the weekends, and watching Netflix. She is a big partier, but tries to make time to get work done. She knows she can be too much of a procrastinator. She is not a great student, but not terrible either. Each semester she plans to work harder, but studying doesn't come easily, and she has a hard time remembering what she's read.

When asked to describe her, Wanda's friends often use words like sweet, but also absent-minded and flaky. A couple of friends mentioned that she jumps from one thing to the next, which can get her into trouble in her classes. Two friends said that Wanda has the quirk of telling long stories, and that she had the tendency to make up some of the details, adding in stuff that she believes, but did not actually happen. She feels confident she's remembering correctly, even when it's not true. It makes her storytelling fun and dramatic, and it causes no harm, as it's just a Wanda thing, and her friends know not to believe all of it.

THE OCEAN VOYAGE

I'd like to tell you about one of the worst family vacations I've been on. The details were (and still are) fuzzy to me. My memory has always been terrible, but it's not like I could be bothered to care about what was going on given the fact that going out on the ocean in a tiny sailboat was hardly my first choice for a vacation. I hate boats and being on or near the ocean. Not to mention I get terrible motion sickness. I usually just take anti-nausea pills when I start feeling motion sick in a car or rollercoaster, but they come with the nasty side-effect of memory loss. So not only did I not want to be there, or want to pay very close attention, I wasn't even completely aware half the time. I really wish my parents would've considered my problems more than they did when planning everything, so I could've had at least a chance of enjoying myself.

Our family is from the Midwest. The only bodies of water near us are pools. I had never even seen a boat in real life. Which was fine, I never wanted to set foot on one. I knew it would be a recipe for disaster. When my parents told us we would be taking a big ocean-side trip, I was thinking of a trip to an island off the coast of **Massachusetts / Maine**, like Nantucket. I can deal with the ocean if I can just lay on the beach and sunbathe. But then, my father told us that our big vacation

was going to be to coastal Maryland, and it would include a trip on a stupid sailboat. I just knew it would be a disaster for my motion sickness. I was dejected. I wouldn't be able to enjoy myself at all. I hate swimming, and when my mom suggested I bring a book to read, I told her that would just make my motion sickness way worse. Not like I'm much of a reader anyway. I don't even think I own a single book I didn't have to read for school. Reading always just felt like a waste of time.

When we arrived in Maryland, I was already miserable. Everything smelled like fish or the ocean. Just knowing what was in store for me made me sick to my stomach, so I had to take my anti-nausea pills even before we were out on the sailboat. Every place we went to eat pushed their 'world famous' Maryland clam chowder because we were tourists. It turns out, I'm allergic to **mollusks / crustaceans**, so I don't think I can eat clams. I always had to stick to whatever bland rice, potato, or chicken dish they offered. It got boring quickly, but it's not like I had any other option when I couldn't stomach seafood.

Our fourth day of the trip was going to be the long-dreaded ocean voyage. The night before, I was plagued with **insomnia / narcolepsy**; I just couldn't get to sleep no matter how hard I tried. I was way too nervous about what the coming day would bring, not to mention my brother was snoring pretty loudly. I kept thinking about how my exhaustion was going to make the next day even worse. The next morning, we walked to the shipyard from our hotel, and just watching the bobbing of the boats in the water combined with the ocean air was making my stomach turn. I took my anti-nausea pill, which was already fogging my brain when we arrived at the ship.

We met the captain, but I was so out of it I can't remember his name. He was dressed in a true, old-fashioned sailor's uniform, which reminded me of Captain **Ahab / Nemo** from *Moby Dick*. At least I think that's what the title of the book was because I had just skimmed it. Anyway, he invited us onto the boat. My parents and brother boarded without a problem, but of course I slipped as soon as my foot touched the floor of the boat. I landed with such a loud thud, hitting my head, like I was **a meteor / an asteroid**, the space rocks that crash and burn into the Earth's atmosphere. Bumping my head really didn't help my motion sickness that was now pushing its way past my medication, while still leaving me feeling lost.

I vaguely remember being helped up and laid down on a bench somewhere on the boat. I heard the captain start to pull different ropes. I ignored him as he rattled on and on about something boring. I figured we were getting ready to sail. He was answering all the dumb questions my family asked, with wild expressions and demonstrations to clearly explain what he was talking about. He pointed out a device that was attached to the sailboat. I think I was falling asleep, as I just heard him faintly talking about something that measures wind speed, **an anemometer / barometer**, if I remember correctly. I had never heard of it before.

After a little while, I sat up and my brother pointed out to me that the shore was already long gone. It made me feel green to think about how we still had a few hours left on the ocean. I thought about how badly I wanted to be back in my landlocked home and start forgetting about all this nautical nonsense. To distract myself from these discouraging thoughts, I turned my attention to listen to the captain's boring story. I think I knew it, it was about **Atlantis/ Pompeii**, that mythical city that sank into the sea. I really wanted to tune him out, but it was hard not to listen to him when he was speaking. He made everything he talked about seem so much less interesting. He even bored us with stories about the history of aviation. He knew more than anyone should about **Lindbergh / Earhart**, the first person to fly a plane across the Atlantic.

Soon after he was done with the last unnecessary story, he launched into a whole bunch of new ones. At least these were personal, about how he decided to become a boat captain. I was disinterested. I didn't care about how he got into boating, since getting off his boat was my main goal. What kind of life did someone have to lead to become a boat captain? A highly failed one, I thought. Apparently, he used to make maps for a living as a **cartographer / geographer**, but didn't really care about being on land enough to map it all out for road atlases. Besides, with evolving GPS technology, no one cares anymore. So, one day he decided to just quit his job and start living on his sailboat, offering voyages to tourists. I thought about how terrifying it would be to live out on the open sea, nothing keeping you from floating away. The only thing below deck would be hundreds of feet of water. Well, *fathoms* / *knots*, or something, which is apparently the fancy name for measuring depths of water.

It was a beautiful summer day. Perfect for laying on the couch, talking with good friends, and enjoying the air-conditioning. How lucky I was to be as far from my ideal day as possible! The captain explained to us how he uses the sun and the wind to determine which direction to sail. My father, annoyingly curious, asked how he would navigate if he's out sailing at night. The captain was happy to explain, and I immediately started tuning out again. My poor memory would come in handy for once, letting me forget these useless facts.

"Just like when I use the sun during the day," he explained, "I use the stars at night. In fact, the North Star is the one I use the most." I was surprised that he didn't refer to the star as **Polaris / Sirius**, or whatever the 'scientific' term for the North Star is, but I guess he correctly assumed that we wouldn't know what that was off the top of our heads. Which was a safe assumption. It's not like the rest of my family knows much more than I do about the ocean. He then started talking about another instrument that I think he called a **sextant / telescope**, which is apparently a tool that's used to navigate using the stars. His yammering goes on, about the stars and how he wanted to be an astronomer. He

said he almost named his boat after that dude from history class, **Copernicus / Galileo**, who proposed that the earth revolves around the sun.

All of a sudden, there was a loud beeping coming from somewhere on the boat. I started freaking out, thinking that it meant there was something wrong, but my brother calmly followed the captain as he walked over to where the sound was coming from. He showed us an old-looking monitor and called it sonar. It was really creepy to watch the silhouettes of fish going by. When he told the rest of my family, they got all excited and asked if they could go fishing.

The captain took out two fishing poles and gave a demonstration on how to use them, then pulled out the bait. My brother and I went towards the back of the boat, him taking a turn with the fishing pole as I laid down on the bench and relaxed. He placed the bait--smelly, dead little fish--right next to my head. He knew there were no other clean benches for me to lie on, and he thought it would force me to get up and join in on the fishing fun. I told him I'd punch him later for it; the rocking of the boat was making me sleepy.

Then, he started singing. I groaned as I listened to him recite the entirety of some song, "I'm on a Boat" by **The Lonely Island / LMFAO**, maybe. I kept my eyes closed for a while, trying to ignore the rocking of the waves, so you can imagine my surprise when something heavy and slimy landed on my face. Then, it started *moving*. I lurched up, knocking whatever it was onto the boat deck.

It was a *fish*.

I furiously wiped my face with the bottom of my t-shirt, then looked at my brother. He looked to be on the verge of hysterical laughter. Apparently, he thought it would be funny to drop a fish he caught onto my face to try to scare me.

I had to scream; it was so horrifying. And honestly, I wanted to throw up. I couldn't let him get away with it. I lunged angrily at him, so he turned and ran to the front of the boat. I gave chase, trying and failing to keep my bubbling fury in. We circled the boat once when we started sliding. The fish from their catches got a whole lot of seawater and algae on the deck. We both slid forward and rammed into the front railing, then toppled into the water.

I think the captain was the one who ultimately helped us out, both of us sputtering seawater. I felt dizzy again. I heard my parents say something apologetic, but the captain just chuckled. I closed my eyes and pretended it didn't happen.

"Just let me go back to the hotel and forget about all of this," I said.

Within half an hour, we were back on shore. My parents said some goodbyes and thanks to the captain as I sulked, soaking. My brother and my parents relaxed on the shore as I walked back to the hotel alone. What a terrible day! When I went to bed that night, I knew I was going to try as hard as I could to forget that day as soon as possible.

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