The Permeability of Fictional Worlds

Meghan M. Salomon (msalomon@u.northwestern.edu)
Lance J. Rips (rips@northwestern.edu)
Department of Psychology, Northwestern University,
2029 Sheridan Road, Evanston, IL 60208-2710, USA

Abstract

Real people sometimes appear in fiction, for example, Napoleon in War and Peace. Readers may also believe that a person who never actually appears in a novel could potentially appear there. In two experiments, we find evidence that readers think that a real person could appear in specific novels and physically interact with a character. This effect is magnified when the person and character share spatial and temporal elements of their setting.

Keywords: fictional worlds; world knowledge; novels

Fictional Worlds

Just as people develop and maintain representations of real-world situations (e.g., Zwaan & Radvansky, 1998), previous research has established that children and adults keep track of fictional worlds: They possess mental representations of the universe in which a fictional work plays out. Investigators have argued that these representations portray a fictional world as discrete, self-contained, and distinct from the real world and from other fictional worlds. For example, preschoolers know that fictional characters like Batman can't touch or see them and can't touch or see characters like Elmo, indicating that these fictional worlds are distinct (Skolnick & Bloom, 2006; Skolnick-Weisberg & Bloom, 2009). Children can also extrapolate information from fictional situations and generalize them as "fantasy rules," using those rules to predict future fictional events (Van de Vondervoort & Friedman, 2014). In this way, children can learn from fantasy and use that information in fantastical settings. However, children tend not to transfer fictional ideas to real world situations (Richert, Shawber, Hoffman, & Taylor, 2009).

Fictional worlds aren't impermeable, however. Readers approach fictional stories with assumptions based on their knowledge of reality (Gerrig, 1993; Gerrig & Allbritton, 1990; Pollard-Gott, 1993; Gerrig & Rapp, 2004). Readers know to import general truths of reality, such as gravity and physiology, into a fictional text (Lewis, 1978; Skolnick-Weisberg & Goodstein, 2009). They assume that Jay Gatsby can sit upright in his chair and that Scarlett O'Hara breathes. Authors also rely on readers' knowledge of reality in importing more specific details into their fiction (Fillmore, 1981). For example, real people sometimes turn up in novels. Napoleon appears in War and Peace and Houdini in Ragtime (see Foulds, 2015). People may also believe that although a real individual doesn't actually appear in a fictional context, she potentially could. Queen Victoria never explicitly graces a Sherlock Holmes story, but readers may recognize this as possible.

What principles govern readers' judgments about whether real and fictional people can mingle? We report two experiments that examine the idea of "one-way permeability": People should be more apt to think that a real person could appear in a fictional world than the reverse. Perhaps paradoxically, Sherlock Holmes could potentially meet Queen Victoria, but Queen Victoria could hardly meet Sherlock Holmes. What is true in a fictional world may depend on the similarity in time and space between the fictional setting and the real one (Lewis, 1978), but in an asymmetric way. Experiment 1 looked at the effect of spatial distance on permeability, and Experiment 2 at temporal distance.[1]

Methodology

Participants in both studies read brief descriptions of novels, such as Jane Eyre and The Great Gatsby, that specified their author, protagonist, and publication date. The description also mentioned real people (e.g., Calvin Coolidge), along with a brief identifier for each. Participants then answered questions of the type: "Consider the world of Jay Gatsby [Calvin Coolidge]. Would Calvin Coolidge [Jay Gatsby] also exist in the same world?" The instructions stated that "being in the same world" means the individuals "could, at least in theory, meet and physically interact with one another." Participants were also cautioned, "… we do not want you to think of a person that merely has the same characteristics as that character…[n]or … a picture, movie, or other representation of the character. Rather you should think of the character him- or herself."

Experiment 1: Spatial Proximity

We expect that people will agree that real individuals *could* appear in a novel, even though they never actually appear there. But we also expect important restrictions to govern these cases. Just as two real people from the same

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[1] Although the experiments we report here focus on simple overlap in space and time, we don't mean to imply that these are the only variables that affect readers' judgments of permeability. Many factors could have such an effect, including ideological, cultural, and technological ones. For example, our intuition is that a Russian czar of the 18th Century is less likely to appear in an 18th Century American novel than a Russian premier of the 20th Century in a 20th Century American novel. We leave these possibility for further research.

country are more likely to interact than two real people from different countries, a real person and a fictional character from the same country are more likely to interact than a similar pair from different countries. For example, although Calvin Coolidge could turn up in the world of Jay Gatsby, it is less likely that Joseph Stalin would appear there. Of course, crossings in the opposite direction should be even more limited, in line with one-way permeability: Coolidge could appear in Gatsby's world, but Gatsby could hardly appear in Coolidge's.

Method

Participants We recruited 30 participants (18 female), aged 18-63, (M=39.17, SD=12.34) through Mechanical Turk.

Procedure Participants in this study answered a series of questions about the novels that appear in Table 1. At the beginning of each block of trials, they read information about one of these novels (author, publication date, and protagonist). The preliminary information also described four real people—political leaders—two from the same country in which the novel was set, and two from a different country. Within each pair, one leader was relatively well known; the other less well known (see Table 1 for a complete list). Participants were given brief descriptions of the leaders and were told that all of them were alive at the time the novel was set.

Following the preliminary briefing, participants answered eight questions about the relations between the fictional characters and the real people. Participants decided whether, for example, Calvin Coolidge [Jay Gatsby] would exist in the world of Jay Gatsby [Calvin Coolidge], and whether Joseph Stalin [Jay Gatsby] would exist in the world of Jay Gatsby [Joseph Stalin]. For example, one question read, "Consider the world of Jay Gatsby. Would Calvin Coolidge also exist in the same world?"

There were seven blocks of trials, corresponding to the seven novels of Table 1. The blocks appeared in a random order, as did the eight questions within each block. After completing the questions, participants indicated which of the Table 1 books they had previously read. The experiment took approximately 20 minutes to complete.

Design The questions varied direction (could a fictional person appear in the real world vs. a real person in a fictional world), location (were the fictional character and the real person from the same country vs. a different country), and fame of the real-world individual (more famous vs. less famous). All factors varied within-subject.

To confirm our judgments of which individuals were more famous, we conducted a norming study. Thirty-one Mechanical Turk participants rated the fame of each real-world political leader from Table 1, on a scale from 1 ("least famous") to 7 ("most famous"). Those we designated more famous received a mean rating of 3.99, and those we designated less famous a mean rating of 1.75, $F(1,30) = 307.72$, $p < .001$. The names of the more and less famous political leaders appear in Table 1, with the more famous

leader preceding the less famous one within each cell of columns 2 and 3.

Results and Discussion

Participants were significantly more likely to say that a real person exists in a fictional world (M=67% "yes" responses, SE=3%) than that a fictional person exists in the real world (M=38%, SE=3%), $F(1, 29) = 13.91$, $\eta_p^2 = .32$, $p < .001$. For example, participants were more likely to say that JFK exists in the world of Atticus Finch than that Atticus Finch exists in JFK's world. This supports the idea that fictional worlds are more permeable than the real world and, further, that readers can equip the fictional world of a novel with real people, even though the novel never explicitly mentions them. This main effect is shown in Figures 1a and 1b as the difference between the left- and the right-hand sides of the graphs.

Participants were also more likely to say that people/characters from the same country exist in the same world (M=59% "yes" responses, SE=3%) than that people/characters from different countries exist in the same world (M=46%, SE=3%), $F(1,29) = 23.02$, $\eta_p^2 = .44$, $p < .001$. For example, participants were more likely to say that JFK exists in the world of Atticus Finch than that Khrushchev exists in that world. Thus, readers take geographical distance into account in determining whether fictional and real-world individuals can intermingle. This suggests that participants interpreted our question (e.g., Would Calvin Coolidge exist in the world of Jay Gatsby?) in a probabilistic way (depending on spatial distance and other relevant factors) rather than in an absolute way (e.g., that it is not *impossible* that Coolidge could exist in Gatsby's world). Just as people think that the chance of two real-world people meeting is greater the smaller their spatial separation, people think that the chance of a fictional and a real-world person being in the same world is greater the smaller the distance between their spatial locations.

But although participants believed that spatial distance was relevant to whether real and fictional people could coexist, they did not believe that the real person's fame affected this issue, $F(1, 29) = 0.18$, $\eta_p^2 = .006$, $p = .678$. Participants' judgments did not depend on whether a real person was very well known or less well known. Even a lesser-known real person of the appropriate place and era is a candidate for existing in a fictional world. No interactions with fame were significant in these data.

Finally, we compared responses from participants who had read a book to those of participants who hadn't. We wanted to ensure that participants who had read, for example, Jane Eyre answered questions about this book in the same way as other participants. The results of this comparison for the main conditions appear in Table 2 and indicate very similar findings for readers and nonreaders. Reader or nonreader status did not significantly interact with either the effect of country or the effect of direction of transfer (all F's < 1). This similarity suggests that the descriptions of the novels in the instructions (or

participants' general knowledge about the novels) provided nonreaders with enough information to make sensible judgments.

Although participants judged real people more likely to appear in fiction than fictional characters in the real world, we did not find an absolute ban on fiction-to-real-world transfers. Participants judged that a fictional character could appear in the world of a real political leader on nearly 40% of trials. Some of these responses might be due to simple misreading or other low-level errors. For example, participants may have failed to distinguish the direction of the question (real-to-fiction vs. fiction-to-real). However, some participants may actually believe that the characters could surface in the real world, and we discuss this possibility in the General Discussion.

These results support our hypotheses in two ways. First, readers do import more into fiction than just (causally) necessary truths of reality. Their willingness to do so, however, depends on geographic relevance. Readers are likely to import real people into fictional worlds who are relevant to the novel's setting, even when these people are never mentioned in the text. This indicates that readers are attuned to the relevance of space, not only within the world (Zwaan & Radvansky, 1999), but also across worlds.

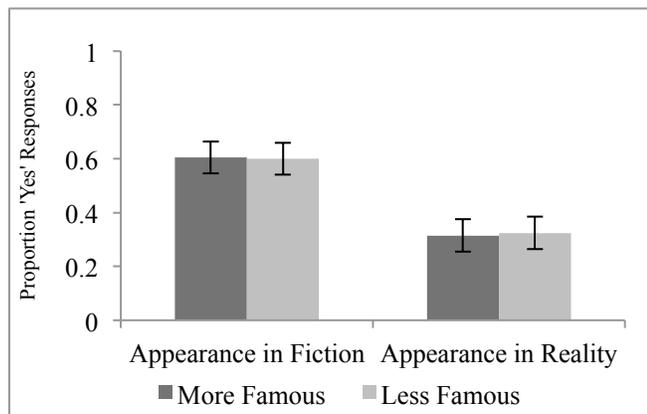Figure 1a: Real people and characters in different countries

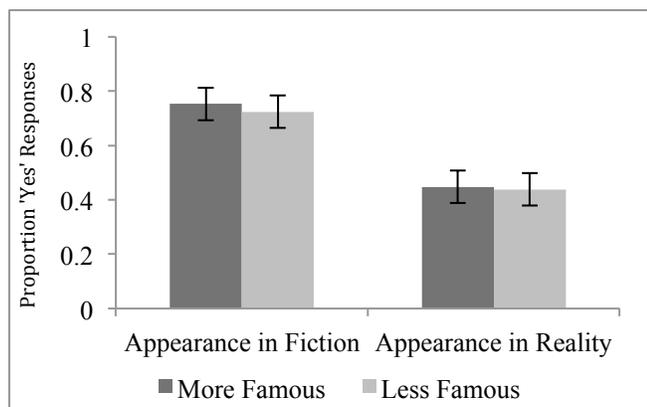Figure 1b: Real people and characters in same country

Table 1: Novels used in Experiment 1

Novel	Real Person (Same Location)	Real Person (Different Location)
Jane Eyre (Jane Eyre)	Queen Victoria; Earl Russell	James Polk; John Calhoun
Moby Dick (Captain Ahab)	Millard Fillmore; Stephen Douglas	Napoleon; General Jacques Leroy de Saint Arnaud
Sherlock Holmes (Sherlock Holmes)	William Gladstone; Charles Parnell	Grover Cleveland; Levi Morton
The Great Gatsby (Jay Gatsby)	Calvin Coolidge; Charles Evans Hughes	Joseph Stalin; Nikolai Bukharin
A Christmas Carol (Ebenezer Scrooge)	Prince Albert; Lord Melbourne	Louis Philippe; Francois Guizot
Breakfast at Tiffany's (Holly Golightly)	Dwight Eisenhower; Estes Kefauver	Queen Elizabeth II; Harold Macmillan
To Kill a Mockingbird (Atticus Finch)	John Kennedy; Edmund Brown	Nikita Khrushchev; Georgy Malenkov

Table 2: Percentage of Readers' and Nonreaders' Agreement that Real and Fictional People could be in the Same World, Experiment 1

Direction of transfer	Spatial separation	Non-readers	Readers
Fiction-to-real	Different countries	33.2%	30.1%
	Same country	45.1	43.2
Real-to-fiction	Different countries	61.5	58.5
	Same country	75.4	71.6

Experiment 2: Temporal Proximity

Experiment 1 showed that spatial restrictions govern how easily a real person can appear in a novel. Temporal factors should produce similar effects, perhaps in a more dramatic way. Although Robert E. Lee might appear in a novel set during the Civil War, such as Gone with the Wind, we would not expect Franklin Roosevelt to appear there. Time travel occurs in some science fiction and fantasy, but in the more realistic novels we used here, we don't expect to find real people from a different era.

Method

Participants We recruited 32 participants (14 female), aged 22-62 (*M*=37.16, *SD*=10.29) through Mechanical Turk. One subject was eliminated for answering "no" to all questions.

Materials. In Experiment 2, we paired novels published in the same year, one set in the past (e.g., Gone with the Wind) and the other set at about the time of publication

(e.g., In Dubious Battle). For each pair, we chose one political leader who was alive at the time of the earlier setting (e.g., Robert E. Lee) and one who was alive at the time of the later setting (e.g., Franklin Roosevelt). We then asked about the relationship between these real and fictional characters (in both orders), as in Experiment 1. For example, participants decided whether Robert E. Lee would exist in the world of Scarlett O'Hara, whether FDR would exist in the world of Scarlett O'Hara, whether Robert E. Lee would exist in the world of Jim Nolan, and whether FDR would exist in the world of Jim Nolan. We also asked the reverse of each of these questions (e.g., whether Scarlett O'Hara would exist in the world of Robert E. Lee). The question wording was the same as in Experiment 1 (e.g., "Consider the world of Scarlett O'Hara. Would Robert E. Lee also exist in the same world?"). Table 3 lists the full set of novels, characters, and real people. At the end of the experiment, participants indicated which of the novels mentioned in the experiment they had read.

Procedure Apart from these differences in materials, the experiment proceeded in the same way as did Experiment 1.

Design The questions varied direction (could a fictional person appear in the real world vs. a real person in a fictional world), era of the fictional character (historical vs. modern, relative to the date of publication), and era of the real person (historical vs. modern, relative to the date of publication). All factors were within-subject.

Results and Discussion

Participants were much more likely to say that two people exist in the same world if they were from the same era (M=82% "yes" responses, SE=2%) than if one person existed before the other (M=26%, SE=2%). The results are shown in Figures 2a and 2b: "Yeses" were more common when the time of the real people and characters matched than when their times mismatched, $F(1,28) = 88.53$, $p < .001$. For example, participants thought that Robert E. Lee was more likely than FDR to exist in the same world as Scarlett O'Hara.

As in Experiment 1, participants judged it easier for real people to appear in fiction than for fictional characters to appear in the real world. In the present experiment, however, this effect appeared only for situations in which the person and the character were from the same era (M=88%, SE=2% for real-to-fiction direction vs. M=76%, SE=2% for fiction-to-real direction). When the eras of the character and the real person mismatched, participants were unlikely to say that either could exist in the world of the other (M=26%, SE=2% for both the real-to-fiction and the fiction-to-real directions). This produced a three way interaction of direction, era of the fictional character, and era of the real person that was on the cusp of significance, $F(1,28) = 4.02$, $p = .05$. These results echo those of Experiment 1 in suggesting that participants were not just considering whether real people could appear in fiction in an all-or-none way. Instead, their decisions depended on probability or relevance, based on temporal overlap.

Although both Robert E. Lee and FDR *could* appear in the world of Gone with the Wind in a logical or metaphysical sense of "could," participants were also taking into account the relative likelihood of such an appearance, based on temporal distance.

As in Experiment 1, we compared responses from participants who had read a given book to those from participants who hadn't. Although there were too few readers for some of the books to permit a meaningful statistical analysis, the trends for readers and nonreaders are quite similar, as Table 4 shows.

In Experiment 1, we found that participants believed real people were more likely to be present in fictional worlds when the real people were in the same locale as the characters. The data from Experiment 2 reinforce the importance of setting by showing that readers believe that real people are more likely to exist in a fictional world when the time of the novel aligns with that of the real person. When the times mismatch, there's little possibility of world crossing in either direction.

General Discussion

Both experiments confirmed one-way permeability: Participants in Experiment 1 were more likely to agree that a real person could exist in the world of a fictional character than that a fictional character could exist in the world of a real person. In Experiment 2, this difference appeared when the time of the real and fictional people matched, but not when it mismatched.

Permeability was also greater in the second experiment when both the characters and real people were from the past than when both were from the time the novel was written. Participants agreed on 86% of trials that two individuals from the past could inhabit the same world, but agreed on 79% of trials that two individuals from the time of publication could inhabit the same world, $F(1,28) = 5.74$, $p = .024$, by a planned comparison. This is a possible effect of genre: Historical novels may be more permeable than contemporary ones. The author of a historical novel typically has in mind a definite real-world place and time, and the importance of this setting (and accompanying realism) may invite readers to believe that aspects of that setting carry over to the world of the novel. For example, the importance of the Civil War milieu to Gone with the Wind may be a pragmatic indication that the reader should incorporate real-world facts from that milieu into the novel (see Byrne, 1993). By contrast, a particular time and place may be less crucial to contemporary novels, providing readers with fewer guidelines about which aspects of reality will continue to hold in the fictional world.

In thinking about the match between fictional worlds and the real world, however, we should be careful to observe that similar settings may be effective because they determine which causal influences from the real world could penetrate the fictional world. For example, readers believe it is unlikely that Jay Gatsby would encounter Abraham

Lincoln due to the temporal discrepancy. But the temporal mismatch may be important because of causal laws that govern people's lifetimes, not because of the absolute difference in era. It could well be that the Emancipation Proclamation influences the world of Jay Gatsby, despite the difference in time between the issuing of the Proclamation and the Jazz Age.

We noted that participants in Experiment 1 sometimes judged that fictional characters could appear in the real world. Figures 2a and 2b show that the same was true in Experiment 2, especially when the eras of the characters and real people matched. In line with one-way permeability, these judgments were less common than those in which real people were deemed part of a fictional world, but what prompted these decisions? One possibility is a confusion between different categories of hypothetical people. Consider a couple who decides to have a family and even decides on a name for their first-born daughter, say, "Olivia" (cf. Perry, 2001). If the couple happens to break up before they can start their family, then we might say that Olivia would have existed in the real world, but for the unfortunate break up. This case differs, however, from that of hypothetical people who are parts of a fictional work, like the Olivia in Twelfth Night or the characters in our experiments. The fictional status of these individuals prohibits them from being part of the real world (a prohibition that applies to Shakespeare's Olivia but not to the couple's Olivia), and enforces one-way permeability. It seems possible, however, that some participants answered the questions about whether a fictional character would have existed in the real world in a way that is appropriate to a merely hypothetical person. These participants may decide on the basis of the character's realistic qualities that he or she would have existed under the right circumstances, ignoring the character's fictional status. In this vein, one participant commented, "A well written character, if they could come out of the pages, would be able to interact with a real person in their era."

In sum, fictional worlds are not completely isolated. People believe that real-world figures (and presumably other real-world objects and events) could potentially appear in fictional worlds, even if they don't appear overtly. While readers sometimes export information from a fictional text (e.g., Gerrig & Prentice, 1991), these results indicate they also import people from reality.

Figure 2a: Historical Novels

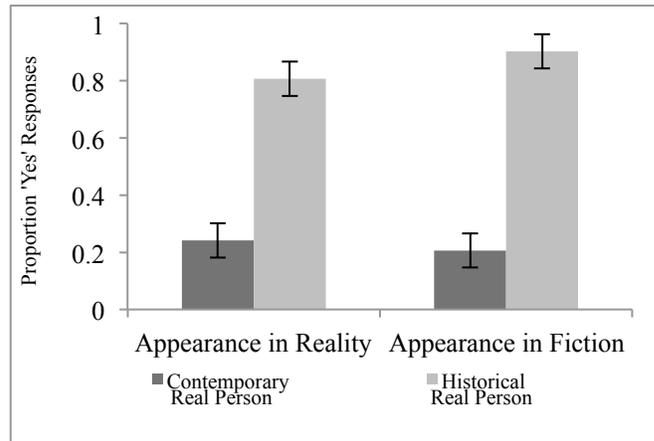

Figure 2b: Contemporary Novels
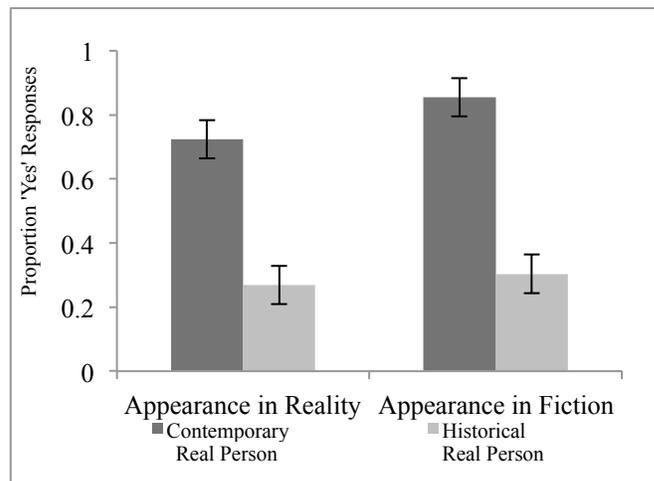
Table 3: Novels used in Experiment 2

Historical Novel	Contemporary Novel	Historic Figure	Contemporary Figure
Gone with the Wind (Scarlett O'Hara)	In Dubious Battle (Jim Nolan)	Robert E. Lee	Franklin Delano Roosevelt
Cold Mountain (W. P. Inman)	The Partner (Patrick Lanigan)	Abraham Lincoln	Bill Clinton
The French Lieutenant's Woman (Sarah Woodruff)	Travels with my Aunt (Henry Pulling)	Queen Victoria	Queen Elizabeth II
War and Peace (Pyotr Kirillovich Bezukhov)	The Idiot (Lev Nikolayevich Myshkin)	Alexander I	Alexander II
Blood Meridian (The Kid)	White Noise (Jack Gladney)	Andrew Jackson	Ronald Reagan

Table 4: Percentage of Readers' and Nonreaders' Agreement that Real and Fictional People could be in the Same World, Experiment 2

Direction of transfer	Temporal relation	Non-readers	Readers
Fiction-to-real	Modern character Modern real person	71.5%	80.0%
	Modern character Historical real person	26.9	26.7
	Historical character Modern real person	24.4	23.1
	Historical character Historical real person	79.0	88.5
Real-to-fiction	Modern character Modern real person	86.2	80.0
	Modern character Historical real person	29.2	40.0
	Historical character Modern real person	20.2	23.1
	Historical character Historical real person	88.2	100.0

References

Byrne, A. (1993). Truth in fiction: the story continued. *Australasian Journal of Philosophy, 71,* 24 – 35.

Fillmore, C. J. (1981). Ideal readers and real readers. In D. Tannen (Ed.), *Analyzing discourse: Text and talk* (pp. 248-270). Washington D. C.: Georgetown University Press.

Foulds, A. (2015). Writing real people. In Z. Leader (Ed.), *On life-writing* (pp. 99-111). Oxford, UK: Oxford University Press.

Gerrig, R. J. (1993). *Experiencing narrative worlds: On the psychological activities of reading*. Yale University Press.

Gerrig, R. J., & Allbritton, D. W. (1990). The construction of literary character: A view from cognitive psychology. *Style, 24*, 380-391.

Gerrig, R. J., & Prentice, D. A. (1991). The representation of fictional information. *Psychological Science, 2*, 336-340. doi: 10.1111/j.1467-9280.1991.tb00162.x

Gerrig, R. J., & Rapp, D. N. (2004). Psychological processes underlying literary impact. *Poetics Today*, *25*, 265-281.

Lewis, D. (1978). Truth in fiction. *American Philosophical Quarterly, 15*, 37-46.

Perry, J. (2001). *Reference and reflexivity*. Stanford, CA: CSLI Publications.

Pollard-Gott, L. (1993). Attribution theory and the novel. *Poetics*, *21*, 499-524.

Richert, R. A., Shawber, A. B., Hoffman, R. E., & Taylor, M. (2009). Learning from fantasy and real characters in preschool and kindergarten. *Journal of Cognition and Development, 10*, 41-66.

Skolnick, D., & Bloom, P. (2006). What does Batman think about SpongeBob? Children's understanding of the fantasy/fantasy distinction. *Cognition, 101*, B9-B18. doi: 10.1016/j.cognition.2005.10.001

Skolnick-Weisberg, D., & Bloom, P. (2009). Young children separate multiple pretend worlds. *Developmental Science, 12*, 699-705. doi: 10.1111/j.1467-7687.2009.00819.x

Weisberg, D. S., & Goodstein, J. (2009). What belongs in a fictional world? *Journal of Cognition and Culture*, *9*, 69-78.

Van de Vondervoort, J. W., & Friedman, O. (2014). Preschoolers can infer general rules governing fantastical events in fiction. *Developmental Psychology*, *50*, 1594.

Zwaan, R. A., & Radvansky, G. A. (1998). Situation models in language comprehension and memory. *Psychological Bulletin, 123*, 162-185. doi: 10.1037/0033-2909.123.2.162