Updating of Protagonist Information in Narratives

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Updating of Protagonist Information in Narratives

An Honors Thesis submitted in partial fulfillment
of the requirements of Honors Studies in Psychology

By

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Abstract

The purpose of the present research was to further examine contested findings in the research literature surrounding the processes readers use to maintain and update their mental representation of contextual information in a text. Research indicates that whether information is directly relevant to the goal of a story’s protagonist influences whether it will be used as a basis for later validation (Levine & Kim, 2019; Levine & Klin, 2001; Lutz & Radvansky, 1997). Some prior research that indicates that participants fail to validate inconsistent contextual information (Albrecht & Myers, 1995; Smith et al., 2020; Smith & O’Brien, 2012) relies on materials in which the inconsistent information is goal irrelevant. The current study employed similar methodology to Smith and O’Brien but with a focus on protagonist identity rather than location. Participants read passages in which the consistency between mentions of goal irrelevant protagonist occupation information was manipulated. Contrary to hypothesis, readers experienced reading disruptions any time they encountered occupation information that was inconsistent with a prior mention, despite its irrelevance. The present findings suggest that readers continually monitor even goal irrelevant identity information.
Updating of Protagonist Information in Narratives

Reading forms much of the foundation of knowledge by which we remain up-to-date and make judgments about daily activities, current events, and more. Moreover, reading takes place in a variety of settings: schools, workplaces, leisure, etc. Reading simple text often feels entirely automatic to those who have learned to do so reasonably well, which is fortunate considering how often it is required. Each day, we read countless text messages, road signs, ingredient labels, emails, etc. Reading these materials feels more like something that simply happens rather than something that takes work to complete. However, despite the second-nature ease of everyday reading, many complex mental processes underpin even the most basic reading comprehension tasks. Take for example reading through a simple, half-page story in which a character named David leaves his home, arrives at a restaurant, orders food, eats his meal, returns home, and comes down with food poisoning. Full comprehension of this story is a trivial task for the average reader. On a more granular level, though, it is not trivial how readers are able to keep up with the changing and unpredictable information in the story. Several critical tasks such as properly encoding information, remembering context, and monitoring for consistency are active in the background, enabling the reader to read seamlessly.

This study sought to further understand how readers keep track of these context changes throughout a story. Specifically, we examined how readers track personal information related to a story’s protagonist and how they respond when they encounter inconsistent information. Some research suggests that readers may skip over information that is inconsistent with their prior knowledge if the information presented is not immediately relevant to the goal of a story’s protagonist (Levine & Kim, 2019). If readers are skipping over any information that directly conflicts with information they already know, it is important to understand under what
circumstances this occurs. The implications of skipping over inconsistent information could have tangible consequences: in the event that the “story” was something like a public news article, properly understanding context (or failing to) could affect a reader’s understanding of the real world. A misinformed reader could propagate misinformation and potentially influence the opinions and actions of others. Additions to our understanding of how readers process information can have a far-reaching impact, potentially by improving the efficacy of teaching/learning strategies in the classroom, helping to prevent mistakes during tasks that rely on reading in the workplace, or providing a basis for more effectively combating false information in written material.

Imagine that there were no mechanism by which readers could accurately remember information in the story that occurred prior to the information they were currently reading. It seems obvious, but without an up-to-date mental representation of prior information, new events in the story would be nonsensical. It would be quite confusing to read that David was eating in the restaurant if the reader did not remember that he had left his home, and the information about his eating at a restaurant and got food poisoning has different implications than if he ate at home. Furthermore, this example assumes that the reader properly encodes (that is, understands and commits to memory) all the information they read. So, let us assume that perfect mechanisms for both encoding and memory exist, and a reader could easily commit to and retrieve from memory every detail of even lengthy stories. Even under this assumption, these mechanisms would be worthless without some way of prioritizing the most relevant information stored in memory. When David eats in the restaurant, the most relevant contextual information is that he is in the restaurant and is eating his food, even though the reader remembers that he used to be at home. Narratives often follow characters through multiple locations, emotional states, actions,
etc. That a reader could follow even a simple narrative progression like the one above suggests that they employ some method of taking in new information and prioritizing that which is most relevant. It is clear that processing even simple stories involves interactions between several underlying mechanisms.

Of primary interest in the current study is the process of validation, when readers process new information as they read and compare it to their prior knowledge (Albrecht & O'Brien, 1993; Singer, 2006). When the reader learns that David is in a restaurant, they must compare this new information with their prior knowledge that David is (was) at home. One widely supported theory proposes that readers maintain a mental framework of contextual information, known as the situation model, as they progress through a story (Zwaan & Radvansky, 1998). The situation model consists of information from the story (e.g., protagonist identity, location, etc.) as well as the reader’s general knowledge about the world. A reader’s situation model is updated as they encounter new information in a text and synthesize newer and perhaps more relevant information with existing information through validation (Zwaan & Radvansky, 1998).

Much research exists regarding how, when, and to what extent validation of new information might occur. When new information agrees, or perhaps does not disagree, with a reader’s existing situation model, validation is likely to occur easily. The situation model is simply updated with the new information. When new information is inconsistent with the situation model, validation becomes more difficult, and this processing difficulty is often indexed by increases in reading time. It requires more time and mental effort to reconcile or accommodate details which contradict, rather than simply occur after, each other. Because of this observable difficulty, much of the research surrounding validation involves presenting readers with inconsistencies in narrative passages. These are particularly useful opportunities to
observe participant behavior, since validation is expected to be obstructed at these moments. For example, processing difficulty is shown to increase the time required for validation when a story’s protagonist is initially described as tall, but subsequent information states or suggests that the protagonist is short (Albrecht & O'Brien, 1993). In a classic example, Albrecht and O’Brien demonstrated that participants experienced processing difficulty when reading stories in which characters exhibited conflicting characteristics. One passage that was presented to research participants described a character named Mary as being a strict vegetarian. Later in the story, Mary ordered a cheeseburger in a restaurant. Participant reading consistently slowed down at these moments, suggesting that participants experienced difficulty validating Mary’s inconsistent actions. This difficulty even extended to stories where Mary only used to be a vegetarian and is under no such limitation when she orders the burger (O’Brien et al., 1998). This finding is ascribed to the hypothesis that information from early in a story, such as Mary's (former) vegetarianism, becomes easily available when related information, such as Mary eating, is presented. Further, the updating of the information about Mary's vegetarianism does not replace it; instead, it exists alongside the formerly-correct information.

Interestingly, the occurrence of validation cannot be predicted simply by the truthfulness or compatibility of narrative events. In fact, there are many factors that influence the likelihood of validation occurring. Some narrative characteristics make it more likely that readers will notice and validate inconsistent information. Validation is shown to occur when: the reader is instructed to carefully validate information while they read (Singer, 2006); the reader is presented with information that contradicts an inference that they were led to make (Klin, 1995); when highly scripted roles are confused, such as a passage describing a manager playing a guitar on stage as opposed to a guitarist (Cook & Myers, 2004); and when a protagonist’s actions or
characteristics are inconsistent with previously established actions or characteristics (Albrecht & O’Brien, 1993).

Sometimes, however, readers do not validate inconsistent information whatsoever, showing no reading time increase that would be expected during normal validation. In other words, they “skip over” wrong information without appearing to be bothered by it. Certain narrative characteristics make it more likely that readers will skip over inconsistent information. An appreciable body of research suggests that inconsistencies are overlooked when sufficient time has elapsed since the reader encountered the establishing information and when they had not been given reminder cues prior to the inconsistency (Albrecht & Myers, 1995; Smith et al., 2020; Smith & O’Brien, 2012). Additionally, goal relevance has an established impact on whether information is validated, with irrelevant information less likely to be validated than relevant information (Levine & Kim, 2019; Lutz & Radvansky, 1997). Goal relevance is of particular importance in the current study. Some goal relevance research suggests that validation of inconsistencies can occur despite the above factors such as elapsed time, so long as the information in question is goal relevant, that is, directly relevant to the goal of the protagonist in a narrative (Levine & Kim, 2019; Levine & Klin, 2001). If inconsistencies surrounding irrelevant information are not validated due to unimportance, then perhaps some prior evidence suggesting that readers skip over other types of inconsistencies may be due, in part, to the information or inconsistencies in question not being goal relevant. A lack of goal relevance and elapsed time both shift participant focus away from information, which seems to account for the fact that they make later validation less likely to occur.

It can be difficult to write experimental narratives that mimic characteristics of leisure reading: intrigue, suspense, aesthetic writing style, etc. Especially when narrative passages are
short, as is the case with much validation research, it can be difficult to write passages that even read naturally. It is possible that the imposed limits of experimental constraints can begin to influence experimental results and limit their generalizability. The mechanisms employed by a reader to comprehend a short, choppy experimental passage could differ from those employed to process a seamless, fun leisure piece. Thus, it is desirable to maximize the extent to which passages mimic real world narratives. One way of doing this is to maximize the goal-relevance of narrative action, since goal relevance is a common characteristic of leisure reading. In leisure pieces, the location, actions, and characteristics of a character are often referenced to the extent that they are relevant to the protagonist’s goal.

In light of this, we think it worthwhile to revisit experimental passages used in prior studies and consider these potential effects.

Our approach to the current study is inspired largely by a review of the results and materials of Smith and O’Brien (2012), who showed that readers overlook location-based inconsistencies when they are not given additional location cues. An example passage is provided in Table 1. Across Smith and O’Brien’s experimental passages, the protagonist’s

<table>
<thead>
<tr>
<th>Table 1: (sample passage from Smith &amp; O'Brien, 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
</tr>
<tr>
<td>The junior varsity team raised enough money to treat the varsity team to a day at Six Flags. The Team Captain was especially excited because he had been working hard during practice all week and needed a day of fun. The team captain was waiting to be let into the park.</td>
</tr>
<tr>
<td><strong>Consistent</strong></td>
</tr>
<tr>
<td>Once he got his ticket, he walked through the gates into the park. He was standing by the security office inside the park.</td>
</tr>
<tr>
<td><strong>Inconsistent</strong></td>
</tr>
<tr>
<td>Once he got his ticket, he walked over onto the walkway to wait. He was standing by the security office outside the park.</td>
</tr>
<tr>
<td><strong>Backgrounding</strong></td>
</tr>
<tr>
<td>As The Team Captain waited for his friends to see him, he concentrated on the upcoming game. If his team won this week, that would mean they would be in the play-offs next week. If they lost, everyone in the school and town would be disappointed. This was a gloomy prospect because it would be as if all of the hard work they had been through up to now would be for naught.</td>
</tr>
<tr>
<td><strong>Target</strong></td>
</tr>
<tr>
<td>The Captain stepped out of line for the first ride. People were cheering for his football team to win.</td>
</tr>
<tr>
<td><strong>Conclusion</strong></td>
</tr>
<tr>
<td>He hadn’t lost a game in three years. Everyone counted on him to get his team into shape, and he was up for the challenge.</td>
</tr>
</tbody>
</table>
inconsistent location was rarely goal relevant. The passage in Table 1 establishes the team
captain’s location as either inside or outside of the gates of Six Flags, which is relevant to his
stated goal of having a fun day at the amusement park. However, the backgrounding section
emphasizes the importance of an upcoming football game, shifting focus away from the
protagonist’s location and towards an intangible future event. The importance of the football
game is further supported by the length of the backgrounding section, the cheering of the park
patrons for the football team, and the passage’s repeated focus on the implications of losing. In
the context of the entire passage, the primary goal of the protagonist appears to be winning the
football game rather than simply having a fun day at Six Flags. The importance of the upcoming
game would not be affected by which side of the gate the team captain stands on. Thus, this
location information appears to be goal irrelevant. Since goal irrelevant information is less likely
to be validated than relevant information (Levine & Kim, 2019; Levine & Klin, 2001), we think
it possible that participants’ failure to validate these inconsistencies is due at least partially to
their being goal irrelevant.

In response, the current study employed methods very similar to those of Smith and
O’Brien (2012). Participants read simple narrative passages that described a protagonist
completing some simple narrative action. An example passage is provided in Table 2. Like the
passage in Table 1, our passages contained important instances of contextual information, and
the consistency of the two instances varied experimentally. Where the methodology of this study
departed from that of Smith and O’Brien was that rather than focusing on protagonist location,
we chose to focus on protagonist identity. Protagonist identity is a very significant concept in
most narratives. In stories like these, other contextual elements such as location are relevant largely to the extent that they support the actions and needs of the protagonist. A story like the one in Table 2 but without any characters is certainly imaginable, but it would be neither remarkable nor interesting to read. The inclusion of a protagonist introduces an important actor with goals and agency that stands out to a reader. We reasoned that the prominent role of the protagonist in our passages would make readers more likely to notice protagonist-related inconsistencies than they would location-related inconsistencies.

Our chosen element of protagonist identity information was protagonist occupation. We manipulated instances of protagonist occupation such that an initial mention was either identical, similar, or dissimilar to a later mention in the critical sentence. Backgrounding sentences provided spacing between these mentions of protagonist occupation. Backgrounding sections are a commonly used tool in comprehension research, and they are designed to allow time for information (in this case, the initial occupation mention) to be removed from a participant’s working memory. Information in working memory is still within a participant’s active focus and has not yet been committed to long-term memory. We were largely concerned with validation that synthesizes new information with that stored in longer-term memory, like that contained in the situation model. Whether validation would occur between two inconsistent mentions that were both still in working memory is hardly an interesting question. Crucially, the protagonist’s

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**Table 2: Sample passage from the present study**

| **Introduction** | The photographer/videographer/baker opened his garage to get the lawnmower. |
| **Body**        | He hadn’t mowed his front lawn all season. The grass had grown thick and up to knee height. He filled the mower up with fresh gasoline and rolled it outside. He fought the small mower through the mountain of grass. The once overgrown lawn was beginning to look presentable. |
| **Critical**    | The yard pleased the photographer for the first time in months. |
| **Spillover**   | He celebrated with a cold drink. |
occupation was entirely irrelevant to their goal in each passage. Passages were written so that the protagonist’s occupation had no connection to their behavior, location, or stated goal. This was to maintain consistency between characteristics of our passages and those of Smith and O’Brien (2012). We would not have been able to draw effective comparisons between our results and those of Smith and O’Brien without maintaining goal irrelevance in our passages.

We hypothesized that participants would exhibit increased reading times on critical sentences that contained dissimilar occupation labels, such as photographer and baker, due to expected processing difficulty. We expected participants to exhibit no such difficulty when reading critical sentences containing identical occupation labels, since the two instances were consistent. Notably, we expected to observe no increase in reading time for the similar condition despite the instances of identity information being inconsistent. Whether the protagonist is a photographer or videographer had no direct relevance to his mowing the lawn. Because of that irrelevance, we expected participants to overlook (i.e., fail to validate) these minor inconsistencies. If readers fail to validate these minor inconsistencies related to protagonist identity due to their irrelevance, this could point to the influence of goal relevance (or lack thereof) in Smith and O’Brien’s (2012) results.

**Method**

**Participants**

For this study 59 participants were recruited from introductory psychology courses at the University of Arkansas and compensated with course credit towards a research requirement. This sample size exceeds that used by Smith and O'Brien (2012) and thus was assumed to provide sufficient statistical power.

**Materials**
Eighteen experimental passages and six filler passages were written for use in this study. Each experimental passage began with a short introductory sentence that established the setting of narrative action, protagonist identity via an occupation label, and a simple goal for the protagonist. This initial occupation mention was manipulated within passages, creating three versions of each story corresponding to each of the three conditions (see Table 2). In the identical condition, this initial mention was identical to a later mention in the critical sentence. In the similar and dissimilar conditions, this initial mention differed from the critical sentence label in a minor or major way, respectively. Pairs of protagonist labels used in the similar condition were first normed for similarity. This was to ensure that results would not be influenced by our subjective judgements of what occupations were “similar.” Norming study participants ranked several dozen pairs of protagonist occupations for similarity on a qualitative 5-point scale ranging from “very dissimilar” to “very similar.” Data from 37 participants who passed an in-survey attention check were used to generate a list of the most similar pairs.

The next five sentences of each passage comprised a backgrounding section of five sentences totaling exactly 49 words. Sentences one, three, and four of each backgrounding section began with a third-person pronoun referring to the story’s protagonist. Sentences two and five began with a reference to another object or action within the story. Care was taken to refrain from introducing important supporting characters, as shifting attention away from the protagonist could subtract from the importance of their identity. A critical sentence of 11 or 12 words immediately followed the backgrounding section of each passage. This sentence contained the second mention of protagonist occupation. Finally, a spillover sentence containing relatively unimportant narrative action concluded each passage. Processing difficulty created by critical sentences can continue into the reading of subsequent text (Rayner et al., 1989).
Measuring reading times from spillover sentences can provide additional evidence of this difficulty. Filler passages followed the structure of experimental passages but were written without the same strict word count constraints. Filler passages were included to break up the systematic nature of experimental manipulations and prevent participants from discerning the purpose of the study through patterns of passage presentation.

**Design**

Protagonist occupation consistency was manipulated within participants, so each participant saw all possible conditions but never saw multiple versions of the same story. Condition was manipulated within passages, so that each passage had three distinct versions. There were three lists of stimuli created with the following constraints: in each list, one-third of the experimental passages appeared in each of the conditions. Across lists, each passage was seen by one-third of the participants in each of the three conditions. Experimental passages were always presented in random order. Each participant first saw two filler passages, then the remaining fillers were presented every fourth passage. No more than three experimental passages were ever presented consecutively.

**Procedure**

Participants completed the experiment on an individual lab computer in a private room. Participants interfaced with lab computers via Direct RT (Jarvis, 2008). A starting screen prompted participants to advance through experiment instructions by pressing the spacebar. Subsequent instructional screens informed participants that they would read stories one line at a time and to read for comprehension. They were told that each story would be followed by a yes/no comprehension question and to concentrate on accuracy. Participants were instructed to keep their left hand on the spacebar to advance through the experiment and to use their right
hand on the left and right arrow keys, corresponding to yes and no (indicated by stickers on the keys), to respond to comprehension questions. Following instruction completion, one practice story and comprehension question appeared to familiarize participants with the sentence-by-sentence presentation and study format. Participants then advanced through each experimental passage in the same manner until experiment completion.

**Results & Discussion**

*Data Screening*

Of 59 participants, three were not included in the data analysis due to accidental file deletions. Another five were excluded from further analysis due to low accuracy on comprehension questions, answering less than 75% correctly. The remaining participants got an average of 92.3% ($SD = 4.1$) of comprehension questions correct. Backgrounding section reading times were averaged to create a mean reading time for each text. One participant was excluded from further analyses due to an average reading time significantly exceeding three standard deviations above the mean. Reading times from 50 participants were all within two standard deviations of the calculated mean.

These 50 participants provided 866 target line observations and 898 spillover observations for analysis. Our exclusion threshold for reading times on critical and spillover sentences was the same as that used by Smith and O’Brien (2012). Any reading time further than 2.5 standard deviations from the mean of all target and spillover sentences was excluded from further analysis. This resulted in 2% of data being discarded. No participant had more than five reading times excluded.

*Models and Analysis*
A mixed linear model was used to analyze these data. Separate models were fit for the target line and the spillover line. Condition (identical, similar, dissimilar) was analyzed as a fixed factor. Participants and stories were analyzed as random factors.

Target Line Results

There was a significant difference in reading times among the three conditions (see Figure 1), $F(2, 798.26) = 22.4, p < .001$. Pairwise comparisons between conditions indicated that reading took significantly longer in the dissimilar condition than in the identical condition, $t(798.51) = 6.7, p < .001$, $d = 0.44$, which was expected. Unexpectedly, reading took significantly longer in the similar condition than in the identical condition, $t(798.08) = 3.8, p < .001$, $d = 0.25$, and significantly longer in the dissimilar condition than in the similar condition, $t(798.19) = 2.9, p = .004$, $d = 0.19$. Participants exhibited slightly longer reading times for the dissimilar condition ($M = 3316$ ms, 95% CI = [3069, 3563]) than the similar condition ($M = 3099$ ms, 95% CI = [2853, 3345]), though this difference was not significant. These results do not support our prediction that significant pairwise differences would occur only between dissimilar and identical conditions. Participants exhibited reading time increases regardless of the nature of the inconsistency, suggesting that they consistently
validated protagonist occupation information even when the inconsistencies were minor and irrelevant.

**Spillover Line Results**

There was a significant difference in reading times among the three conditions (see Figure 2), $F(2, 829.4) = 16.8, p < .001$. Pairwise comparisons between conditions indicated that reading took significantly longer in the dissimilar condition than in the repeat condition, $t(829.4) = 5.7, p < .001, d = 0.36$, and significantly longer in the dissimilar condition than in the similar condition, $t(829.4) = 3.8, p < .001, d = 0.24$. There was no significant difference in reading times between the similar condition and the repeat condition, $t(829.4) = 1.8, p = .07, d = 0.12$. These results again suggest that participants experience more processing difficulty when validating dissimilar changes ($M = 2106$ ms, 95% CI = [1895, 2318]) than similar changes ($M = 1894$ ms, 95% CI = [1683, 2105]), though this difference was not significant.

**General Discussion**

The purpose of the present study was to further investigate how readers track and validate contextual information in written narratives. Significant debate exists over what circumstances cause validation to occur during reading. Numerous studies detail both situations in which
readers validate inconsistent information (Albrecht & O’Brien, 1993; Cook & Myers, 2004; Klin, 1995) and those in which they overlook it (Albrecht & Myers, 1995; Smith et al., 2020; Smith & O’Brien, 2012). Due to the established impact of goal relevance on whether certain information is validated (Levine & Kim, 2019; Levine & Klin, 2001), we reasoned that the results of prior validation research excluding goal relevance factors might have failed to account for their influence. The findings of the present study indicate that readers consistently validate protagonist identity information even when that information is goal irrelevant.

To test this, we designed a study inspired by Smith and O’Brien’s (2012), which showed that participants failed to validate inconsistent location information presented in short narrative passages. We believe that the goal irrelevance of the location information in their materials could possibly have accounted for participants’ failure to validate those inconsistencies. Our primary modification of Smith and O’Brien’s materials was our focus on protagonist occupation, an extension of protagonist identity, rather than location. Our participants read a series of passages containing multiple mentions of a protagonist’s occupation. The consistency of these mentions was manipulated such that the first mention was either identical, similar, or dissimilar to a second mention later in the story. We reasoned that the importance of protagonist-related information in understanding a narrative should make it even more likely that participants would validate changes in protagonist occupation than location. Despite the importance of protagonist information, we hypothesized that readers would overlook minor inconsistencies between occupation mentions in the similar condition simply due to their irrelevance. Our passages were written to mimic Smith and O’Brien’s in the sense that the manipulated contextual element would be entirely goal irrelevant. This was to ensure that any comparison drawn between how readers process location and identity information would not be influenced by a goal relevance
variable. To have shown that participants failed to validate even identity-related contextual information so long as it was goal irrelevant would arguably have undermined the novelty of Smith and O’Brien’s conclusion that they fail to validate irrelevant location information.

Readers consistently experienced processing difficulty when they encountered inconsistencies of any magnitude, contrary to our hypothesis that they would overlook inconsistencies in the similar condition. These results indicate that goal relevance was not the most important factor involved in determining how accessible prior knowledge of the protagonist’s occupation would be when readers encountered inconsistencies. Several characteristics of our method may be responsible for our observed results. Our choice of occupation may not have been the proper element of protagonist identity to focus on. Context cannot be categorized as simply as we are tempted to do. Elements of protagonist identity include appearance, behavior, personal history, dialect, and many others. Readers may prioritize some of these such as occupation more so than others, making them more likely to be tracked closely. Even if our results showed that readers were prone to overlook occupation inconsistencies, it would remain unanswered how carefully they might track other elements of protagonist identity.

How information is backgrounded influences the extent to which it remains relevant to a reader. Multiple factors dictate how likely prior information is to be relevant, or active for use, in validation. These factors are studied in reading comprehension literature, but it is fairly well-established that elapsed time, reminder cues, and relevance all influence how likely it is that a reader will continue to prioritize certain information (Albrecht & Myers, 1995; Levine & Kim, 2019; Levine & Klin, 2001; Smith et al., 2020; Smith & O’Brien, 2012). Any of these factors can be manipulated in a backgrounding section; doing so in an ineffective manner might cause a
reader to deactivate critical information or continue to prioritize non-critical information. It is possible that ineffective backgrounding may account for our observed results. A few notable differences existed between the backgrounding section of our passages and those used by Smith and O’Brien. Smith and O’Brien’s passages included sections of 81 words between the initial mention of protagonist location and the target sentence mention. Our passages included 49 words between the end of the introductory sentence that contained the initial mention of protagonist occupation and the target sentence mention. Smith and O’Brien’s longer backgrounding section may have provided additional time for the initial location mention to be removed from participant working memory, making it less likely to be retrieved for validation later. Our backgrounding length may not have been sufficient for protagonist occupation to be removed from readers’ working memory. Modifying our passages to reflect a backgrounding length more similar to those of Smith and O’Brien might make it more likely that participants would overlook the same occupation inconsistencies that they validated in this study.

The content of the backgrounding section in some Smith and O’Brien (2012) passages may simultaneously be a strength and a shortcoming of their materials. In the Smith and O’Brien example passage discussed previously, the backgrounding section shifts significant focus away from the initial protagonist goal and location of having a fun day at Six Flags and onto the importance of an upcoming football game. This shift of focus causes protagonist location to become largely goal-irrelevant, and the importance of this was one of the primary motivators of the present study. On the other hand, that the backgrounding section does not focus solely on the protagonist for its entirety is possibly a necessary element for effective backgrounding. Natural narrative progression does not require that all plot advancements be directly tied to a description of the protagonist. Natural readability is desirable for passages like these because their
associated results can be generalized to more natural reading scenarios. It is possible that a desirable middle ground exists for backgrounding sections wherein some focus is shifted away from the critical information, but not enough for it to become goal irrelevant. Our backgrounding sections focused heavily on the protagonist throughout. Participants were given very little personal information about the protagonist of each passage, and it is possible that protagonist occupation always remained relevant to readers simply because it was a scarce resource.

To further investigate which factors determine the relevance of certain information for validation, it is worthwhile to revise these materials to include more effective backgrounding and to examine other elements of protagonist-related information. More effective backgrounding sections would include a higher word count, perhaps closer to the 81 words used by Smith and O’Brien (2012), and subject matter relevant to the protagonist’s goal but not laser-focused on protagonist identity. Appearance is a highly flexible category of characteristics that could provide additional insight in future research. A highly goal relevant appearance detail might be that a very short protagonist plays in a basketball game with other players who are very tall. An irrelevant detail might be the shirt color of a protagonist who is doing the dishes at home. Further investigation of these factors will help to answer questions about how readers validate information that this study sought to address.
References


