Towards a Cognitive Science of Literary Style:
Perspective-Taking in Processing Omniscient versus Objective Voice

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Abstract

What are the consequences of narrative style for the cognitive operations that comprehenders perform? Third person narratives can adopt different voices. Omniscient voice has access to the mental states of characters, while objective voice only describes how characters would appear to an observer. It's currently unknown what cognitive consequences different voices have for people processing third person language. We hypothesize that in building representations of described scenes, omniscient voice may make comprehenders more likely to adopt the internal perspectives of characters than objective voice. We tested this prediction in a narrative-image matching study. Participants read short passages describing a third person character in either omniscient or objective voice. They then saw an image that either depicted the described scene or not, and which depicted the event from the perspective of the character or not. Their task was to decide as quickly as possible whether the image matched the narrative. In cases where the narrative and image matched, participants were significantly faster to indicate the correct decision when the narrative voice and the image perspective matched—that is, an image from the character's perspective after an omniscient narration or an image from a different perspective after an objective narration. This finding provides the first evidence that narrative voice affects the perspective from which comprehenders represent described scenes.

Keywords: language processing; perspective; narrative voice; literary style; grammatical person; mental simulation

Introduction

Understanding the processes that underlie language comprehension is among the primary concerns of cognitive science, and justifiably so. Language is pervasively, and uniquely, human. The study of the cognitive processes underlying language comprehension has, also justifiably, begun by focusing on how people process words or sentences in isolation. Yet this is not language's natural state in the wild. We mostly interact with words and sentences embedded in context—social, physical, and linguistic. And one—though not the only—context in which words and sentences appear is in narrative. Across cultures, humans recount and process accounts of sequences of events, whether purportedly fictive or factive. We're all story-tellers, from marketing directors to kindergarteners to shamans. The outstanding question for cognitive science is how we go about understanding narratives, with all their stylistic peculiarities. What cognitive operations do we perform to go from a story to understanding?

Narrative Voice

A key feature of every narrative is that it is told using a particular (though possibly variable) narrative voice. Here, by way of illustration, is an example of two different narrative voices that appear in the same text. Ernest Hemingway's *The Old Man and the Sea* features an eponymous old man. Throughout the narrative, we read different kinds of descriptions of him. Early on, we read:

> *The old man was thin and gaunt with deep wrinkles in the back of his neck. The brown blotches of the benevolent skin cancer the sun brings from its reflection on the tropic sea were on his cheeks. The blotches ran well down the sides of his face and his hands had the deep-creased scars from handling heavy fish on the cords. But none of these scars were fresh. They were as old as erosions in a fishless desert.*

Compare this with a passage that follows, as we're getting to know the old man a little better:

> *He was asleep in a short time and he dreamed of Africa when he was a boy and the long golden beaches and the white beaches, so white they hurt your eyes, and the high capes and the great brown mountains. He lived along that coast now every night and in his dreams he heard the surf roar and saw the native boats come riding through it. He smelled the tar and oakum of the deck as he slept and he smelled the smell of Africa that the land breeze brought at morning.*

Although these two passages both describe the old man in the third person, they differ in terms of their narrative voice. While the first describes properties of the old man that can be viewed by an outside observer, the second omnisciently enters the old man's mind, so that the narrator is able to

recount aspects of the old man's mental life that would only be known to him.

For cognitive scientists, the first question is what the consequences of narrative voice choices are for comprehenders. Do we process omniscient voice differently from objective voice? And if so, in what way? Yet, to date, we know of no work addressing narrative voice and how it affects language processing.

Perspective in Language Processing

One thing that's quite clear from recent work on language processing is that comprehenders construct detailed mental representations of scenes that they read or hear about. These are variously described in different literatures as *situation models* (Zwaan & Radvansky, 1998) or *mental simulations* (Barsalou, 1999). It also seems clear that these mental representations are often constructed from a particular perspective within the described scene. Different features seem to affect the perspective a comprehender will adopt (D'Argembeau, Comblain, & Van der Linden, 2002; Frank & Gilovich, 1989; Nigro & Neisser, 1983; Robinson & Swanson, 1993), but these at the very least include the types of actions the narrative describes (Borghi, Glenberg, & Kaschak, 2004) and the grammatical person of the narrative (for instance, 2nd versus 3rd person; Brunyé et al., 2009).

The effects of grammatical person on mental representations are particularly relevant to voice—in fact, deciding whether a narrative should use 1st person (*I*) or 3rd person (*he*), is a dimension of voice. There's been some work (Brunyé et al., 2009) showing that when people process 3rd person language, they are more likely to mentally represent the described scenario from the viewpoint of an outside observer (they adopt an *external* perspective) than from that of a character (an *internal* perspective). By way of comparison, 2nd person language (about *you*) is more likely to induce an *internal* perspective.

And yet, not all third person narratives are alike, as the Hemingway passages illustrate. There's evidence that the more a comprehender identifies with a character, the more likely he or she is to adopt that character's perspective when mentally reconstructing the described scene (Libby & Eibach, 2002; Libby, Eibach, & Gilovich, 2005).

So voice might make a difference. In cases where the narrator omnisciently describes a character's mental states, it could well be that this draws the comprehender into adopting that character's perspective in mental representations of the described scene. By contrast, objective voice, which describes characters as they would be viewed externally, might be more likely to induce external perspectives in mental representations of described scenes.

This reasoning leads to two key questions. First of all, is it ever the case that third person language can systematically lead comprehenders to adopt an internal perspective, rather than the external perspective that has previously been shown to predominate with third person language? And second, if it is, what is it about certain third person narratives that leads comprehenders to adopt an internal perspective?

We pursued both of these questions through an experiment looking at one property of narratives—narrative voice—that presents itself as a viable candidate for engaging internal perspectives in comprehenders. This is a first step in applying tools used to address comprehension processes to the stylistic details of narrative—a step in the direction of a cognitive science of literary style.

Method

In order to investigate whether third person language using different narrative modes—objective or omniscient—induces mental representations of events from different perspectives in comprehenders, we adapted a method first used by Brunyé et al. (2009). We began by creating pairs of four-sentence narratives in English; one member of each pair used omniscient voice and the other used objective voice. Each pair of narratives concluded with the same fourth sentence. Native speakers of English read one narrative from each pair, and then saw a picture that either depicted the scene described in the narrative or not. The participant's task was to decide whether the depicted event could be part of the preceding story. We were only interested in those trials in which the image did depict the scene. These images depicted the scene from either an internal perspective (as if the reader were the character described in the narrative) or an external perspective (as if the reader were an outside observer of the action performed by the character). We predicted that if readers were more likely to adopt an internal perspective when reading omniscient voice narratives, this should make them faster to indicate their judgments about the internal perspective images following omniscient voice narratives, and conversely, if they were more likely to adopt an external perspective while processing objective voice narratives, then objective voice should make them faster when confirming matching external perspective images.

Participants

Fifty-eight native speakers of English who were undergraduate students at the University of California, San Diego participated in this study in exchange for course credit. All participants reported normal or corrected-to-normal hearing and vision.

Language Materials

We created twenty-four pairs of narratives. Within each pair, the two narratives were made up of three sentences that differed, but they both ended with a fourth sentence that was the same. Each narrative was entirely in the third person, and used one of the two narrative modes: omniscient or objective. Omniscient narratives included information about the mental states of the protagonist, while objective narratives only described externally visible features of the protagonist. The final sentence in both conditions described an event where the protagonist manipulated the given object with her hand (e.g., she threw away, grabbed, peeled off, or picked up the object). In addition to these twenty-four

critical narratives, which were paired with matching pictures, as described below, we also created twenty-four filler stories, half in the omniscient and half in the objective mode. These were paired with non-matching pictures. Here is a sample pair of critical narratives:

(1a) Third person omniscient narrative

She was very uncomfortable because her hands felt sticky and there was still clay under her nails from her ceramics class.
She desperately wanted to wash her hands, but could not see a sink anywhere.
She could feel the clay drying even more and eyed the small towel on the table.
She picked up the hand towel.

(1b) Third person objective narrative

She appeared out of breath when she rushed into the room.
She looked down at the table, where there was a hand towel.
Her hands were covered with clay, and she glanced back and forth between her clay-covered hands and the towel.
She picked up the hand towel.

In both narrative modes, the number of third person pronouns *she* was matched (mean: 4.8 for omniscient, 4.4 for objective), and the total number of words used for each set of items was similar (mean: 52.5 for omniscient and 56.3 for objective).

Image Materials

The experiment used forty-eight critical pictures (twenty-four internal and twenty-four external perspectives) and twenty-four filler pictures (twelve internal and twelve external perspectives). For each set of critical sentences, corresponding pictures were taken to create a set that depicted the event from the internal perspective (i.e., a protagonist's or performer's viewpoint) as shown in Figure 1(a), and from the external perspective (i.e., an outside observer's viewpoint) as shown in Figure 1(b). Images were photographs taken using a tripod to ensure that all internal and all external images were taken from the same angle.

(a) Internal perspective   (b) External perspective
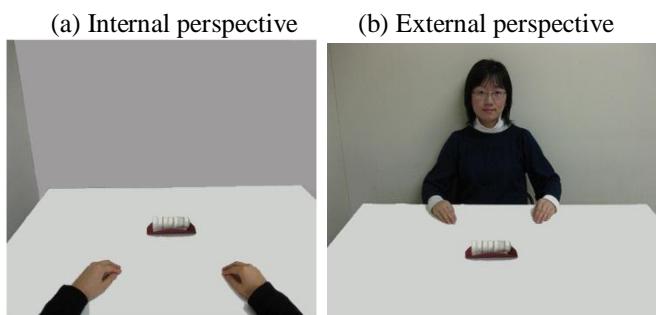
Figure 1: Internal versus external perspective images

Procedure

Participants were tested individually. The experiment began with a set of four practice trials, followed by the experimental session, which was composed of twenty-four criticals (requiring "yes" responses) randomly mixed with twenty-four fillers (requiring "no" responses). In the experimental session, each participant viewed twelve critical and twelve filler item-sets in the omniscient narrative mode, and twelve criticals and twelve fillers in the objective narrative mode.

Each trial began with a fixation cross for 500 ms, followed by the first sentence in the middle of the screen. Participants pressed the spacebar as soon as they finished reading the sentence, at which point it was replaced on the screen by the next sentence. After the fourth and final sentence, participants saw another fixation cross for 500 ms, followed by a picture depicting, from either an internal or external perspective, an image that either was or was not part of the scene described in the story that they had just read. Participants then indicated if the pictured event was mentioned in the prior set of sentences, as quickly and accurately as possible, by pressing a button ("l" for "yes" or "a" for "no").

Participants were asked to answer "yes" when the depicted scene was part of the prior story. No instructions were given regarding the different perspectives that images used or the different narrative voices, so as not to draw attention to these dimensions of the manipulation.

To ensure that participants paid equal attention to each of the four sentences in the narratives, every trial was followed by a comprehension question (after picture verification) that addressed one of the four sentences in the set, in equal proportions. We recorded the responses (i.e., "yes" or "no") and measured the reaction times for picture verification and responses to comprehension questions.

The two independent variables, Narrative Mode (Omniscient, Objective) and Picture Perspective (Internal, External) were fully crossed and manipulated within participants. The four experimental conditions produced by crossing these two variables were equally assigned to four lists in a Latin-square design, resulting in six experimental items in each condition for each participant. Likewise, the twelve omniscient and twelve objective filler stories were followed by half internal, half external perspective pictures that depicted objects unrelated to the preceding scene.

Predictions

We predicted that if third person omniscient narratives lead participants to project themselves into the protagonist and accept an internal perspective, participants should respond faster to internal perspective pictures, whose perspective matched that evoked by the preceding story, than to external ones, which mismatched. Conversely, if third person objective narratives drive participants to adopt an outside observer's perspective that has clear mental distance from the protagonist, it should facilitate responses to external perspective pictures.

Results

Three participants were excluded for being left-handed, and an additional three participants were excluded due to low accuracy (below 80%) to picture verification or question comprehension. One item was excluded for its low accuracy rate (below 80%). The image, of sushi, may have been problematic because it depicted a type of sushi not typically available in the United States, which might have confused participants. Extremely slow responses (those over 4000 ms), incorrect responses to picture verifications and/or to comprehension questions, and responses that were more than $2.5sd$ above or below the mean response time for each participant were removed. This resulted in eliminating 11.8% of the data (3.0% exclusion due to incorrect picture verification, 4.8% due to inaccurate response to comprehension questions, and 4.0% due to the outliers).

Two-way Repeated-Measures ANOVAs revealed no significant main effect of Narrative Mode ($F_1(1,51) = 1.0$, $p = 0.3$, $\eta^2_p = 0.02$; $F_2(1,22) = 1.4$, $p = 0.3$, $\eta^2_p = 0.06$). Picture Perspective produced a non-significant main effect in the subject analysis ($F_1(1,51) = 1.3$, $p = 0.3$, $\eta^2_p = 0.03$) but reached a significant effect in the item analysis ($F_2(1,22) = 6.9$, $p = 0.02$, $\eta^2_p = 0.24$). However, as we predicted, Narrative Mode and Picture Perspective produced significant interaction effects ($F_1(1,51) = 6.6$, $p = 0.01$, $\eta^2_p = 0.12$; $F_2(1,22) = 5.5$, $p = 0.03$, $\eta^2_p = 0.2$) (Figure 2).

Planned pairwise t-tests showed that external-perspective pictures were verified significantly faster after participants read the third person sentences framed in the objective mode than after their counterparts in the omniscient mode (mean RTs for external-perspective pictures: 1510 ms after omniscient narratives, 1385 ms after objective narratives; $t_1 = 2.3$, $p = 0.03$; $t_2 = 2.1$, $p = 0.049$). The converse was true as well: internal perspectives were verified numerically faster after reading sentences formulated in the omniscient mode than after reading sentences in the objective mode. However, the differences did not reach significance (mean RTs for internal-perspective pictures: 1392 ms after omniscient narratives, 1432 ms after objective narratives; $t_1 = 0.8$, $p = 0.4$; $t_2 = 0.4$, $p = 0.7$). The most robust difference was found in the picture verification time after participants read the omniscient narratives (mean RTs after reading omniscient narratives: 1510 ms for external-perspective pictures, 1392 ms for internal-perspective pictures; $t_1 = 2.6$, $p = 0.01$; $t_2 = 3.8$, $p = 0.001$), while only a numerical difference was found after participants read the objective narratives (mean RTs after reading objective narratives: 1385 ms for external-perspective pictures, 1432 ms for internal-perspective pictures; $t_1 = 1.1$, $p = 0.28$; $t_2 = 0.1$, $p = 0.9$).
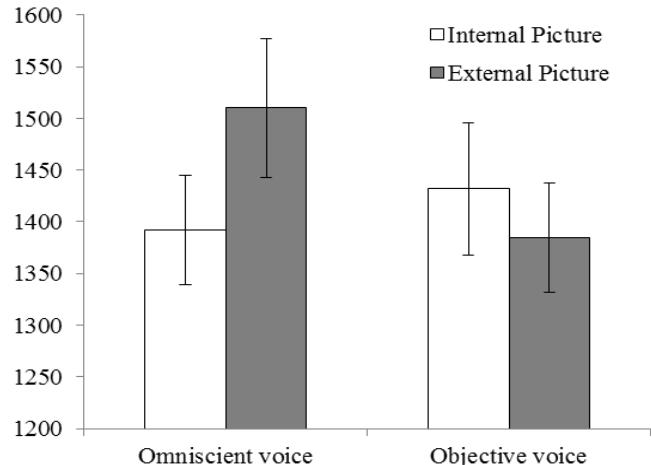

Figure 1: Mean RTs for picture verification, demonstrating an interaction effect between Narrative Mode (Omniscient vs. Objective) and Picture Perspective (Internal vs. External). Error bars indicate standard error.

In order to assess whether there could be a speed-accuracy tradeoff present in these data, we conducted an error analysis. We ran Repeated-Measures ANOVAs with Accuracy as the dependent measure and Narrative Mode and Picture Perspective as the independent measures. These revealed no significant main effects of Narrative Mode (Fs < 1) or Picture Perspective (Fs < 1), nor any interaction effect (Fs < 1).

We also conducted post-hoc analyses to determine whether perspective adoption effects differed according to participants' sex; as the narratives all described a female protagonist, it's possible that female participants were more likely to adopt an internal perspective on the described scenes. We had unbalanced numbers of male and female participants (male = 15, female = 37). Three-way Repeated-Measures ANOVAs with Reaction Time as the dependent measure and Narrative Mode, Picture Perspective, and Participant's Sex as the independent variables did not show a significant three-way interaction of Gender by Narrative Mode by Picture Perspective ($F_1(1,50) = 2.4$, $p = 0.1$, $\eta^2_p = 0.05$). This might indicate that perspective adoption is not significantly affected by participants' gender.

Discussion

We investigated the notion that language comprehenders construct mental representations of described scenes by adopting particular perspectives, perspectives that, by hypothesis, might be affected by the narrative voice used. Previous work (Brunyé et al., 2009) has shown that third person language tends to elicit an external perspective on described events, but we found that it did not do so across the board. Rather, as predicted, the adopted perspective was modulated by the type of narrative voice. Omniscient voice made comprehenders significantly more likely to adopt an internal perspective, while objective voice made them quantitatively more likely to adopt an external perspective.

The asymmetry between the strong effect of omniscient voice and the relatively weaker one of objective voice may relate to the fact that all narratives and images in the experiment described or depicted to the same female protagonist. It's possible that there was a cumulative effect over the course of the experiment whereby participants came to identify with the protagonist. This might have resulted in third person objective language, which according to previous results should have facilitated external images, instead driving internal mental representations of described events.

In general, these results we observed are compatible with previous work showing that language comprehenders not only construct detailed mental representations of described scenes, but do so from a particular perspective. Critically, this study adds to the existing literature on perspective by showing that person is not the only linguistic factor that can push the comprehender's adopted perspective around—narrative voice appears to have a similar effect. The perspective a comprehender adopts in constructing mental representations of described scenes is the flexible product of stylistic aspects of the narration itself. It is already known that the same person does not always lead to the same perspective in comprehension. Previous research conducted by Brunyé et al. (2009) shows that first person *I* in an isolated sentence is more likely to induce an internal perspective, but when it's embedded in a richer discourse context, it tends to evoke an external perspective. Our findings show a similar flexibility for third person language, but whereas it is the presence or absence of a back-story that has been shown to modulate perspective during first person language processing, we found that the style of the narrative context itself modulates perspective in third person language processing.

Our specific finding is that when the protagonist's internal states are described, as in a third person omniscient narrative, readers are more likely to adopt the visual perspective of the relevant character. This may be related to empathetic projection in which a reader engages with that character (Carr et al., 2003; Decety & Sommerville, 2003; Lamm, Batson, & Decety, 2007; Perrine & Decety, 2004). Reading descriptions of the mental and emotional states of a character might lead comprehenders to identify with and imagine themselves as that character. As a result, omniscient narration might not only lead to measurable differences in the visual perspective comprehenders adopt, but also influence the extent to which they adopt the affective perspective of a character—the extent to which they recreate, while reading, the emotions that a character might experience (Havas, Glenberg, & Rinck, 2007).

Our results may also be related to resonant projection—observers are more likely to find a situation resonant when they share action-relevant characteristics with the actor, such as a viewpoint in hand-object interacting events (Bruzzo, Borghi, & Ghirlanda, 2008), similar motor competence (Calvo-Merino et al., 2006), or relevant motor knowledge or expertise (Calvo-Merino et al., 2010).

Readers do not adopt a fixed perspective that is evoked by language, and it might be that the modulation of perspective by narrative voice works similarly to these other factors that influence projection.

Conclusion

In sum, the results we've reported here add to the existing literature on perspective adoption in language comprehension by showing that narrative style has an impact on whether comprehenders view a described scene from an internal or an external perspective. In some circumstances, third person language can be just as effective at transporting the comprehender into the described experience of a character as second person language can. Research like this shows the promise of using empirical cognitive science methods to explore the effects of literary style. Readers are, after all, humans, and reading is, after all, a cognitive behavior. Understanding the effects of cognitive style is well within our reach.

Acknowledgments

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