

Better You than I: Perspectives and Emotion Simulation during Narrative Comprehension

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Abstract

Recent studies suggest that readers develop richer multidimensional situation models when they mentally participate as characters in narrative worlds. The present study tested this by examining whether readers differentially represent situational elements when they read narratives using the pronoun 'you' or 'I' to describe a protagonist, and whether the pronoun 'you' would make readers more likely to react to the emotional valence of narratives, embodying the affective states of protagonists. Response times and error rates to comprehension questions demonstrated a richer representation of the spatial organization of narrative worlds with the pronoun 'you' relative to 'I.' Further, readers were more emotionally reactive to valenced narrative events with the pronoun 'you.' Results demonstrate that readers differentially represent narrative worlds as a function of perspective, developing richer spatial mental models of layouts and a greater internalization of emotional events when directly addressed as a protagonist.

Keywords: Emotion, perspective-taking, embodied cognition, discourse comprehension, language, action understanding

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In Nathaniel Hawthorne's (1834, p. 1) short story *The Haunted Mind*, the author invites the reader to explore the "intermediate space" between sleeping and waking:

What a singular moment is the first one, when you have hardly begun to recollect yourself, after starting from midnight slumber! By unclosing your eyes so suddenly, you seem to have surprised the personages of your dream in full convocation round your bed, and catch one broad glance at them before they can flit into obscurity.

In this classic tale the reader is directly addressed as the protagonist and invited to play an active role in imagining described situations, actions and emotions. Most readers, regardless of whether they are invited to do so, can relate to the experience of becoming immersed in narrative worlds, mentally simulating described and inferred sights, sounds and activities, and becoming invested in characters' experiences and outcomes. Indeed understanding language involves going beyond representing the text itself to creating vivid mental representations of described and inferred situations (i.e., situation models; Zwaan & Radvansky, 1998). These multidimensional situation models built during language comprehension track information regarding characters, locations, time, emotions, expectations, objects, actions and causality (Zwaan & Radvansky, 1998; Zwaan, 2004). Readers also represent described and inferred emotions (e.g., de Vega, León, & Diaz, 1996), and have recently been shown to mentally simulate, or embody, described actions (for a review, see Glenberg, 2007). Most relevant to the present study, the perspective from which readers embody described actions varies as a function of narrative perspective, typically manipulated through the use of pronouns (Brunyé, Ditman, Mahoney, Augustyn, & Taylor, 2009; Ditman, Brunyé, Mahoney, & Taylor, 2010; Ruby & Decety, 2001). The present study uniquely investigated two possible effects of narrative perspective. First, whether

perspective modulates the qualitative characteristics of constructed situation models, including the representation of time, space, context and characters. Second, we examined whether readers would be more likely to internalize, or embody, a protagonist's emotions when they are directly addressed as the subject of a narrative.

Previous behavioral and neuroimaging data demonstrate that linguistic cues, such as pronouns, encourage readers to differentially adopt perspectives during reading (Brunyé et al., 2009; Ditman et al., 2010; Ruby & Decety, 2001). Specifically, using the pronoun *you* to describe an action (e.g., *You* are peeling the cucumber) leads readers to mentally simulate the action from the performer's perspective, whereas the pronouns *I* and *he* promote an observer's perspective (Brunyé et al., 2009; Ruby & Decety, 2001). Further, the pronoun *you* promotes the development of memories that are better retained over both short and long retention intervals relative to *I* and *he*, suggesting that readers incorporate multiple sensory and motoric traces when directly addressed as a character (Ditman et al., 2010). Indeed recent theoretical developments propose that cognition is grounded in perception and action, meaning that language comprehension incorporates and may even require the automatic and tacit reactivation and manipulation of perceptual and motoric memory traces (i.e., embodiment; Glenberg, 2007). These more recent theories stand in opposition to traditional amodal theories of cognition which posit abstract symbol manipulation as the primary mechanism for extracting meaning (e.g., Fodor, 1983). The pronoun *you* may promote the active simulation of events from a first-person egocentric perspective of an immersed protagonist rather than passively from an external 'onlooker' perspective, prompting more comprehensive mental simulations (Borghi et al., 2004; Brunyé et al., 2009; Ruby & Decety, 2001). This mechanism appears to be the primary contributor, above and beyond any effect of personalization, to the memory advantages for

described actions that are seen with the pronoun *you* (relative to *I* or *he*; Ditman et al., 2010). The notion that pronouns modulate the perspectives characterizing mental images is related to distinctions made in the spatial cognition and spatial language literature between egocentric and allocentric perspectives; egocentric describes a first-person "mental tour" perspective through a described or pictured space, whereas the allocentric is external to the environment. Linguistic variations such as pronouns (you versus he) and world- versus body-centered spatial reference frames (go north versus go forward) can promote varied spatial perspectives that are reflected both in behavior and patterns of neural activity (i.e., Ruby & Decety, 2001; Taylor & Tversky, 1992). The present study investigated whether, in addition to promoting the representation of actions, pronouns encouraging a first-person perspective may also aid in the development of rich multidimensional situation models that code for dimensions such as the passage of time, organization of space, contextual information and character attributes.

There are at least two reasons why pronouns might modulate the richness of situation models. First, directly addressing a reader as the subject of a sentence may provide a degree of personalization that encourages self-relevance and engagement (Glenberg, Gutierrez, Levin, Japuntich, & Kaschak, 2004). Second, an immersed perspective may encourage the mental simulation of described perceptual and motoric information from a first-person perspective, resulting in relatively comprehensive and vivid narrative 'experiences' during the process of mental simulation (e.g., Borghi, Glenberg, & Kaschak, 2004). In either case, readers who are encouraged to immerse and engage themselves in narrative worlds may be more inclined to develop mental representations that code for multiple situational variables.

A second goal of the present study was to examine the emotional experience of readers as a function of whether pronouns refer to them or another as a protagonist. Emotion is a

component of situation models that is often considered a second-order representation tied to context and protagonists' traits. A number of studies have demonstrated that readers track characters' emotional states and traits and use this information to predict and evaluate narrative outcomes (e.g., de Vega et al., 1996; Rapp, Gerrig, & Prentice, 2001). Related work in social cognition has demonstrated that people embody others' emotions conveyed via facial expressions, gestures, posture and tone of voice, and as a result experience congruent emotional states (for a review, see Niedenthal, Barsalou, Ric, & Krauth-Gruber, 2005). No studies, however, have examined whether readers internalize and personally experience the protagonist's emotional reactions and how this might vary as a function of narrative perspective. If readers are more likely to mentally simulate the perceptual and motoric information contained within a text using the pronoun *you*, then it follows that readers may also be more likely to internalize (i.e., adopt) a protagonist's emotional states. If this is the case, theories of embodied language comprehension (i.e., Glenberg, 2007; Zwaan, 2004) might also consider internal states as a characteristic of readers' mental simulations.

To this end, the present study examined the emotional reactivity and resulting memory representations after participants read two sets of narratives adapted from fiction novels; we chose to use real-world narratives to broaden the potential scope of the situation model and extend research using single- and multiple-sentence scenarios to a more realistic reading environment. The narratives were modified from their original states to use either the pronoun *you* or *I* to refer to the protagonist. After reading each narrative, we assessed whether participants could answer comprehension questions probing for knowledge of time, space, context and character attributes. We assessed readers' emotional reactivity by comparing responses on the Brief Mood Introspection Scale (BMIS) before and after reading. If the pronoun *you* promotes

first-person mental simulations of described situations and the internalization of emotional states to a greater extent than the pronoun *I*, then in the former case we should find improved memory for situational dimensions and a greater degree of emotional reactivity amongst readers.

Method

Participants & Design

Forty-eight native English speaking Tufts University undergraduates (11 male; age $M = 19.85$, $SD = 3.53$) participated for monetary compensation. We manipulated the narrative perspective in a repeated-measures design between the first-person (*I*) and second-person (*you*), and tested its influence on comprehension question verification and ratings of emotional state.

Materials

Narratives. Eight extended passages were chosen from two fiction novels; four were chosen from Tom Robbins' *Half Asleep in Frog Pajamas* (1994), which consistently maintains a second-person perspective, and four from Wally Lamb's *I Know This Much is True* (1998), which is consistently narrated in the more traditional first-person perspective. The eight passages received the highest average pilot ratings of negative emotionality, which involved 10 participants rating 20 candidate passages on whether they described "emotionally negative" situations using a scale from 1(not at all) to 5(very). Each of the eight chosen passages described anxiety or fear in the protagonist, detailing arousing and negatively-valenced events such as social rejection, looming career failure and relationship break-up. We chose to use negatively valenced events due to research demonstrating that whereas positive emotions are somewhat difficult to evoke (i.e., people are generally happy already; Diener & Diener, 1996), negative emotional variation is more readily elicited in laboratory settings. The chosen passages were

similar in length ($M = 434.9$ words, $SD = 80.7$, $Range = 311-533$ words) and were able to stand alone and maintain coherence without a preceding context (i.e., passages did not refer to ambiguous characters and generally introduced a new context, location and time frame). To account for any potential remaining differences, we experimentally rotated the texts through the two pronoun conditions across participants. An excerpt from a sample passage is presented in Appendix A.

Comprehension Questions. A yes/no test contained 48 comprehension questions (6 per passage), 8 of which tested for contextual knowledge (e.g., *Is it cold outside?*), 24 for character knowledge (e.g., *Does Dr. Patel dislike tea?*), 8 for temporal knowledge (e.g., *Is the war over?*), and 8 for spatial knowledge (e.g., *Is the office in the middle of the city?*). As with many fiction novels, brief passages tend to have a richer representation of characters than of context, space or time. The unequal representation of these dimensions in our comprehension questions was designed to match this narrative weighting and thus reinforce an equal allocation of attention to these four situational dimensions. Half of the questions were designed to elicit a YES response and half a NO response. Questions never referred to the protagonist, and answers could not be derived from memory of the text itself but rather required inferences based upon the described situations.

Emotion Questionnaire. We used a set of 10 adjectives adopted from the Brief Mood Introspection Scale (BMIS) to assess readers' affective valence (positive versus negative) and arousal state (high versus low). The BMIS is considered a sensitive and highly reliable (Cronbach's $\alpha = .83$) method for measuring the subjective experience of mood and arousal (Mayer & Gasche, 1988). Five of these adjectives related to valence (*happy, content, sad, fed up, nervous*) and 5 to arousal (*lively, peppy, active, tired, calm*), and all were rated on a scale from 1 (*definitely do not feel*) to 4 (*definitely feel*). The division between mood and arousal is thought to

reflect the orthogonal and bipolar nature of affective state (Lang, Greenwald, Bradley, & Hamm, 1993).

Procedure

Participants were instructed to read carefully, and told that their memory would be tested. Each passage was presented in two separate sections, each approximating a single page, one at a time on the computer monitor. Participants advanced through the two digital pages at their own pace, but were limited to an upper reading pace of 375 msec per word (1.5 times the natural reading rate of ~250msec/word), at which time the page would automatically advance (no participant reached this threshold). Participants read a series of four passages from one novel presented in either the *you* or *I* perspective, and then read the other novel's passages presented in the other perspective (for a total of eight passages); the order of novels and whether each set of passages was presented with the *you* or *I* perspective were counterbalanced across participants in a Latin square. After reading the first four passages, participants took a 5 minute break during which they completed a series of 20 arithmetic problems. Participants completed the BMIS immediately prior to and following each of the eight passages; they were instructed to indicate how *they* felt at those particular moments. Following each passage and emotion questionnaire, participants answered a series of six comprehension questions, presented in random order one at a time on the computer monitor, and then took a 2 minute break; the same questions were used for a given passage regardless of narrative perspective. Participants were instructed to press YES or NO as quickly as possibly using the keys C and M (respectively).

Results

Comprehension Questions. We examined recognition sensitivity (d') and response times to Hits

as a function of Narrative Perspective (You, I) and the Situational Dimension being probed (Context, Characters, Time, Space). Table 1 details mean hit rates, false alarm rates, sensitivity and response times¹.

For recognition sensitivity, we performed a 2(Narrative Perspective) \times 4(Situational Dimension) ANOVA. This analysis yielded a main effect of Narrative Perspective, $F(1, 47) = 4.31, p < .05, \eta^2 = .01$, and Situational Dimension, $F(3, 141) = 11.03, p < .01, \eta^2 = .08$, qualified by a Narrative Perspective by Situational Dimension interaction, $F(3, 141) = 6.22, p < .05, \eta^2 = .03$. Planned comparisons revealed higher sensitivity within the *You* condition relative to the *I* condition, but only in the space dimension, $t(47) = 3.19, p < .01, d = .46$ (all other p 's $> .65$). To test for order effects, we ran a second ANOVA including the order of Narrative Perspective as a two-level between-participants independent variable (You first, You second), which did not reveal any main or interactive effects of order (all p 's $> .05$).

Response times generally mirrored those of sensitivity. A 2 \times 4 ANOVA yielded a main effect of Situational Dimension, $F(3, 141) = 97.78, p < .01, \eta^2 = .45$, but no interaction (all other p 's $> .31$). To follow-up specifically on the effect of Narrative Perspective found with sensitivity, we conducted a single comparison in the space dimension, which yielded a significant effect, $t(47) = 2.14, p < .05, d = .31$, with faster response times within *You* relative to *I*. As with sensitivity, there were no main or interactive effects of order (all p 's $> .05$).

Emotion Questionnaire. To assess readers' emotional states we calculated difference scores by subtracting pre-passage from post-passage ratings. To assess changes in affective valence (positive versus negative) we averaged across the positive adjectives (*happy, content*) and the

¹ Note that average reading times for each passage did not differ as a function of Narrative Perspective (p 's $> .05$).

reverse-scored negative adjectives (*sad, fed up, nervous*). To assess changes in arousal (high versus low) we averaged across the increased arousal adjectives (*lively, peppy, active*) and the reverse-scored decreased arousal adjectives (*tired, calm*). This technique allowed us to look at participants' emotional reactivity in terms of the bipolar and orthogonal mood and arousal dimensions.

We conducted a 2(Narrative Perspective: You, I) \times 2(Emotional Dimension: Mood, Arousal) repeated-measures ANOVA on calculated difference scores, finding main effects of Narrative Perspective, $F(1, 47) = 4.05, p < .05, \eta^2 = .03$, and Emotional Dimension, $F(1, 47) = 33.52, p < .01, \eta^2 = .18$. These effects were qualified by an interaction between these two variables, $F(1, 47) = 51.52, p < .01, \eta^2 = .23$, as shown in Figure 1. Planned comparisons demonstrated greater negative mood reactivity, $t(47) = 6.69, p < .01, d = .96$, but greater positive arousal reactivity, $t(47) = 2.59, p = .01, d = .37$, within the *You* condition relative to the *I* condition. As with sensitivity and reaction time, there were no main or interactive effects of order (all p 's $> .05$).

General Discussion

The present study demonstrated that when stories use a second-person narrative perspective, readers' mental representations of space and emotion are relatively vivid and internalized. Specifically, situation models built during language comprehension differentially represent elements related to the spatial organization of described environments, with relatively accurate and easily retrieved memories with the pronoun *you*. In addition, readers internalize described emotions and develop congruent emotional states, in terms of both affective valence and arousal, when they imagine themselves as a described protagonist.

Building situation models during reading involves the active indexing or tracking and integration of multiple dimensions of a story, such as contextual causal influences, time, space and characters. Going beyond the online processing of language, the present study aimed to examine resultant memories as a function of pronominal perspective, hypothesizing that the *you* pronoun would enhance memory for all four situation model dimensions. However, our results suggest that increased reader engagement as a result of using the pronoun *you* rather than *I* may only enhance the spatial dimension. One potential explanation for this finding can be derived from previous research demonstrating that readers may only develop situation models containing comprehensive spatial information under very precise circumstances such as with specific reading goals, a temporal shift, or high causal relatedness (e.g., Hakala, 1999; Zwaan & Radvansky, 1998). Spatial information may be deemed of increased relevance, however, when the reader actively imagines him or herself in the protagonist's shoes, as their and other characters' positions and orientations relative to a described space can influence available perceptual and action-based affordances (i.e., what they and others can possibly perceive and/or do; e.g., Franklin & Tversky, 1990). That is, directly addressing readers as protagonists may be a reliable method for promoting the tracking and representation of space because such information is needed for developing perceptually- and motorically-rich mental simulations that subserve inference generation. Less clear, however, is why the *you* pronoun did not improve performance on questions probing for contextual, temporal or character knowledge. As detailed in Table 1, performance levels for these questions showed potential for improvement (i.e., they were not at ceiling). The pronoun *you* may promote the active processing of perceptual and motoric information, but not necessarily enhance relatively declarative knowledge such as goals, character traits, or the sequential ordering of events. That is, first-person immersion in an

unfolding scenario may promote active perceptual (e.g., where objects are) and motoric (e.g., where you are and where you might be going) imagery, without enhancing knowledge represented outside of these modalities. This finding better specifies recent results (Ditman et al., 2010) suggesting that readers show better memory for described actions when they are directly addressed as the subject of a sentence and imagined performer of events (*You...*) rather than a passive onlooker (*He...*). We suggest that these earlier results might be at least partially driven by relatively rich representations of spatial information, with readers immersing themselves in the unfolding narrative and actively processing information about their actions within current surroundings.

In addition to developing more comprehensive representations of space, we also found that readers integrate and internalize the emotional states characterizing situations when they actively imagine themselves as a protagonist. The embodiment of characters' emotional states during narrative comprehension is a relatively understudied topic, though a variety of studies have demonstrated that readers' track (but do not necessarily internalize) characters' emotional states and traits (e.g., de Vega et al., 1996; Rapp et al., 2001). Our results are consistent with those found in social cognition research, demonstrating that people can adopt emotional states that are conveyed through others' behaviors (i.e., Niedenthal et al., 2005). We extend these findings by demonstrating that readers' emotional state can be influenced by the perspective they take on described situations. In this case, readers addressed as the protagonist rather than an onlooker showed higher negative affective reactivity and higher arousal states following the comprehension of passages that generally described negative scenarios (e.g., social rejection and relationship break-up). Representing emotion during immersed comprehension of narratives appears to involve the activation of relevant emotions in one's self. In fact, some work shows

facilitated comprehension in communicative settings when the sender and recipient of messages share common emotional states (Niedenthal, 2007). It could be the case that fully comprehending emotionally-laden narratives is partially determined by the extent that readers embody, or personally experience, described emotions, and that this process may be differentially triggered by narrative perspectives. We propose that internal states may play an important role in readers' representation of described events. This is a potentially important advance for theories of embodied cognition, which focus heavily on internal perceptual and motoric representations, neglecting to recognize the potential internalization of emotional states during reading. We propose that, extending embodied conceptualizations of language comprehension, readers automatically reactivate and re-experience perceptual, motoric and affective states, particularly when they are directly addressed as the subject of a text.

There are at least three mechanisms by which the pronoun *you* may promote comprehension and memory for described situations and actions. The first mechanism is related to the extent to which a reader deems the materials relevant and important to the self, or the degree of personalization experienced during reading. Indeed some research indicates that personalization through either linguistic cues or encouraging self-relevance and imagination can promote comprehension and memory for text-based materials (Glenberg et al., 2004). In this case, personalizing messages by using the pronoun *you* may increase readers' perceptions of self-relevance and thus encourage interest and attention to described situations. This mechanism, however, is not necessarily embodied in a reader's sensorimotor system, and does not predict internalized emotional reactivity. The second and more plausible mechanism is related to the extent to which readers actively adopt first-person perspectives during reading and map words to modal symbols representing percepts and actions. As noted in the introduction, recent theories of

both language and more general cognitive processes propose that knowledge is grounded in perception and action; this grounding is thought to involve the tacit reactivation and manipulation of perceptual and motoric memory traces during reading (i.e., embodiment; Glenberg, 2007). The pronoun *you* may promote the active simulation of events from an egocentric or "first-person" immersed perspective rather than a relatively allocentric or external 'onlooker' perspective, and these simulation processes may promote more comprehensive memories for described information (Borghi et al., 2004; Brunyé et al., 2009; Ditman et al., 2010; Ruby & Decety, 2001). Finally, the second-person perspective is a relatively rare narrative practice. Thus, it could be the case that readers attend to story elements more diligently due to the relative novelty of this perspective, potentially leading to memory advantages due to increased depth of processing. However, we find this explanation highly unlikely given that we found memory improvement in the spatial dimension only; increased depth of processing should impart advantages across all dimensions of the situation model. Further, depth of processing effects alone cannot explain the increased likelihood to embody, or adopt, the emotions of characters in the second-person perspective.

Overall, the present results build upon the notion that language comprehension activates and guides internal modal simulations of described events that allow for greater comprehension, retention and inference generation (Ditman et al., 2010; Glenberg, 2007). We also extend recent work suggesting that readers differentially take perspectives and perform mental simulations of described situations as a function of linguistic cues such as pronouns, in this case with real-world narratives (i.e., Borghi et al., 2004; Brunyé et al., 2009; Ruby & Decety, 2001). Finally, we uniquely demonstrate that getting fully immersed in an unfolding narrative involves the vivid

representation of spatial layouts and the activation of described and inferred emotional states of a protagonist.

Figure Caption

Figure 1. Mean and standard error difference scores (post – pre) derived from measures of mood and arousal, for each pronominal perspective (*I, You*).

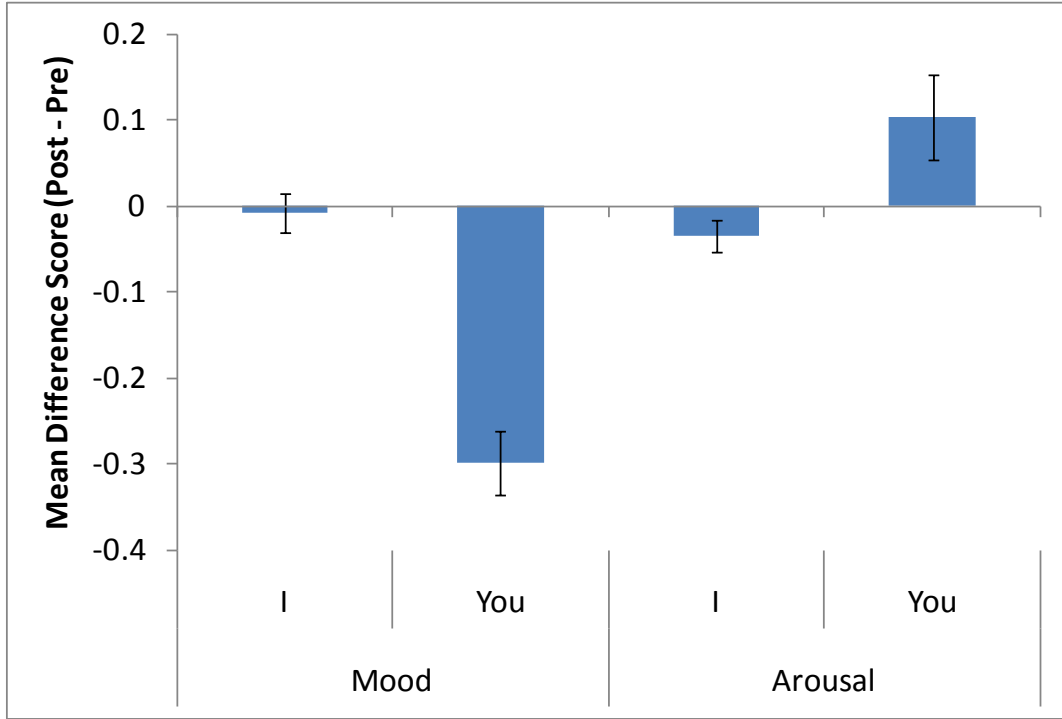


Table 1. Mean and standard error hit rates, false alarm rates, sensitivity and response times (to hits) from the comprehension questions, for each of the two Narrative Perspectives and four Situational Dimensions. * $p < .05$, ** $p < .01$, in t -test comparing I versus You (all other p 's $> .15$).

	I		You	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
<u>Hit Rates</u>				
Context	.82	.03	.81	.04
Characters	.79	.02	.81	.02
Time	.81	.04	.79	.04
Space	.77	.04	.89	.03*
<u>False Alarm Rates</u>				
Context	.06	.04	.06	.03
Characters	.13	.02	.17	.03
Time	.32	.05	.27	.05
Space	.27	.05	.13	.03**
<u>Sensitivity</u>				
Context	3.09	.16	3.05	.20
Characters	2.26	.13	2.21	.17
Time	1.99	.25	2.12	.23
Space	2.02	.24	3.04	.18**
<u>Response Times (to Hits, in seconds)</u>				
Context	2.19	.12	2.20	.12
Characters	2.47	.10	2.45	.09
Time	3.09	.17	3.03	.16
Space	2.62	.11	2.33	.09*

Appendix A

A portion of a sample passage from *Half Asleep in Frog Pajamas* (Tom Robbins, 1994; pg. 3):

The day the stock market falls out of bed and breaks its back is the worst day of (your/my) life. Or so (you/I) think. It isn't the worst day of (your/my) life, but (you/I) think it is. And when (you/I) give voice to that thought, it is with conviction and a minimum of rhetorical embellishment.

"This is the worst day of my life," (you/I) say, as (you/I) drop a salted peanut into (your/my) double martini – on better days, (you/I) drink white wine – and watch it sink. It spirals downward more slowly, more gracefully, than (your/my) own plunging fortunes, the pretty little gin bubbles that gather around the peanut a marked contrast to the lumps and burrs and stinging things that are attaching themselves to (your/my) heart.

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