

PERSPECTIVE TAKING IN NARRATIVE COMPREHENSION: A THREE-
FACTOR INVESTIGATION

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ABSTRACT

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A narrative is a kind of discourse wherein events/situations revolving around characters are described. The field of narrative comprehension deals with how characters/events in narratives are represented in readers' cognitive system, what types of inferences are activated, and what text factors influence the comprehension of narratives. In this paper, we focus on the issue of perspective taking in narrative comprehension. Some studies argue that readers always take the protagonist's perspective while reading narratives, whereas others argue that it depends on several factors (e.g., the point-of-view the narrative is written from). To investigate this issue further, we developed several hypotheses comprising of three factors. Our main hypotheses, which follow some important studies in the literature, state that while reading passages written from third-person point-of-view, readers adopt the omniscient narrator's perspective, whereas in passages written from first-person point-of-view, readers adopt the protagonist's perspective. For our specific hypotheses, we added two more factors to our formulation (i.e., establishment and deictic motion verbs). We argued that 1) establishment of source and destination information, as well as 2) deictic motion verbs (come, go) and how these verbs are used are important in deciphering perspective taking. We conducted 10 experiments with native English speakers to test the effects of our three factors (i.e., narrator point-of-view, establishment, and deictic motion verbs). We used reading time as the dependent measure in our experiments. The results overall indicated that readers consistently adopted the protagonist's perspective during reading. We discussed the results and offered some directions for future studies.

Keywords: narrative comprehension, perspective taking, deictic motion verbs, establishment, narrator point-of-view

ÖZ

HİKAYE KAVRAMADA BAKIŞ AÇISI ALMANIN ROLÜ: ÜÇ FAKTÖRLÜ BİR İNCELEME

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Hikâye, karakterler etrafında dönen olayların/durumların anlatıldığı bir söylem türüdür. Hikâye kavrama, hikayelerde anlatılan karakterlerin ve olayların okuyucunun zihninde nasıl temsil edildiğini, hikayeleri okurken ne tür çıkarımların etkinleştirildiğini ve hikayelerin kavranmasını hangi metin faktörlerinin etkilediğini içerir. Bu yazıda hikâye kavramada perspektif alma konusuna odaklanıyoruz. Bazı araştırmalar, okuyucuların anlatıları okurken her zaman kahramanın bakış açısını aldıklarını savunurken, diğerleri bunun çeşitli faktörlere (örneğin, anlatının yazıldığı bakış açısı) bağlı olduğunu ileri sürmektedir. Bu konuyu derinlemesine araştırmak için üç faktörden oluşan hipotezler geliştirdik. Literatürdeki bazı önemli çalışmaları takip eden temel hipotezlerimiz şöyledir: Okuyucular, üçüncü-şahıs bakış açısıyla yazılan pasajları okurken her şeyi bilen anlatıcının bakış açısını benimser, birinci-şahıs bakış açısından yazılan pasajlarda ise kahramanın bakış açısını benimser. Spesifik hipotezlerimiz için ise formülasyonumuza iki faktör daha ekledik (kurulum ve gösterimsel hareket fiilleri). Perspektif almanın deşifre edilmesinde, 1) kaynak ve varış noktası bilgilerinin kurulması durumunun ve 2) gösterimsel hareket fiillerinin (gel, git) ve bu fiillerin nasıl kullanıldığının önemli olduğunu savunduk. Üç faktörümüzün (anlatıcı bakış açısı, kurulum ve gösterimsel hareket fiilleri) etkilerini test etmek için ana dili İngilizce olan kişilerle 10 deney gerçekleştirdik. Deneylerimizde bağımlı ölçü olarak okuma süresini kullandık. Sonuçlar, okuyucuların okuma sırasında sürekli olarak kahramanın bakış açısını benimsediklerini gösterdi. Sonuçları tartıştık ve gelecekteki çalışmalar için bazı fikirler sunduk.

Anahtar Sözcükler: hikaye kavrama, bakış açısı alma, gösterimsel hareket fiilleri, kurulum, anlatıcı bakış açısı



To My Family

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
METU	Middle East Technical University
ms	milliseconds
RT	Reading Time
SD	Standard Deviation
SE	Standard Error
<i>d</i>	Cohen's <i>d</i> (effect size)
df	degrees of freedom
<i>M</i>	Mean
η_p^2	Partial Eta Squared
PoV	point-of-view
<i>r_B</i>	The rank-biserial correlation
<i>Mdn</i>	Median

CHAPTER 1

INTRODUCTION

Discourse is a verbal or written way of conveying ideas and/or events in a meaningful way. It is mostly in the form of sequenced sentences that are interconnected (Webber, Egg, & Kordoni, 2012). Discourse can be realized in two stages: Production and Comprehension. Production simply means the formation of the discourse by the author/speaker. Comprehension is the understanding of the discourse by the reader/listener. These two stages are influenced by each other, as the author/speaker intends that his message will be clearly understood by his audience and the reader/listener intends to understand both the meaning of the discourse itself and the intention and mindset of the author/speaker.

In this study, we deal with “deixis”, an important notion of language at the discourse level. Deixis simply means using and interpreting utterances depending on their context (Levinson, 1983). This context can be spatial, personal, and temporal (Lyons, 1977; Fillmore, 1975). We will focus on the comprehension of a specific type of deictic expressions, namely the motion verbs “go” and “come”, within their discourse context. These two verbs are quite well-known and studied in linguistics (Wang, 2018).

Discourse comprehension consists of multi-level representations (Graesser, Millis, & Zwaan, 1997). People not only preserve the explicitly stated ideas in texts, but they also generate inferences during reading with the aid of their world knowledge in order to fill in the gaps in texts and establish coherence (Graesser & Forsyth, 2013). The text-based information and extra-textual processes together give rise to a memory representation called situation model (or mental model). The situation model is the reader’s developing understanding of the text (Glenberg, Meyer, & Lindem, 1987).

Narratives are discourses where events take place at a certain time and setting around some certain characters, often involving a protagonist and an antagonist. Narrative comprehension involves how the characters and events described in stories are represented in the reader’s mind, what kinds of inferences are activated during reading

narratives, and what text factors affect the comprehension of narratives (Morrow, 1985; Graesser, Singer, & Trabasso, 1994). While reading narratives, people can keep track of various aspects of those narratives (i.e., Space, Time, Protagonist, Causality, and Intentionality) (Zwaan, Langston, & Graesser, 1995). Of these aspects, space and protagonist are the most important ones for the present paper.

One issue about narrative comprehension is perspective-taking. There are several empirical studies in the literature on this issue (e.g., Kaakinen & Hyönä, 2008; Black, Turner, & Bower, 1979). Some studies suggest that readers always identify themselves with the protagonist and hence adopt his/her perspective during reading (e.g., Black et al., 1979; Rall & Harris, 2000). Other studies suggest that readers adopt the narrator's perspective (e.g., O'Brien & Albrecht, 1992). Who the narrator is depends on how the narrative is written. In narratives written from first-person point-of-view, the narrator is the protagonist himself and hence the readers are inclined to adopt the protagonist's perspective (Creer, Cook, & O'Brien, 2019, 2020), whereas in narratives written from third-person point-of-view, the narrator is assumed to be omniscient and hence the readers are inclined to take the omniscient narrator's perspective (Albrecht et al., 1995; O'Brien & Albrecht, 1992; Creer et al., 2019). Omniscient narrators do not have to stick to the protagonist; they instead help readers to reach information outside the protagonist's knowledge and spatial limitations.

Furthermore, the adopted perspective can be in different forms, such as a visual-spatial perspective (O'Brien & Albrecht, 1992; Creer et al., 2019), a cognitive perspective (e.g., tracking the goals of the protagonist) (Albrecht et al., 1995; Creer et al., 2020), or an emotional perspective (Child, Oakhill, & Garnham, 2018).

The notion of deixis in general and deictic motion verbs in particular are very relevant to the issue of perspective-taking. Deictic motion verbs are verbs which describe movement according to some perspective. For instance, the verb "go" emphasizes "departure" from the speaker (e.g., He *went* home around midnight), whereas the verb "come" emphasizes "arrival" towards the speaker (e.g., He *came* home around midnight) (Fillmore, 1975; Nakazawa, 2006) (see Chapter 2 for the use of deictic motion verbs in narratives).

In psycholinguistics literature, several dependent measures are used to study perspective taking in narrative comprehension, such as comprehensibility scales, re-writing (editing), reading times, memory tests, and verbal protocols (Gernsbacher & Kaschak, 2013; Millis, 1995; Black, Turner, & Bower, 1979). The most commonly used dependent measure is reading time (in milliseconds). The general assumption in reading time measure is that if a comprehension difficulty arises for some reason while reading a sentence, the difficulty will manifest itself through slowed reading times. The slower reading times of the critical sentences relative to the other sentences will give the researchers some clues that there is some factor that affects reader's comprehension in those sentences.

In this thesis, our aim is to test the effects of deictic motion verbs, location/character establishment, and narrator point-of-view on perspective taking. The effects of deictic motion verbs (e.g., Rall & Harris, 2000; Black et al., 1979) and narrator point-of-view (e.g., Creer et al., 2019, 2020) were studied before in different studies. However, as far as we know, the effect of establishment has not been studied so far in the relevant literature.

To fulfill this aim, we conducted a series of experiments with native speakers of English. In our experiments, we manipulated these three variables in narrative texts so as to understand their combinatorial effects on perspective taking. In short, we want to find answers to the following research questions:

-How is readers' comprehension affected by the establishment of the locations/characters in narratives? Does pre-establishing the destination and source locations influence the comprehension of sentences describing movement to those locations? Under what conditions is it important to establish the secondary character? Where is perspective-taking in all these situations?

-How does narrator's point-of-view (i.e., third-person or first-person narration) affect readers' perspective taking in narratives?

-How does the use of deictic motion verbs (e.g., come, go) affect the comprehension of sentences involving movement descriptions? How does the use of these verbs interact with the establishment and narrator point-of-view to affect perspective taking in narratives?

Our main and specific hypotheses along with their theoretical backgrounds are presented in the last section of Chapter 2. We tested our hypotheses in 10 experiments. In all our experiments, we used reading time as our dependent measure.

The rest of this thesis is organized as follows: Chapter 2 covers the relevant literature on the topics of discourse and narrative comprehension, perspective taking, and deictic motion verbs. It lastly presents the background, aim, and hypotheses of the thesis. Chapter 3 presents the experiments that we conducted to test our hypotheses. It includes experiment descriptions, methodology, results, and mini discussions. Chapter 4 is the general discussion chapter in which we broadly interpret and discuss the results of our experiments. In Chapter 5, we sum up our work and give some directions for future research. This is followed by references, appendices that contain experimental materials and ethics committee approval, and the curriculum vitae.



CHAPTER 2

LITERATURE REVIEW

In this chapter, the literature on discourse comprehension, theories of discourse comprehension, and some factors affecting comprehension will be reviewed first. Then, the literature on narrative comprehension, perspectives-taking, and deictic verbs of motion will be reviewed. In the last section of the chapter, background and motivation for our research as well as our aim and hypotheses will be explained.

2.1. Discourse Comprehension

Comprehension simply means ‘understanding’. Its scope involves written materials, spoken materials, and other forms such as pictures and films. Gernsbacher, Varner, and Faust (1990) found that people’s comprehension skills in written materials are highly correlated with their comprehension skills in spoken and nonverbal (pictorial) materials. In this thesis, our focus will be on written materials as most of the studies on discourse comprehension are done on written materials (i.e., texts).

Theories of text comprehension generally assume that comprehension consists of multi-level representations (Graesser, Millis, & Zwaan, 1997). These representations are: 1) Surface code, in which the verbatim representations of the sentences are preserved. 2) Textbase, which is a propositional representation of the explicitly stated ideas in the text. 3) Situation model (mental model), which is the representation of what the text is about. It is more than the explicitly stated ideas in the text. It involves several inferences readers generate during their reading, with the aid of their prior knowledge, in order to fill in the gaps in the text and establish a coherence. 4) The genre and the rhetorical structure of the text. 5) The pragmatic communication (between the author and reader). Readers may encounter difficulties at any of these levels, and they may obtain help from the other levels, external sources, or some strategies in order to compensate for these difficulties (Graesser & Forsyth, 2013).

Of these levels, the most studied one is the situation model (i.e., mental model). At this level, readers try to keep track of many aspects of the texts and use their prior knowledge in order to establish coherence and continuity in comprehension. Most of the studies covered in this chapter are about the situation model.

2.2. Theories of Discourse Comprehension

In his influential book (Kintsch, 1998), Walter Kintsch presents an extensive view on text comprehension. He proposes his own comprehension theory, i.e., the Construction-integration (CI) model (see also Kintsch & Van Dijk, 1978; Kintsch, 1988; for earlier versions of this theory). In CI model, comprehension occurs in two iterative stages: 1) Construction stage: Incoming information (e.g., a sentence) is converted into a propositional text-base and then goes into the working memory; there, relevant information from long-term memory is retrieved to make sense of the sentence. 2) Integration stage: The information is assimilated into the existing situation model of the discourse. Kintsch cites many empirical works, both his and other researchers', to evaluate his model. He also shows how his comprehension theory can be applied to cognitive domains other than discourse comprehension, such as remembering, learning, and problem-solving.

Another comprehension theory is the RI-Val model (O'Brien & Cook, 2016). This model is an extension of the previous two-stage (i.e., activation and integration) models of comprehension (e.g., Myers & O'Brien, 1998; O'Brien & Myers, 1999). According to the RI-Val model, comprehension is a result of three continuous and overlapping stages: Resonance, Integration, and Validation. In the Resonance stage, when the incoming information is read by the reader, long-term memory (LTM) is signaled with a passive resonance mechanism, and most related information is activated. The activated content which is above a certain threshold is then linked with the contents in working memory. This linking stage is called the Integration stage. Then, the content of the integrated information is checked against the reader's knowledge-base. This checking stage is called the Validation stage. There are some empirical studies that were motivated by this model (for instance, Creer et al., 2018, 2019; Smith & O'Brien, 2016).

Another comprehension theory is the Structure Building Framework (Gernsbacher, 1990, 1997). According to this theory, comprehension involves building coherent mental representations ("structures"). The first step in comprehension is to lay foundations for the mental structures. Then those mental structures are developed. The incoming information, if it is related to the previous information, is mapped onto the relevant, developing structures. If it is less related or not related at all, then a new (sub)structure is developed. The building blocks of those structures are memory nodes, which are the previously stored memory traces. Those memory nodes are activated by the incoming information. The relevance of the incoming information affects the activation levels of the other memory nodes. The activations of those other nodes are

either suppressed or enhanced depending on their relevance to the developing structures, thus paving the way for successful comprehension.

2.3. Inferences in Discourse Comprehension

Comprehending texts involves making different kinds of inferences regarding the content of those texts. Inferences in comprehension are widely studied in the literature (e.g., McKoon & Ratcliff, 1986, 1992; Keenan, Baillet, & Brown, 1984; Klin, Guzmán, Weingartner, & Ralano, 2006; Singer, 1993; van den Broek, Lorch, Linderholm, & Gustafson, 2001). Some of the inferences are made on-line (during the reading of the text) and the others are made off-line (after the reading, e.g., in a retrieval task).

“The Constructionist Theory of Comprehension” proposed by Graesser, Singer, and Trabasso (1994) distinguishes what kinds of inferences are generated on-line and what kinds of them are generated off-line. The theory states that under normal reading circumstances people generate on-line inferences of the following kinds: Referential, Case structure role assignment, Causal antecedents, superordinate (main) goal of the characters, and Characters’ emotional reactions. In this theory, people do not need to generate the following kinds of inferences on-line: Causal consequence, Instantiation of noun category, Instrument, Subordinate goal/action, and State.

Cook and O'Brien (2017) also reviewed some theories and empirical studies regarding how inference generation occurs in reading. The authors say that integrating information into the situation model of the text involves making inferences so that the text can be understood well. Memory-based theories state that inference activation is a passive/dump process, whereas explanation-based theories (e.g., Constructionist theory proposed by Graesser et al., 1994) state that inference activation is a result of the interaction between basic memory mechanisms and goals/strategies of the readers. Cook and O'Brien's review focuses on the memory-based approaches (e.g., RI-Val model; O'Brien & Cook, 2016). The authors cite some empirical studies supporting the passive inference activation during reading. They grouped the inferences into two categories: On the one hand, there are backward inferences such as binding two pieces of information in the text, anaphoric inferences, and bridging inferences (attributing causes to events). On the other hand, there are forward inferences such as activation of category exemplars, logical conclusions, and predictive inferences, which may also be activated passively. The activated inferences may or may not incorporate into the mental/memory representation of the text.

While comprehending texts, readers make inferences regarding the text content. One kind of inference is the predictive inference, which is about consequences of actions. In an experimental study, Lassonde and O'Brien (2009) investigated the relation between the contextual support and the likelihood of predictive inference generation. Experiment 1 showed that after reading contextual passages, participants named the target words following the inference-evoking sentence faster than the target words

following the baseline sentence, suggesting that the inference was activated when there was contextual support in the passages. Experiment 2 was conducted to see whether the results of Experiment 1 were due to inference generation, not semantic priming. Participants were presented with word pairs (from the passages in Experiment 1) and were told to name aloud the second word in each pair. The results showed that naming times did not differ across the conditions, thus eliminating the semantic priming explanation for Experiment 1. In Experiment 3, it was shown that as the context was specified, only one target item manifested the activation of predictive inference. The authors concluded that as contextual support gets more specified, activated inferential information becomes more specific.

2.4. Factors Affecting Comprehension

There are several factors (textual or extra-textual) that affect comprehension processes (Sparks & Rapp, 2010). We will cover some of them in this section.

Mind wandering.

Mind wandering is a factor that affects narrative comprehension. Mind wandering occurs when people's attention shifts away from the current task to other things unrelated to the task. Feng, D'Mello, and Graesser (2013) investigated how text difficulty and frequency of mind wandering affect text comprehension. Before the experiment began, participants were instructed to express it whenever (i.e., in which sentence) they experienced mind-wandering by pressing a certain key during their reading. Participants read four difficult and four easy passages (in a self-paced reading paradigm). They answered some comprehension questions after each passage. The results showed that participants experienced more mind-wandering in the difficult texts than in the easy texts. Also, their comprehension scores were more impaired for the difficult texts. The authors interpreted the results such that difficult texts have more discontinuities in cohesion than easy texts, which lessens people's sustained control of attention, thus giving rise both to more frequent mind-wandering and to comprehension impairment.

In another study, Reichle, Reineberg, and Schooler (2010) explored how reading processes are affected by mind wandering. Participants read an entire novel (over days) while their eye movements were recorded. Episodes of mind wandering were tracked as follows: Participants were told to press a certain button when they caught themselves thinking about something other than the text they were reading (i.e., self-caught mind wandering). Besides, they were prompted at some points during their reading to indicate whether they had been mind-wandering at that time (i.e., probe-caught mind wandering). Eye-movements preceding the mind wandering reports/indications showed that participants fixated longer on words during mind wandering, compared to normal/mindful reading. Moreover, some lexical-semantic effects occurring in normal reading (e.g., word length and word frequency effects) were less evident during mind wandering episodes. Also, participants made more off-

text fixations during mind wandering than during normal reading. The authors concluded that cognitive processes underlying mindless reading are different than those underlying mindful reading.

Neurocognitive effects.

Another factor that affects comprehension is brain physiology. Longworth and Marslen-Wilson (2011) give an overview of what brain regions are related to language comprehension. Damage to the left hemisphere of the brain is generally associated with language deficit, and the authors cite some studies which show what kinds of linguistic processing difficulties patients with such damages have (Tyler, Randall, & Marslen-Wilson, 2002; Marslen-Wilson & Tyler, 1997, 1998). In those studies, linguistic processing of healthy individuals was compared with that of brain-damaged patients, in order to infer where in the brain different kinds of linguistic processes occur. For instance, priming studies involving Broca's aphasics suggest that word stems and irregular past tense words are stored in the lexical memory as they are, but regular past tense words are not; instead, they are stored in their decomposed (component) forms. The current neurocognitive model argues that there are at least two language pathways in the brain: a unilateral dorsal pathway in the left hemisphere, which accompanies compositional (combinatorial) processes involving structured lexical levels and sentences, and a bilateral ventral pathway, which is related to unstructured lexical processing and use of semantic knowledge (Longworth, Marslen-Wilson, Randall, & Tyler, 2005).

Reading skill.

Reading skill is yet another factor that affects discourse comprehension. Smith and O'Brien (2016) investigated what factors could contribute to improving less skilled readers' comprehension levels. In their experimental study, when the texts had local incoherence (i.e., the two contradicting sentences were close to each other), both less skilled and more skilled readers became aware of this contradiction, evidenced by slower reading times of the target sentence indicating the contradiction. However, when the texts had global incoherence (i.e., the contradicting sentences were far away from each other), less skilled readers were not disrupted by the contradiction, but the more skilled readers were. Moreover, in the subsequent experiments, when the inconsistent texts in the global incoherence condition were rewritten such that the interconnectedness of information was provided, less skilled readers experienced processing difficulty in the target sentences. Also, when a relevant information was cued before the target sentence in the inconsistent condition, less skilled readers experienced processing difficulty. The authors concluded that providing explicit relevant text information made less skilled readers become aware of global incoherence. The authors interpreted the results in terms of the RI-Val model of comprehension (O'Brien & Cook, 2016). See also the Creer, Cook, and O'Brien (2018) study described below in the General World Knowledge section for how

reading skill and general world knowledge interact with each other during comprehension.

In another study, Gernsbacher and Faust (1991) investigated experimentally some properties of the general comprehension skill. They argued that general comprehension skill underlies comprehension of both linguistic and nonlinguistic materials. They tested less-skilled comprehenders and more-skilled comprehenders on various materials containing linguistic and/or nonlinguistic stimuli. The results of their experiments showed that both groups of comprehenders experienced some interference *immediately after* 1) they read sentences containing ambiguous (i.e., having multiple meanings) words, 2) they read sentences containing homophonic words, 3) they saw pictures of contextually related objects, 4) they saw words appearing on objects which were conceptually similar to those words. However, when some amount of time (i.e., 1 second) passed, more-skilled comprehenders did not experience the interference anymore, but the less-skilled ones still experienced it. Gernsbacher and Faust interpreted the results such that less-skilled comprehenders have less efficient suppression mechanism; that is, they are less able (i.e., slower) to suppress the irrelevant meanings and forms.

Coherence.

Coherence of the texts is another important factor that affects comprehension. It is well-studied in the literature (e.g., Sonia & O'Brien, 2021; Cook, Halleran, & O'Brien, 1998; Williams, Cook, & O'Brien, 2018; van den Broek et al., 2011, 2001). In one study, Albrecht and O'Brien (1993) investigated how coherence in narrative texts affects comprehension and recall of those texts. Participants read passages that all had local coherence (i.e., any two consecutive sentences are consistent in terms of their meaning relation), but some of the passages lacked global coherence (i.e., some later sentences contradicted the elaborate description of the protagonist presented earlier in the passage; the contradiction was not impossible but an unlikely action of the protagonist). The results indicated that target sentences that contradicted the earlier elaboration were read more slowly than target sentences that were neutral or did not contradict the elaboration, suggesting a comprehension difficulty in the inconsistent condition. Moreover, participants recalled contradictory target sentences and the elaborations they contradicted better than non-contradictory target sentences and elaborations. Albrecht and O'Brien interpreted the results such that when readers read a sentence that is difficult to integrate, they reprocess the early parts of the passage to try to integrate that information, which then strengthens their memory traces.

In another study, Hakala and O'Brien (1995) investigated how local and global incoherence influence the comprehension and recall of texts. In Experiment 1, participants experienced processing difficulty (i.e., slower reading times) while they read target sentences that were inconsistent with earlier sentences which were close (local incoherence) or with earlier sentences which were far (global incoherence). In Experiment 2, it was shown that in global incoherence situations, recall of contradictory sentences was high. However, in local incoherence situations, recall of

earlier sentences that were later subject to contradiction was not high; instead, participants distorted information from these earlier sentences in an attempt to make it coherent. Hakala and O'Brien interpreted the results in terms of different strategies that readers employ while they encounter local and global inconsistencies.

In yet another study, Glenberg and his colleagues investigated whether readers could notice a contradiction (inconsistency) in expository texts and whether this would be reflected on their assessment of their own comprehension level (Glenberg, Wilkinson, & Epstein, 1982). Participants were told beforehand that the passages they were going to read might contain contradictions. The passages were one-paragraph- or three-paragraph-long. The contradictions were explicit and were at sentence level, not at discourse level. The last sentence of each passage was contradictory to the previous sentence. The contradictions were marked as syntactically given or new (in respect to the previous sentence). The results showed that the contradictions went unnoticed most frequently (%51) in three-paragraph passages where the contradictory sentence was marked as new. Readers in this condition were also highly confident that they comprehended the text well. The authors explained the findings in terms of the processes involved in 'establishment of coherence'.

Prior text knowledge.

In their classic paper, Bransford and Johnson (1972) report a series of experiments they conducted to test the hypothesis that prior knowledge about a text increases the comprehension and recall of it. In one of the experiments, participants read a prose passage about "possible communication problems that can be encountered during a serenade", but the passage was not self-evident regarding its topic; that is, the passage seemed ambiguous without a proper context. One group of participants saw an appropriate context picture of a typical 'serenade' situation before they read the passage. The other groups of participants either did not see the picture at all, or saw it after they read the passage, or saw an inappropriate context picture (i.e., containing the same elements but in a different arrangement) before they read the passage. The results showed that participants who saw the appropriate context picture before the passage comprehended and remembered the passage better than the other groups. Bransford and Johnson concluded that for a satisfactory comprehension, prior knowledge must be activated (as a semantic context) during the continuing process of comprehension.

General world knowledge.

Another important factor that affects comprehension is the general world knowledge. Creer and her colleagues investigated under what conditions and to what extent "general world knowledge" (GWK) interferes with the comprehension of fantasy stories (Creer, Cook, & O'Brien, 2018). Since familiar fantasy story characters (e.g. Superman) are also a part of GWK, reading the superhuman attributes of those characters should not disrupt comprehension. But reading a story with an unfamiliar superhuman character (e.g., Benjamin) should disrupt comprehension (i.e., slower

reading times of the critical sentences) because that character is not a part of GWK. That is, if the context of a story is in contradiction with GWK, this should lead to comprehension difficulty. However, if the fantasy context of the unfamiliar-character story is bolstered (elaborated) from the beginning of the story, that context information can dominate the comprehension processes and facilitate the comprehension of the sentences involving superhuman abilities. These two expectations were supported in the first two experiments. As for Experiment 3, the researchers compared the performance of less skilled and more skilled readers on the same story materials. The results showed that both groups of readers comprehended the stories easily when the character was familiar; however, in the unfamiliar-character condition, less skilled readers experienced comprehension disruption even with the bolstered fantasy context. The more skilled readers did not experience such a disruption when the fantasy context was bolstered. Findings of Experiment 3 is consistent with the idea that more skilled readers are more able to use contextual information and integrate it into their developing discourse representation.

Knowledge Revision.

Revision of knowledge regarding a subject is also an important factor in the comprehension process. In one study, Kendeou and her colleagues explored how texts designed to refute an incorrect commonsense belief can contribute to the knowledge revision processes and facilitate the comprehension of the new/correct information (Kendeou et al., 2014). For instance, one text attacks the commonsense belief “Meteors landing on Earth are hot”. The text first states that the belief should be false and then gives an elaborate explanation paving the way for the correct information, and finally states that correct information “Meteors landing on Earth are always cold” (correct outcome sentence). The results of the experiments showed that participants read the correct outcome sentence faster when the text had refutation and explanation sections than when it did not have such sections, suggesting that refutations and their elaborations may initiate the early stages of belief revision. Moreover, participants not only encoded but also retained the correct information, evidenced by their high memory scores for the correct information a month after the experiment, suggesting that effects of knowledge revision are not transient.

Eye movements.

Eye movements and fixations are important factors in written discourse comprehension. Eye-tracking methodologies help us decipher overt attentional processes during reading (Vasishth, von der Malsburg, & Engelmann, 2013; Richardson, Dale, & Spivey, 2007).

Schotter and her colleagues investigated the effect of regressive eye movements on comprehension (Schotter, Tran, & Rayner, 2014). Participants read several sentences on a screen while their eye movements were recorded. Half of the sentences were garden-path sentences (i.e., sentences that seem structurally ambiguous until a

disambiguating word is encountered; see Ferreira et al., 2002; and Patson et al., 2009) and the other half were unambiguous sentences. Half of the trials were normal reading trials in which participants could make regressions and thus reread any word they wanted, and the other half were trailing-masked trials in which every word participants read and went passed became masked with Xs (e.g., “cold” became “xxxx” after it was passed). After each sentence, a comprehension question was asked to the participants. The results showed that 1) garden-path sentences were comprehended poorer than unambiguous sentences, and 2) comprehension was better in the normal reading condition than in the trailing mask condition. Moreover, trial-by-trial analyses revealed that, regardless of sentence ambiguity, comprehension was better in trials in which participants *did not choose* to make a regression (i.e., in normal reading condition) than in trials in which participants did not make a regression (i.e., in the trailing mask condition, where participants knew that regressions would not bring any benefit), suggesting that regressions can compensate for comprehension failures while reading. This study, showing the importance of normal reading, is relevant to the Benedetto et al. (2015) study (described just below).

Benedetto and his colleagues experimentally compared people’s performance in Spritz, a poplar text reading application, to their traditional reading performance (Benedetto et al., 2015). Traditional reading consists of series of eye fixations and saccades made on the lines of a text; eye movements’ trajectories are generally left-to-right and top-to-bottom, allowing regressions. Another type of reading is the Rapid Serial Visual Representations (RSVP), which is characterized by displaying one or more words at a time on a screen, with people almost always fixating the same spot while the words are passing. So, Spritz is a version of RSVP. It does not allow regressions. The only user control is that readers can pause the flow of text any time they want. In the experiment, half of the participants read a story on a screen in the traditional reading style; the other half read it on a screen in the Spritz style. Participants’ eye movements were recorded during their reading, and several other dependent measures were also used. The results showed that fewer rates and longer durations of fixations occurred in Spritz condition. Also, traditional reading condition was better at literal comprehension questions than the Spritz condition, probably because the lack of regressions and parafoveal processing in Spritz degraded information extraction quality. Moreover, Spritz readers experienced more task-load than the other group, which is not surprising given that Spritz participants were forced to fixate the same place during their whole reading. Finally, reading speeds did not significantly differ between the two groups. All in all, these findings suggest that Spritz has more disadvantages than advantages compared to traditional reading style.

Task demands.

Task demand is another factor that influences comprehension. Whether one reads just for comprehension or for another purpose (e.g., proofreading) can affect the process of comprehension. For instance, Kaakinen and Hyönä (2010) explored the influence of reading task on eye movements. Participants read several sentences while their eye movements were recorded. In half of the trials, participants were instructed to read for

comprehension (normal reading), and in the other half they were instructed to proofread the sentences for there might be spelling errors in some words (in fact, critical sentences did not have spelling errors, only did the filler sentences). Critical words were compound words of short or long length (orthography manipulation) and of low- or high-frequency (lexical-semantic manipulation). The results showed that number and duration of fixations were higher, and the saccade amplitude was shorter in the proofreading condition than in the normal reading condition. Proofreading also caused shorter intra-word saccade length and more refixations than normal reading. Gaze durations and rate of refixations were higher at the long words, especially in the proofreading condition, suggesting that proofreading is characterized by orthographic (e.g., letter-by-letter) processing. Finally, lexical-semantic processing had some effects on proofreading: Spell checking of high-frequency words occurred faster than that of low-frequency words. All in all, these findings suggest that cognitive processes involved in reading are affected by reading task demands.

Accessibility.

Accessibility and referential coherence are also important in the comprehension process. Sanders and Gernsbacher (2004) cover the issue of accessibility at the intersection of linguistics and psycholinguistics. The authors mention some theories and findings in these areas. For instance, according to the accessibility theory in linguistics (Ariel, 1990, 2001), high accessibility markers generally have less linguistic material (e.g., pronouns) and signal that the activation of the current referent is continuing; low accessibility markers have more linguistic material (e.g., full names) and signal the termination of the activation of the current referent and the start of the activation of another topic/referent. The authors also cite some psycholinguistic experiments (which employed reading times and eye tracking data as dependent measures) to support the idea that grammar works as a processing instructor (e.g., Carpenter & Just, 1977; Garrod & Sanford, 1985, 1994; Ehrlich & Rayner, 1983; Sanford & Garrod, 1994).

In one study, Duffy and Rayner (1990) explored the effects of antecedent typicality and the antecedent's distance from its anaphor on the process of anaphor resolution. Participants read several paragraphs while their eye movements were recorded. The antecedents were either typical (e.g., doctor) or atypical (e.g., writer) of the noun anaphor (e.g., the profession). The distance between the noun anaphor and its antecedent was also manipulated. The results showed that participants fixated shorter on the anaphors whose antecedents were typical and near than the other cases. Furthermore, when the anaphor was an empty name (e.g., the object) rather than a category name (e.g., jewel) and its antecedent was, for example, "diamond", the shorter fixation advantage was eliminated. The authors interpreted the results by referring to stages in anaphoric resolution and priming processes.

In another study, Ehrlich and Rayner (1983) investigated the effect of the distance between a pronoun and its antecedent on pronoun assignment. Participants read short passages while their eye movements were recorded. The results showed that after

readers passed the pronoun, they spent more time in reading the subsequent portion of the text if the pronoun's antecedent was far back in the text. It was also found that gaze duration on a pronoun did not increase as the distance between the pronoun and its antecedent increased. The authors evaluated the results in terms of the cognitive lag, the immediacy assumption, and process monitoring views.

In yet another study, van Gompel and his colleagues (2004) reviewed the two conflicting theories – Semantic Overlap Theory (SOT) and Informational Load Hypothesis (ILH) – regarding the antecedent typicality effect on anaphor resolution, which is that people read anaphors of typical antecedents faster than anaphors of atypical antecedents. The authors then presented their eye-tracking study testing the opposing predictions of these theories for some variants of antecedent typicality situation. For instance, in the sentences “The coal/The peat was ordered in great quantities before the winter. Obviously, the fuel was in great demand”, the SOT's prediction is that people will read faster the second sentence when the anaphor's (i.e., the fuel) antecedent is typical (i.e., the coal) than when it is atypical (i.e., the peat). The ILH, however, predicts the reverse case. The results showed a two-stage effect: In the first-fixation and first-pass reading times, anaphors of typical antecedents led to faster reading times in the post-anaphor region compared to the anaphors of atypical antecedents, supporting the SOT. On the other hand, regression-path times showed the reverse of this effect in the final part of the sentences; specifically, anaphors of typical antecedents caused slower reading times in the final region of the sentences compared to the anaphors of atypical antecedents, which is in a way consistent with the ILH account.

As can be seen in these examples, accessibility and referential coherence are important in comprehension. Garnham (2010) makes an interesting point on this issue. He says that establishment of coherence in discourse processing is not necessarily independent of anaphoric resolutions. Coherence establishment involves the relations between the events described in discourse. Coherence relations are sometimes explicitly signaled (e.g., with conjunctions) and other times they are inferred from the context of the discourse and from reader's world-knowledge.

Shallow processing.

Whether readers comprehend the texts they read fully or partially is an important point for the comprehension process. Sanford and Graesser (2006) present some examples to the idea that language comprehension is not always complete. They offer the terms “shallow processing” and “underspecification” to point that people do not always make a complete semantic analysis of the text they read because complete processing may not be needed at the time or because the information in the text is incomplete. The authors cite some empirical studies showing that people generally do not detect some types of anomalies in sentences and interpret some forms of sentences incorrectly (Ferreira et al., 2002; Otero & Kintsch, 1992; Erickson & Mattson, 1981). Sanford and Graesser also mention that some factors in the text structure (e.g., linguistic focus) affect the depth of processing. They finally touch upon some individual differences

(e.g. age and reading skill) in shallow/incomplete processing (Christianson et al., 2006; Hannon & Daneman, 2004; Daneman, Hannon, & Burton, 2006).

In another study, Ferreira and her colleagues (2002) made a short review of some psycholinguistic findings indicating that people misinterpret certain types of sentences. For example, the following is a garden-path sentence: “While Anna dressed the baby played in the crib” (without commas). People generally interpret the sentence such that “the baby” is the object of the “dressed” and, at the same time, the subject of the “played” (Christianson et al., 2001). Moreover, active or passive voice in the sentences is also important. People rated the events in the active sentences “The man bit the dog” and “The dog bit the man” as being implausible and plausible, respectively, almost all the time. But interestingly, they rated the passive sentence “The dog was bitten by the man” as being plausible in more than %25 of the time (Ferreira & Stacey, 2000, as cited in Ferreira et al., 2002). Ferreira et al. (2002) took these findings as evidence of their non-compositional, good-enough language comprehension theory, which states that people’s comprehension of language is not always compositional, complete, and accurate.

Lastly, Patson and her colleagues (2009) investigated how people process garden-path sentences. Garden-path sentences (e.g., While Anna bathed the baby spit up on the bed) have temporarily ambiguous structure and cause processing difficulty. Previous research indicated that initial misinterpretation of these sentences continued and affected the final interpretation. This study was conducted both to support further those findings and to eliminate some methodological concerns in previous research by offering a different experimental paradigm (i.e., paraphrasing). Participants read several garden-path sentences; half of the sentences were ambiguous (without a comma), the other half were disambiguated (with a comma). After reading each sentence, participants paraphrased it. Results indicated that proportions of paraphrases categorized as partial reanalysis (e.g., “the baby” was written both as the object of the verb ‘bath’ and as the subject of the verb “spit”) was much higher in the ambiguous condition than in the disambiguated condition, suggesting that people kept holding the incorrect interpretation of the garden-path sentences.

Negations.

Negations made in the sentences also affect the comprehension of texts. For instance, Kaup and her colleagues investigated when readers focus their attention on the actual state of affairs after they read negated sentences (Kaup, Lüdtke, & Zwaan, 2006). In the experiment, for every trial, participants first saw a sentence, and after some time interval, they saw a picture of an object. Their task was to say aloud the name of the object. The sentences were affirmative or negated, with each sentence having contradictory predicates as their alternatives (e.g., The umbrella was open/closed; The umbrella was not open/was not closed). The pictures showed either the actual state of affairs of the sentences (e.g., a picture of a closed umbrella for the sentences “The umbrella was closed/was not open”) or the negated state of affairs of the sentences (e.g., a picture of a closed umbrella for the sentences “The umbrella was open/was not

closed”). The results showed that after the time interval of 750 ms, participants responded faster to pictures matching to the affirmative sentences (e.g., open-door picture after the open-door sentence) than to pictures mismatching to the affirmative sentences; but this facilitation did not occur for the negated sentences. When the time interval was 1500 ms, participants responded faster to pictures that matched the negated sentences than to pictures that mismatched to the negated sentences; but this facilitation did not occur for affirmative sentences. The authors concluded that in the negated sentences (e.g., the door was not open), readers focus their attention first on the negated situation (e.g., open door) and later on the actual situation (e.g., closed door); since this shifting process takes time, the effect of negated sentences does not occur earlier.

In yet another study, Kaup et al. (2007) explored whether readers visually simulate the negated situations in the negated sentences. In each trial, participants first saw a sentence and then a picture of an object. Their task was to decide (yes/no) whether the pictured object was mentioned in that sentence. For example, a sentence was “The eagle was not in the sky”, and the picture that followed it was an eagle with its wings outstretched (negated situation) or an eagle with its wings folded in (other situation). Critical sentences in the experiments were all negated sentences. All of the critical sentences required “yes” responses. The results showed that participants responded faster to pictures that matched to the negated situation in the preceding sentence than to pictures that mismatched; for example, the picture of an eagle with its wings outstretched was responded faster after the sentence “The eagle was not in the sky” than after the sentence “The eagle was not in the nest”. Kaup and her colleagues concluded that while reading negated sentences, readers must construct a visual simulation of the negated situation in the sentence, which then facilitates the recognition of a shape that matches to that negated situation.

Order of events.

Presented order of events is an important factor in discourse comprehension. For instance, Ohtsuka and Brewer (1992) tested the effect of event order on comprehension. Five types of passages were used; each passage type presented events in different orders. In canonical passages, the actual order of events was presented as they were (e1, e2, e3, e4, e5). In backward passages, the events were presented in reverse order (e5, e4, e3, e2, e1). In flashback passages, one of the former events (e2) was presented later (e1, e3, e4, e2, e5). In embedded passages, the event order was e3, e4, e2, e5, e1. In flashforward passages, the order of events was canonical except that the final event (e5) was presented in the middle, indicating a flashforward (e1, e2, e5, e3, e4). Participants listened to the passages twice and then answered some comprehension questions. The results showed that comprehension was highest in the canonical passages and lowest in the flashforward passages. The authors interpreted the results in terms of the Immediate Integration Principle.

So far we have introduced some typical studies regarding discourse comprehension as background to the current thesis. Next, we will present an important issue about the

content of the situation models. As mentioned before, a situation model is a level of comprehension in which readers form a representation of the text they read by incorporating their world knowledge and daily experiences. In the upcoming section, we will present some studies on the notion of grounded cognition to see how our sensorimotor experiences have an effect on the formation of situation models. We will also present some reviews on grounded cognition to see how this issue is discussed in the literature.

2.5. Grounded Cognition and Text Comprehension

How comprehension is represented in the human mind, as propositional statements or as experience-like states is an important debate in psycholinguistics. Barsalou (2008) described and reviewed research on what is called ‘grounded cognition’. Grounded cognition is a non-traditional view of mind that proposes that amodal, abstract, arbitrary symbols are not central to mental processes; instead, modal symbols, sensorimotor simulations, and situated actions form much of the cognition.

There are several experimental studies that are in line with the grounded cognition view. For instance, Glenberg and Kaschak (2002) tested what they called the ‘indexical hypothesis’, which states that linguistic meaning is based on our actions, that is, on our bodily interactions with the environment. In the experiment, participants made decisions regarding whether the sentences they read were sensible or nonsense. The sensible sentences were describing transfer actions, either towards or away from the reader. The response buttons were arranged such that in some of the cases participants must press the relevant button by moving their hands towards their bodies and in other cases they must do it by moving their hands away from their bodies. The results showed that when sentences were describing actions that were opposite to the required directions of responses, participants had difficulty in responding (i.e., they needed more time to respond). The effect was observed both in sentences describing concrete transfer actions and in sentences describing abstract transfer actions. Glenberg and Kaschak concluded that the findings were consistent with the idea that language comprehension uses the same mechanisms as those involved in taking actions.

Zwaan and his colleagues (2004) conducted a similar experimental study in which the emphasis was more on the perceptual aspect than on the action aspect. Zwaan et al. investigated whether dynamic visual representations are part of language comprehension. Their participants first listened to a sentence, then they were shown two objects successively on a computer screen. In the crucial trials, the sentence expressed the movement of a ball either toward the participant or away from him (e.g., You tossed the ball toward the kids / The kids tossed the ball toward you), and the following two pictures were of the type of the ball indicated in the sentence. The ball in the first picture was either smaller or larger than the one in the second picture, thus implying a motion toward or away from the participant. Immediately after the second picture was shown, participants were asked if the two pictures were the same or not.

The results showed that participants made faster responses when there was a match between the movement mentioned in the sentence and the movement suggested in the pictures than there was a mismatch. Zwaan et al. inferred that movements described in the sentences must have caused visual motion representations, which in turn facilitated the responses to the relevant situations.

In another study, Taylor and Zwaan (2008) explored how language comprehension interacts with motor processes. Participants read sentences while they turned a knob. For half of the sentences, they turned the knob in a clockwise fashion and for the other half they did it counter-clockwise. Half of the sentences described actions that were clockwise (e.g., He picked up his pencil which he sharpened rapidly) and the other half described actions that were counter-clockwise (e.g., He found a closed jar which he opened rapidly). They read the sentences frame-by-frame, with each frame consisting of one to three words. With every 5 degrees of rotation of the knob, the current frame was replaced by the next frame. The results showed that participants read faster the frames that described an action that matched to the participants' knob rotation than the frames in which there was a mismatch. The effect was observed both in the verb (e.g., sharpened) and in the following action-modifying adverb (e.g., rapidly). However, when the adverb was agent-modifying (e.g., nervously), the match advantage was not observed. Taylor and Zwaan concluded that semantic and motor systems may share some neurophysiological substrates.

All of these studies were conducted at sentence level. There are few studies that tested the grounded cognition hypothesis at discourse level. One such study was conducted by Spivey and Geng (2001). In that study, participants listened to stories that included descriptions of horizontal or vertical movements. Eye-movement analyses of the participants yielded that the directions of their eye movements (i.e., vertical or horizontal) matched the movement descriptions in the stories. Another study related to the grounded cognition view is Bower and Morrow (1990) study. That study reports several experiments which showed the facilitative effect of spatial layouts during comprehension. We will describe the Bower and Morrow (1990) study in detail in the narrative comprehension and space section below.

There are several reviews that touched upon the grounded cognition issue. For instance, Zwaan (1999) compares two different views of language comprehension (i.e., amodal symbol systems vs. perceptual symbol systems). In amodal symbol systems (AS), the relation between the referent and its mental representation is arbitrary, and the mental representation is composed of propositions. In perceptual symbol systems (PS), however, this relation is analog; therefore, PS is said to provide richer information about the referents (and a high-resolution situation models of the texts) compared to AS. Zwaan mentions some empirical studies to support the PS view, but he also stresses that experimental data shown as supporting one view can also be explained (post hoc) by the other view; so, crucial experimental paradigms are needed to decide which view is more realistic, he says. He also mentions the possibility that these both views can be true; so, depending on the text, one system may be more involved in the comprehension process than the other.

In a similar theoretical review, Zwaan (2016) discusses the possible interplay between sensorimotor representations and symbolic representations during discourse comprehension. When there is no context (e.g., when people read individual words or sentences), symbolic representations (e.g., lexicons and propositions) of the text content might be dominant in text comprehension; however, as longer bodies of text (e.g., discourse-level texts) are read, contextual information is gained, and sensorimotor representations may step in... Furthermore, abstract concepts (e.g., justice) are thought to be represented symbolically; but, within a discourse context, they may function as memory pointers for the (concrete) events described within the text. Abstract concepts may acquire sensorimotor instantiations cataphorically (i.e., they provide focus to the upcoming information in the text) or anaphorically (i.e., their current meaning is instantiated by the previously presented information). Finally, Zwaan states that this analysis may be more suitable for narrative-kind texts than other kinds of discourse (e.g., scientific/theoretical texts).

In another review, Zwaan (2014) first describes a debate in cognitive science regarding language comprehension and then proposes his own solution to the problem. According to the traditional symbolic view, manipulations of amodal, arbitrary symbols dominate cognition; on the other hand, embodied view states that multimodal, non-arbitrary symbols that are analog representations of experiences and thus are grounded in the brain's action and perception systems dominate cognition. Since both views have empirical support, Zwaan offers an alternative view that takes both amodal symbols and multimodal/grounded symbols into account. He proposes five levels of situational embeddedness for language use; those levels have varying degrees of embeddedness and can be characterized in terms of communicative situation (CS) and referential representation (RR). The more overlap between the CS (i.e., where the communication takes place) and RR (i.e., the content of communication), the more embeddedness in language use. Those levels are: 1) *Demonstrations*: All agents, objects, and events in RR are present in CS. 2) *Instructions*: A desired/required state different from the current one is described. 3) *Projections*: Mapping future/past state of the world to the present one. The spatial location of CS and RR are the same, but they happen at different times. 4) *Displacements*: Environment of RR is totally different from that of CS (e.g., narratives, historical accounts). 5) *Abstraction*: No mention of a particular environment, no space and time frames (e.g. scientific/philosophical papers, legal documents). The degree of embeddedness decreases from level 1 to level 5.

Having presented several studies, theoretical frameworks, and discussions on discourse comprehension, we now move on to narrative comprehension (i.e., a subfield of discourse comprehension) in the next section.

2.6. Narrative comprehension

As noted earlier, narration is a type of discourse. Narratives traditionally describe events and situations revolving around a protagonist and other characters. Narrative comprehension is a subfield of discourse comprehension. Narrative comprehension involves how the characters and events described in stories are represented in reader's mind, what kinds of inferences are activated during reading narratives, and what text factors affect the comprehension of narratives (Emmott, 1997; Graesser, Singer, & Trabasso, 1994; Morrow, Greenspan, & Bower, 1987).

According to the event-indexing model developed by Zwaan, Langston, and Graesser (1995), readers monitor five dimensions of narrative texts. These dimensions are Protagonist (i.e., the main character in a story), Time (when the events occur), Space (spatial relations between the entities described in the text), Causality (which events are causally related), and Intentionality (the relevance of incoming information to the protagonist's goals and intentions). The processing of these five dimensions occurs at the situation model (i.e., mental model). Readers update their situation models as they read new information in the text. Furthermore, readers may hold some parts of the text content more active than the other parts (e.g., Glenberg, Meyer, & Lindem, 1987).

To test the event-indexing model, Zwaan, Langston, and Graesser (1995) conducted two experiments in which they employed a verb-clustering task. In experiment 1, participants read four short stories. After each story, they were given 10 selected verbs from that story. Their task was, on the basis of the story they read, to make groups of those verbs, such that the verbs they thought were related should belong in the same group. Participants did the task twice: First, with the aid of their memory of the text; second, with the text being present with them during the task. Experiment 2 was the same as Experiment 1, with the modification that the task sequence was reversed. Regression analyses were made on the patterns of clustered verbs. The results showed that the five dimensions of narrative texts contributed independently to the situation model.

In narratives, there may be spatial, temporal, and causal discontinuities, which make the incoming information more difficult to integrate into the mental model. Zwaan, Magliano, and Graesser (1995) presented their participants some stories whose temporal, spatial, and causal dimensions were manipulated. The results showed that participants read sentences that involved causal and temporal discontinuities more slowly than those that did not have such discontinuities. The effect of spatial discontinuities, although in the expected direction, did not reach significance in reading times. The authors concluded that under normal reading conditions, readers keep track of several dimensions of the story world.

As mentioned earlier, a situation model (also called mental model) of a text is the reader's conception of what that text is about. It involves not just the propositional descriptions of the sentences in the text but also the inferences and world knowledge reflected on the text by the reader. Glenberg, Meyer, and Lindem (1987) explored how

the structure of mental models affects the comprehension processes of texts. Any ‘thing’ in the text can be foregrounded (held active in the mental model) as long as it is relevant to the ongoing processing of the text. What these researchers tested was the idea that an object in a text remains foregrounded in the mental model as long as it is spatially associated to the protagonist, even if it is not mentioned again in the text. The results from item-recognition tests and reading times showed that participants were faster when the target object and the protagonist were spatially associated (“close”) than when they were spatially disassociated (“far”). Since the texts used in this experiment were propositionally equivalent, the resulting difference between the conditions were interpreted such that mental models are more than the text structure.

An extension of the Glenberg et al. (1987) study was conducted by Cook et al. (2007). Participants read several narratives. In Experiment 1, target object in the narratives was either associated to (i.e., physically attached) or disassociated (i.e., physically detached) from the protagonist. A few sentences later, the object was mentioned again, either consistent or inconsistent with the earlier information in the text. The data showed that critical sentences mentioning the associated objects were read faster than those mentioning the disassociated objects. This is the typical foregrounding effect, also found in Glenberg et al (1987). Moreover, inconsistent sentences in the associated condition were read more slowly than the inconsistent sentences in the disassociated condition. These findings suggest that 1) associated objects have greater status in discourse representation, and 2) with this status, the inconsistencies with the associated objects produce more processing difficulty. In Experiment 2, a probe-naming task was used. The results supported the possibility that foregrounding occurs because of accessibility advantage, not of availability advantage. Experiment 3 showed that the degree or importance of association (e.g., low- or high-association) did not affect accessibility of foregrounded objects.

Tracking the goals of the protagonist is also important in narrative comprehension. In one study, Linderholm and her colleagues (2004) investigated how readers represent multiple and changing goals of a story character. Participants read several passages; each passage had three paragraphs. The first paragraph, which was the same for all participants, introduced the character and his/her goal. The second paragraph had three versions: i) original goal rementioned, ii) new goal introduced (without referring to the original goal), and iii) neutral (no mention of any goal). Participants were randomly assigned across these three conditions. The third paragraph, which was the same for all participants, was the concluding paragraph. After each paragraph, participants were presented with a probe word (e.g., cake), which was related to the original goal. How fast they respond to the probe word would indicate the accessibility of the original goal information in participants’ memory. Results showed that relative to the neutral condition, original goal information was maintained/enhanced in the original-goal-rementioned condition (faster response times), but it was suppressed in the new-goal-introduced condition (slower response times). The authors concluded that people keep track of the goals of the story character, enhance/maintain the activation of the important goals, and suppress the activation of the old/unimportant goals.

2.7. Narrative Comprehension and Space

The aim of this thesis is to investigate spatial perspective taking in narrative comprehension. For this, we should first look at how readers represent the space dimension in their situation models of narratives. After mentioning some studies in this area, we will move on to the perspective taking issue.

In one study, Zwaan and van Oostendorp (1993) investigated whether readers could construct detailed spatial representations while reading some naturalistic text. The text in the experiment was a page from a detective novel. Half of the participants were instructed to read the text as they normally would ('normal' condition); the other half were instructed to read it focusing on the spatial information and locations of objects in the text ('spatial' condition). The results showed that as compared to participants in the normal condition, participants in the spatial condition read (that is, encoded) the text more slowly, suggesting that they made an effort to construct a spatial representation of the text. Accordingly, they were better at inference-judgment questions about the spatial content of the text than participants in the normal condition. The findings are in line with the idea that under normal reading conditions, constructing spatial situation model of a text is not a critical/necessary aspect of story comprehension.

In another study, Haenggi, Kintsch, and Gernsbacher (1995) investigated whether readers' comprehension of narratives involves spatial inferences. Before reading the narratives, participants studied for 10 minutes the spatial layout of a castle which consisted of four rooms and within each room there were four different objects. The castle was the common place for all the narratives to be read. In the narratives, the protagonist walked through every room in the castle. During their reading, participants were interrupted several times and shown two object names; they should decide whether the objects belonged to the same room or to different rooms. The response times indicated that participants responded more quickly to the names of the objects that were in the same room as the protagonist at that time than to those that were in a different room (i.e., away from the protagonist's current room). After the experiment, participants were given a cube-comparison test, which measures people's spatial imagery ability; its results were highly correlated with the response time measures in the experiment. Together, these findings are in line with the idea that readers can construct and benefit from spatial mental models during their comprehension process. Finally, the authors made a computer simulation of the experiment with a propositional network. When they ran the simulation, they observed that its outputs were similar to the human data in the actual experiment.

In another study, Bower and Morrow (1990) explored the facilitative effects of spatial situation models on comprehension. While reading narratives, people generally keep track of the character's goals, actions, and thoughts. In one study, participants first memorized the spatial layouts of two buildings (with rooms and objects in those rooms), then they read narratives which took place in the buildings memorized by the participants; the character was walking in those buildings to satisfy his/her goals.

Participants' responses to probe questions about the objects in the buildings were fastest for the objects which were in the character's current room, less fast for those in his/her previous room, even less fast for those in another room in the same building, and slowest for the objects that were in the other building. In another study, readers paid more attention to the major character's surroundings than the minor character's. In yet another study, readers responded faster to probes of objects which were at the intermediate locations the character was passing than those at his previous location, even though these intermediate locations were never explicitly mentioned but only inferable from the memorized layout. In a last study, readers responded faster to probes of objects which were at the character's mental location (e.g., the room s/he was thinking of) than to those at his/her physical location. Bower and Morrow (1990) concluded that readers focus their attention on the story characters' perspective, actions, goals, and mental states during reading; thus, any thing that is relevant to these will be comprehended more easily than other things.

In a different study, Hakala (1999) investigated under what conditions people construct and benefit from spatial situation models of the texts they are reading. He conducted four experiments for this purpose. The same narratives (with little modifications) were used in all experiments. In all experiments, half of the participants were instructed to pay attention to the spatial details of the texts (spatial-instruction condition) and the other half were just told to read them normally (normal-instruction condition). Experiment 1 showed that after the reading, participants responded faster to probe words that referred to the character's final location than to neutral probe words. This effect was observed only in the spatial-instruction condition. Experiment 2 showed that participants read the spatially relevant sentences more quickly than their spatially irrelevant alternatives. This, too, occurred only in the spatial-instruction condition. Experiment 3 showed that even though a narrative was written in a way that encourages readers to focus on spatial details, participants in the normal-condition still did not utilize the spatial information to facilitate their comprehension. In Experiment 4, it was shown that while reading narratives that encourage readers to focus on spatial details, readers benefited from the spatial information only if the information was critical to comprehend the narratives. All in all, people benefit from spatial inferences during reading 1) if they are told to focus on spatial details or 2) if the texts strongly encourage them to do so.

In another study, Smith and O'Brien (2012) investigated under what conditions people track the spatial information in narratives. Participants read several passages in which the description of the protagonist's location was either consistent or inconsistent with the earlier description of her location. The manipulated (target) sentence spatially cued either the location of the protagonist, or an object around the protagonist, or both the protagonist's location and the object. Reading times showed that, in all spatial-cue cases, participants read the inconsistent target sentences more slowly than the consistent ones, suggesting that participants became aware of the contradictions. Furthermore, to test the idea that spatial cues are necessary to facilitate the tracking of spatial information (e.g., the protagonist's location), Smith and O'Brien conducted two more experiments. In Experiment 2a, there was no spatial cue – neither an object cue

nor a location cue regarding the protagonist's location – but instead there was some information *implying* the protagonist's location (without any spatial cue). Experiment 2b was the same as Experiment 2a, with the exception that participants were explicitly instructed to take the protagonist's perspective while reading. The results showed that participants did not exhibit an inconsistency effect in Experiment 2a but did in Experiment 2b. These findings overall suggest that while reading narratives, people keep track of spatial information 1) if there are spatial cues or 2) if they read from the perspective of the story character (see also Smith et al., 2020, for the extended replication of this study).

2.8. Narrative Comprehension and Perspective Taking

One of the issues about narrative comprehension is whether readers adopt the perspective of the protagonist while reading narratives. The perspective can be about visual-spatial dimension (e.g., O'Brien & Albrecht, 1992; Creer, Cook, & O'Brien, 2019; Franklin & Tversky, 1990) or about some cognitive dimension like tracking of some important goals of the protagonist (e.g., Albrecht et al., 1995; Creer, Cook, & O'Brien, 2020).

In one study, Pichert and Anderson (1977) investigated whether the recallability of elements in narratives (i.e., the likelihood of them being remembered) depends on the perspective that readers adopt during their reading. All participants read the same narrative but from different perspectives. One group of participants were instructed to read it from a "burglar" perspective, whereas the other group of participants were instructed to read it from a "potential homebuyer" perspective. The results showed that participants adopting the burglar perspective remembered the elements which a burglar might be interested in better than the other elements in the narrative. Similarly, participants adopting the homebuyer perspective remembered the elements that could be of interest to a homebuyer better than the other elements. Pichert and Anderson (1977) concluded that adopting a certain perspective during reading activates a relevant schema. Information which has importance to that schema will be learned and later remembered better than information that has less importance to the schema.

Anderson and Pichert (1978) conducted an extension of the Pichert and Anderson (1977) study. Participants read a story about two kids skipping school and spending some time at one of the kids' houses. In the story, some elements (e.g., a color TV) could attract a burglar's attention more, while other elements (e.g., a leaky roof) could attract a homebuyer's attention more. Half of the participants were instructed to read the story from a "burglar" perspective and the other half were instructed to read the story from a "homebuyer" perspective. Some time after their reading was over, participants were told to recall as much information as possible from the story. This was the first attempt. Some time after this attempt of recall, participants were told to recall the story again but from a different perspective (i.e., participants in the homebuyer condition now tried to recall the story from the burglar perspective and vice versa for the other group). The results indicated that at the first recall attempt,

participants remembered more information related to their original perspective than information related to the other perspective. At the second recall attempt, that is, when they shifted their perspective, they remembered more information related to the newly adopted perspective than information related to the old perspective. Anderson and Pichert (1978) interpreted the results in terms of the role of schemas in retrieval processes.

In a different study, Brunyé et al. (2009) were interested in under what conditions people adopt the actor's perspective in the text. In Experiment 1, participants read several one-sentence texts that had varying pronouns for the subject (e.g., *I* am slicing the tomato; *You* are taping the package; *He* is ironing the pants). After each sentence, participants saw a picture which depicted the same action described in the sentence; the picture was either shot from the third-person (external) perspective or first-person (internal) perspective. The results showed that when the pronoun was "I" or "You", participants responded faster to internal-perspective pictures than to external-perspective ones. Also, when the pronoun was "He", participants responded faster to the external-perspective images than the internal ones. Experiment 2 was the same as Experiment 1, with the exception that each sentence was embedded in a short discourse so as to minimize the ambiguity regarding who the actor was. The results were similar to Experiment 1 with the exception that in Experiment 2, the pronoun "I" led participants to adopt the external (third-person) perspective (indicated by faster responses to the external pictures). Brunyé et al. (2009) concluded that readers are more consistently prone to adopt the first-person perspective when they were addressed as the subject of the sentence (i.e., "You").

In another study, Kaakinen, Hyönä, and Keenan (2002) investigated whether or how adopting a certain reading perspective influences readers' processing speed and their recall of perspective relevant information in texts. Participants read an expository text about four unfamiliar countries. The text compares and contrasts those countries on several aspects such as economy, climate, and transportation. Half of the participants were instructed to imagine they were going to reside in one of those countries (i.e., Honduras) for a long time and to read the text to decide on the good and bad sides of that country; thus, their reading perspective was Honduras. The other half were instructed the same way except that their reading perspective was another country in the text (i.e., Pitcairn). Furthermore, their reading span (i.e., working memory span for reading) was also measured after the experiment. Eye-tracking data and recall protocols showed that participants fixated (i.e., processed) longer and also recalled better the sentences relevant to their reading perspective than the other sentences. As for the effect of reading span on performance, low-span readers' longer processing of the perspective relevant sentences showed itself only at later stages (i.e., look-back fixation durations), whereas high-span readers did this longer processing at early stages (i.e., first-pass fixation durations).

In order to investigate whether the perspective effect on the comprehension of expository texts (Kaakinen et al., 2002, described right above) would also be valid for narrative texts, Kaakinen and Hyönä (2008) conducted the same study, with narrative

texts this time. Participants read a story in which two characters (one was planning burglary; the other was an interior design student) were visiting three houses. Half of the sentences were related to burglary; the other half were related to design of the houses. Half of the participants were told to adopt a burglar's perspective while reading the story, the other half were told to adopt an interior designer's perspective. The results showed that perspective-relevant sentences were recalled better than perspective-irrelevant ones. Moreover, fixation times showed that perspective-relevant sentences were read longer than the irrelevant ones. The magnitude of the perspective effect, however, was modulated by the prototypical prior knowledge about the perspective. A separate pilot study indicated that people have more a priori knowledge about burglary than about interior design. So, when their prior knowledge about their perspective was little (i.e., interior design perspective), participants' recall performance for the perspective-relevant sentences was not much different from that for the perspective-irrelevant sentences, although they fixated the relevant sentences faster. Besides, when they were knowledgeable about their perspective (i.e., burglary), they encoded the relevant sentences as fast as the irrelevant ones, and still their recall of these sentences was better than the irrelevant ones.

In a different study, Houghton and Klin (2020) investigated if readers simulate the story character's memories and thoughts. In Experiment 1, participants read a brief James Bond story in which Bond was given a list. In the Remember condition, he concentrated his attention on the items in the list. In the No Remember condition, he just glanced at the items. The list appeared in the story text. After they read the story, participants were asked to recall the list in the story. The results showed that participants in the Remember condition read more slowly the line of the text that showed the list and later recalled more items from the list than the participants in the No Remember condition. Experiment 2 was the same except that the importance of the list to the story was equated in the Remember and the No Remember conditions. The results were similar to those of Experiment 1. Experiment 3 was conducted to test the alternative explanation that higher recall in the Remember condition might be due to the participants' slower reading time of the list items in this condition, not to their simulation of Bond's thoughts and memories. For this, the story text was presented at a fixed time such that every line of the text must be read at equal duration for every participant. The results showed that participants in the Remember condition still recalled more list items than participants in the No Remember condition. The authors concluded that readers incorporate the character's mental representation into their own mental representations and thus remember what the character remembers.

In another study, Weingartner and Klin (2009) investigated how accurately readers take the perspectives of the story characters. While readers read a story, they sometimes read about events that are not experienced or shared by every character in the story. In such cases, readers may mistakenly assume that a character knows something when she in fact does not. The experiments in this study showed that participants read the target sentences more slowly when the information in the sentence contradicted the earlier information in the story which was unknown to the current character in the story. That is, if participants had taken the current character's

perspective, they should not have been disrupted by the contradiction in the sentence because the contradiction was unknown to the current character. Weingartner and Klin concluded that readers are not always accurate at adopting the story character's perspective.

Furthermore, Creer, Cook, and O'Brien (2020) compared participants' reading times for the target sentences which were either compatible or incompatible with the protagonist's goal. When the passages were written from third-person point-of-view, participants were not disrupted while reading the target sentences that were incompatible with an unsatisfied goal. However, when the passages were written from the first-person point-of-view (i.e., "I") or when participants were explicitly instructed to read the passages from the protagonist's perspective, their reading times slowed down, suggesting that participants became sensitive to perspective-relevant information in these conditions. The researchers also showed that participants were sensitive to perspective-irrelevant information (i.e., the information that was evident to the reader but not to the protagonist), suggesting that readers do not fully take the perspective of the protagonist.

In a different study, Ferguson and Jayes (2018) investigated whether the degree of plausibility of the sentences and the perspective of the subject in those sentences would affect the ease of comprehension. The sentences were presented in counterfactual form (i.e., if-clause sentences which describe not-real, hypothetical situations). The plausibility degree (i.e., anomalous, implausible, plausible) and the perspective (i.e., proper noun, second-person perspective "You") were manipulated. For example, If *Sophia/you* had used a *pump/axe/knife*, *she/you* would have prepared the large carrots in time for dinner". Eye-tracking data showed that participants looked longer at the target region (e.g., carrots, where the violation could be evident) in the anomalous sentences than in the other types of sentences. Also, their fixations at the post-target region (e.g., in time for dinner) were longest in the anomalous condition, less long in the implausible condition, and shortest in the plausible condition. The authors concluded that readers are sensitive to degrees of plausibility even in counterfactual narratives; thus, in counterfactual world, they continue to evaluate the incoming information and do not give up processing just because of the "not-real" inference. Lastly, contrary to expectations, the effect of perspective was little and limited.

In another study, Horton and Rapp (2003) investigated whether readers take the perspective of the story character and also whether they represent the objects in the character's field of view. Participants read narratives in which an object in the field of the character (e.g., a TV, scattered papers, a mailbox) was either occluded by another object (e.g., a person appearing in front of the TV, a thick wave of smoke filling in the room, a large truck being pulled up) or non-occluded. The results indicated that participants responded more slowly to probe questions about the occluded objects than the questions about the non-occluded ones. Horton and Rapp interpreted the results such that people take the perspective of the story characters and also represent story events in a way like actual perception.

In a different study, van Krieken (2018) investigated how perspective in narratives would be interpreted by readers if linguistic viewpoint markers and verb tense were manipulated. In Experiment 1, participants read two-sentence passages written in past or present tense; the first sentence had a linguistic viewpoint marker (e.g., looked outside) or not (e.g., stepped outside); the second sentence was a continuation sentence with no viewpoint marker (e.g., the bushes leaned close together). After each passage, participants were told to make a rating on a slider as to who made the observation in the second sentence (i.e., the narrator or the character?). The results showed that when the first sentence had a viewpoint marker, participants gave a higher rating to the possibility that the observation in the second sentence was made by the character. Whether the text was written in past or present tense did not exhibit any effect on ratings. Experiment 2 employed longer passages and its results were similar: viewpoint markers affected participants' perceptual attributions in favor of the character. This occurred not only in the second sentence but also in the later sentences, suggesting that the effect is continuous.

Studies using Naturalistic Texts.

There are also some studies in the literature that employed naturalistic texts (instead of experimenter-created texts). For instance, Öncel, Creer, and Allen (2022) designed a study in which they used a naturalistic story. They explored several factors to test readers' phenomenological experiences during reading. They found that participants' verbal- and visual-thought reports were correlated negatively, indicating that engaging in one form of thought lessens the possibility of experiencing the other form. They also found that participants' visual imagery reports were correlated positively with their transportation into the story. The naturalistic story these researchers used in their study was a story that was written from third-person PoV. In order to see the influence of perspective taking, these researchers explicitly instructed half of their participants to adopt the perspective of the main character in the story while reading. The results, however, showed that participant's experience of transportation into the story was not affected by the perspective taking instruction. That is, there was no difference between the neutral reading group and the instructed reading group in terms of the transportation scores. Then, the researchers rearranged the story by re-writing it from first-person PoV. This way, participants should naturally adopt the perspective of the main character without needing any form of explicit instruction. However, the results again showed that first-person narration did not influence the participants' transportation experience. That is, transportation into the story was not augmented by the perspective taking manipulations. Öncel and her colleagues postulated several explanations as to why their findings were different from the previous studies which also had used naturalistic texts. For instance, they stressed that cohesion level of narratives might be crucial for the likelihood of perspective taking and that several text-based factors (e.g., how much detail was provided by the author about the protagonist; Cohen, 2006) might influence readers' ability to identify with the protagonist. The researchers lastly stated that future studies must be conducted with

several different naturalistic stories in order to better understand the relationship between perspective taking and transportation into the story world.

In another study, Millis (1995) presented his participants with a naturalistic story. The reading time measures showed that participants read the sentences with a perspective-shift more slowly than the sentences that had no such shift. However, this reading time difference was not observed when participants re-read the story. This suggests that participants had encoded the perspective-shift information in the first reading and hence they did not need to encode or re-calculate it in the second reading. Moreover, participants read the sentences containing suspense elements faster than the no-suspense sentences, suggesting that they wished to find the resolution to the suspense-eliciting situation. However, in the second reading, participants still read the suspense sentences faster, which may suggest that they wished to re-experience the situation like in the first time.

2.9. Deictic Motion Verbs and Perspective Taking

Up to this point, we have reviewed several important studies in narrative comprehension domain, with some emphasis on the spatial perspective-taking issue. From now on, we will review a few more studies that are even more in line with this thesis's aims and hypotheses. These studies are all about spatial perspective-taking in narratives and yet all of them, in one way or another, used some form of deictic motion verbs in their stimulus sets.

First of all, we should note that deictic motion verbs (i.e., come, go, bring, take) are quite well known and studied in the literature (Fillmore, 1975; Wang, 2018; Black et al., 1979; Clark, 1974; Goddard, 1997; Fillmore, 1966; Goldin et al., 2021).

Psycholinguistics studies that employed deictic motion verbs in narrative comprehension and perspective taking are few in number. In one study, Black and his colleagues (1979) tested the assumption that readers generally adopt the perspective (point of view) of the story character. Their claim is that the narrator of the story identifies with the protagonist, and readers take the perspective of the narrator; consequently, readers take the protagonist's perspective. People seek coherence (e.g., a consistent point of view) while reading narratives; when the coherence is broken, they try to make it up. In the experiments, participants read very short narratives (i.e., compound sentences). The perspective consistency was manipulated as the following: For instance, the narrative "Terry finished working in the yard; and he went into the house" has a consistent perspective if we assume that the reader identifies himself with Terry (i.e., the character) and also with the character's location (i.e., in the yard). However, if the second half of the narrative is "and he came into the house", this is an inconsistent (changed) point of view relative to the character. In this case, readers should do more processing while reading the inconsistent part. The results of the experiments indicated that participants read the consistent-perspective narratives faster and rated them as more comprehensible than the inconsistent-perspective narratives.

Moreover, they recalled the inconsistent-perspective sentences falsely, as if those sentences had had a consistent point of view. The authors suggested that people take the protagonist's perspective while reading.

In another study, Rall and Harris (2000) investigated whether children at the ages of 3 to 4 would take the perspective of a story character. The researchers adopted the paradigm developed by Black et al. (1979). The children in the experiment listened to some short familiar stories. The results showed that children misrecalled verbs that were inconsistent with the story character's perspective. For instance, when the verb 'went' in the sentence was inconsistent with the story character's perspective, children recalled that verb falsely as "came". The authors interpreted the results such that children adopt a story character's perspective while they listen to stories.

In a similar study, Ziegler and her colleagues (2005) investigated whether children at the ages of 4 to 9 would adopt the perspective of a story character. In the experiments, the children listened to unfamiliar stories. In Experiment 1, children misrecalled verbs that were inconsistent with the protagonist's perspective (e.g., "came" was misrecalled as "went"). In Experiment 2, it was tested whether the protagonist's being "good" or "bad" would affect the misrecalls. The results showed that children made similar recall errors regardless of the protagonist's characteristic. Experiment 3 showed that children made some recall errors even in the absence of a principal protagonist. The authors concluded that children are sensitive to perspective information while they listen to stories.

In another study, O'Brien and Albrecht (1992) investigated whether readers are sensitive to protagonist's location and whether they adopt the protagonist's perspective during reading. In Experiment 1, participants read the sentences in which the given information was inconsistent with the protagonist's location more slowly than the sentences in which there was no such inconsistency. The authors concluded that readers are sensitive to the protagonist's location. They also noted that this does not necessarily mean that readers adopted the protagonist's perspective. To test whether readers are really taking the protagonist's perspective, O'Brien and Albrecht conducted Experiment 2 in which they used the verb *come* (i.e., a deictic motion verb that is sensitive to perspective): In one passage, the protagonist (i.e., Kim) was standing inside the health club and later in the passage her instructor *came in* the door of the club. The alternative passage was the same except that the protagonist was standing outside the health club. In terms of spatial relations, the instructor's "coming in" (i.e., the critical sentence) was consistent with the protagonist's perspective in the first passage (i.e., her being inside), but it was inconsistent in the second passage (i.e., her being outside). All passages were written from the third-person point-of-view (e.g., he, she). The participants were told to read for comprehension. The results showed that participants were not disrupted by the spatial violation in the second passage. That is, under normal reading circumstances, people do not adopt the protagonist's perspective. However, in Experiment 3, when participants were explicitly instructed beforehand to read the passages from the protagonist's perspective (e.g., put yourself in the shoes of the protagonist), they were disrupted by the violation (i.e., slower

reading of the critical sentence in the second passage). O'Brien and Albrecht (1992) concluded that people take the protagonist's perspective only under specific reading conditions.

In a recent study, Creer and her colleagues (2019) made an extended replication of the O'Brien and Albrecht (1992) study. As in that study, participants in normal reading condition were not disrupted by the spatial violation in the target sentence but were disrupted by that in the instructed condition. Furthermore, in a separate experiment, Creer et al. modified the passages such that all passages were written from first-person point-of-view (i.e., I). With this modification, they found that participants were disrupted by the spatial violation in the target sentences under normal reading circumstances. The researchers concluded that text-base manipulation of the narrator perspective affects readers' perspective taking. That is, in narratives written from third-person point-of-view, reader generally adopt an omniscient narrator's perspective and consequently are not disrupted by spatial violations relative to the protagonist; however, in narratives written from first-person point-of-view, since the narrator is the protagonist herself, readers adopt her perspective and consequently are disrupted by spatial violations relative to her perspective.

2.10. The present study

This study is about how comprehension is affected by the narrator's point-of-view, establishment, and deictic motion verbs. Before describing our research hypotheses, we will first lay out a specific background to pave the way for our hypotheses.

2.10.1. Background

We should note that the conclusions of Black et al. (1979), Rall and Harris (2000), and Ziegler et al. (2005) were contradictory to the conclusions of O'Brien and Albrecht (1992) and Creer et al. (2019). That is, they investigated the same research question but reached different conclusions from their experimental findings. Using narratives written from third-person point-of-view, Black et al. (1979) concluded that people take the perspective of the protagonist, whereas O'Brien and Albrecht (1992) concluded that people do not take the perspective of the protagonist but instead adopt an omniscient perspective.

The discrepancy between these studies may be due to the manipulations in the narratives. For instance, in O'Brien and Albrecht (1992) study, the destination location (e.g., health club) was pre-established and the protagonist was either inside or outside that location. Then a new character (e.g., the instructor) *came in* the door of the club. This is a clear manipulation because readers are free to adopt the protagonist's perspective.

However, in Black et al.'s (1979) study, the destination location was not pre-established. It was established only during the critical sentence, which was written

either with the verb “go in” or with the verb “come in”. That is, the protagonist (e.g., Terry) was in the yard and then he went into or came into the house. The slower reading of the “came into” version was interpreted by the authors such that people normally adopt the protagonist’s perspective. However, the results may be interpreted differently: It is quite possible that the slower reading of the “came into” version of the critical sentence could be because of the prerequisite of the verb “come in”, rather than the protagonist’s perspective. By prerequisite, we mean the conditions which should be met in order to use the deictic motion verbs properly in narratives. For example, the proper use of the verb “come in” may require that the destination location (e.g., the house) be established at the beginning and be put in the mental model of the narrative. If the house is not established beforehand and hence not in the mental model, then it may be improper to use the verb “come in” to describe a movement towards the house. In other words, the slower reading of the inconsistent critical sentence may be the result of the improper use of the verb “come in”, not the result of the adoption of the protagonist perspective.

An easy way to test this claim is to establish the house at the beginning of the narrative. If the house is established beforehand (e.g., Terry finished working in the yard of the house), then we have a clear manipulation. In this case, if the readers still read the “come in” version more slowly than the “go in” version, then we can have a strong conclusion that the readers adopt the protagonist perspective. However, if the readers are not disrupted by the “come in” version in this case, then we can say that people do not adopt the protagonist perspective and may instead adopt a free (omniscient) perspective.

On the other hand, Black et al. (1979) study sometimes used established destination locations. They reported that in those cases, the verb go was read slowly because this time it is inconsistent to the protagonist’s perspective. A possible problem here is that the establishment of the second character (i.e., the character who is the agent of motion) was not controlled in those examples. The slower reading of the verb go in such cases might have happened because of some unsatisfied prerequisite of the verb go, rather than the perspective taking. This problem can be solved by manipulating the establishment of the secondary character in narratives.

Lastly, the passages in Black et al. (1979) study were all short; they are mostly compound sentences. Passages of this kind may not be sufficient to test perspective taking because readers may not have enough time to form a proper mental model of the text, and they may comprehend the sentences at the surface structure level mostly (O’Brien and Albrecht, 1992). Therefore, longer passages may be better to capture any perspective taking effect.

Black et al. (1979) have the above-discussed confoundings and limitations in their study. However, O’Brien and Albrecht (1992) and Creer et al. (2019) studies do not have such limitations/confoundings. The latter two studies were kept well-controlled; they manipulated what they needed to manipulate only and held other variables

constant. Therefore, we adopt these two studies as a baseline and formulate our main hypotheses in accordance with their conclusion.

2.10.2. Aim and Hypotheses

We have “main hypotheses” on the one hand, and we have “specific hypotheses” on the other hand.

Our main hypotheses are the same as those in Creer et al. (2019, 2020) studies. They are as follows: Under normal reading circumstances, while reading narratives written from third-person point-of-view, people do not take the protagonist’s perspective. Instead, they adopt a free/broad perspective, which can also be called “omniscient narrator perspective”. However, while reading narratives written from first-person point-of-view, people adopt the protagonist’s perspective. In either case, it is the narrator whose perspective is adopted by the readers. In detail, in third-person narratives, the narrator is someone who overlooks the characters, events, and places in the story; that is, he does not have to stick to the protagonist or another character. However, in first-person narratives, the narrator is the protagonist himself; that is, he has the same limited perspective as the protagonist.

With this regard, the effects in these two types of narratives should be different. A simple way to test these ideas is to use deictic verbs of motion (e.g., come, go). Since deictic motion verbs are, by nature, related to the perspective, we can manipulate them and their prerequisites within the narratives to see how narrative comprehension interacts with the narrator perspective.

Our specific hypotheses (predictions) and their rationale are described in the sections below. On the one hand, we developed some rules for using deictic motion verbs in narratives. We argue that if these rules are broken in narrative discourse, comprehension difficulty should arise in readers’ minds. On the other hand, we have developed some predictions regarding the establishment status of the locations and characters in narratives. We argue that establishment and deictic motion verbs are quite dependent on each other in narratives. Establishing a character/location might affect the comprehension of deictic motion verbs in narratives.

Deictic verbs of motion.

Deictic motion verbs are verbs which describe movement according to some perspective. For instance, the verb “go” emphasizes “departure” (e.g., He went home around midnight), whereas the verb “come” emphasizes “arrival” (e.g., He came home around midnight) (Fillmore, 1975; Nakazawa, 2006). These verbs are used frequently in conversations. Conversation is a type of communication in which a speaker and an addressee take part. In conversations, people take not only their own perspective but also the perspective of the addressee. Although this is not a universal feature, it occurs in many languages (Nakazawa, 2006, 2007, 2009).

Conversations and narratives (stories) are similar in some respects in terms of the use of deictic motion verbs. However, since conversations occur in interactive environments, they may have more presuppositions than narratives. In narratives, the use of deictic motion verbs may mostly depend on the narrator's point of view. Therefore, the logic of deictic motion verbs may somewhat be different in narratives. In order to formulate the logic of deictic motion verbs in narratives, we should first examine the narrator's point of view in more detail.

Narrative comprehension and narrator perspective.

Every story has a narrator. The narrator's position depends on the point-of-view in which the story is written. In third-person narratives, the narrator is some omniscient being who overlooks the story content. In first-person narratives, the narrator is the protagonist himself and therefore his perspective is the same as the protagonist. Since narrative comprehension is affected by the narrator's perspective, we can claim that 1) third-person point of view encourages readers to comprehend the narratives from a free/broad perspective, 2) first-person point of view encourages readers to comprehend the narratives from a confined/limited perspective (Creer et al., 2019). With this regard, we can use the deictic motion verbs and their prerequisites to understand this difference better.

While people read stories, they create a mental representation of the story, which is also called situation model or mental model. This representation is updated as the reading goes on (Graesser, Millis, & Zwaan, 1997; Glenberg, Meyer, & Lindem, 1987; Zwaan, Langston, & Graesser, 1995).

All established characters and places occupy some space in the mental model. For instance, the protagonist is introduced and described as being at some place. At this point, the reader forms his mental model with that information. Any further information within this environment will be added to the mental model as the story goes on.

Rules for using deictic motion verbs in narratives.

The source-path-goal schema (e.g., Johnson, 1993) is generally used to describe the components of the motion verbs. For instance, consider "James was at the restaurant, then he went to the cinema". Here, James's source location is the restaurant. His goal or destination location is the cinema. The path information is not evident in this sentence.

Describing the movements of the story characters with deictic motion verbs may be subject to some rules. These rules are the prerequisites of the deictic motion verbs for the narrative semantics/pragmatics and narrative comprehension. The rules we formulated are described below.

Note that these rules are not valid for the first sentence of the narratives, because in the first sentence the mental model is being formed from scratch.

Rule for go-class verbs (i.e., go, take): pre-establishing the agent with his source location is mandatory, but pre-establishing the destination location of the agent is optional. For example, in a story content, “James went to the cinema” is acceptable only if James has been introduced at some place in the story world earlier. Although pre-establishing James with a source location is mandatory, it is optional to establish the cinema (destination location) beforehand.

Rule for come-class verbs (i.e., come, bring): pre-establishing the destination location is mandatory, but pre-establishing the agent with his source location is optional. For instance, in a story content, “James came to the cinema” is acceptable only if the cinema (destination location) has been introduced beforehand in the story world. However, pre-establishing the agent (James) with a source location is optional. Note that establishing a person means that he should be placed at some location in the story. Just mentioning the name of a person (e.g., the protagonist is thinking about his friend James) does not suffice to establish him.

Narrator perspective and deictic motion verbs.

The proper use of deictic motion verbs in a story is affected by the narrator perspective. We have some hypothesis for the interaction between the narrator perspective and the use of deictic motion verbs.

In third-person narratives, all established locations and agents are equidistant to the narrator. (Note that this may be valid only in small environments. In huge environmental shifts, such as geographical distances or a driving distance, the established locations may be de-established; Smith, Lea, & O’Brien, 2023). Non-established locations and agents are more distant to the narrator than the established ones. That is, from narrator's (and thus reader's) perspective, established locations are closer than the non-established ones.

Then, one prediction can be like this: If an established character moves from his established location to some non-established location, then only go-class verbs are acceptable. That is, movement from a close location to a distant location allows only the use of go-class verbs. This prediction will be tested in Experiment 1a.

Another prediction is: If an established character moves from his established location to another established location, then both go-class and come-class verbs are acceptable. That is, movement from a close location to another equally close location allows the use of both types of verbs (because all established locations are equally distant to the narrator). This prediction will be tested in Experiments 1c and 1e. Experiment 2c will also test this prediction but with a different arrangement of the passages.

Conversely, if a non-established agent moves toward an established location, then only come-class verbs are acceptable. That is, movement from a distant (unknown) location to a close location allows only the use of come-class verbs. This prediction will be tested in Experiment 2a.

In first-person narratives, the protagonist is the narrator. Therefore, even if the locations are established, the ones close to the protagonist are coded close, and the ones distant from the protagonist are coded distant. As for the non-established locations and agents, they are assumed to be distant to the narrator and thus to the protagonist.

Possible predictions are: If a movement away from the protagonist to somewhere else occurs, only go-class verbs are acceptable. This should happen both for non-established destination locations and for established destination locations. These predictions will be tested in Experiments 1b, 1d, and 1f.

Conversely, if a movement toward the protagonist from somewhere else occurs, only come-class verbs are eligible. This should happen both for non-established source locations/agents and for established source locations/agents. These predictions will be tested in Experiments 2b and 2d.

Closing remarks: The novelty of the thesis and contributions.

To our knowledge, there is no experimental study published so far in the literature that has explored the combinatorial effects of deictic motion verbs, narrator point of view, and character/location establishment at the same time on comprehension. Even though we have mentioned above that we adopt the conclusions of Creer et al. (2019) and O'Brien and Albrecht (1992) for our main hypotheses, these two studies did not address and manipulate deictic motion verbs and establishment. They just manipulated the narrator's point-of-view (i.e., third-person vs. first-person). In their passages, the deictic motion verb they used was always "come", the destination location was always pre-established, and the secondary character was always non-established. However, in our experiments, we manipulate all these three variables as will be described in the next chapter.

Thus, the contributions of this thesis are as follows:

- 1) Narrator PoV and deictic motion verbs are manipulated at the same time within the passages.
- 2) Location/character establishment is manipulated within the passages.
- 3) The rules we have developed for deictic motion verbs and how these rules are dependent on the establishment factor are investigated.
- 4) The three factors (i.e., narrator PoV, deictic motion verbs, and establishment) are manipulated at the same time within the narratives.



CHAPTER 3

EXPERIMENTS

Experiments in Turkish

We started testing our hypotheses with native speakers of Turkish, by using Turkish materials. We conducted several experiments for this purpose. Some of our hypotheses got empirical support and some of them did not. The main problem with the Turkish experiments was that we had always very low number of participants (i.e., 20 or less, per experiment). In Appendix A, we present the contents, results, and discussions of our Turkish experiments.

Even though the results of these experiments were not conclusive and hence not suitable for broad generalizations, we learned a lot from this whole process. For instance, we discovered that holding the secondary character out of narrative focus in the filler sections of the passages would make that character's later integration into the narrative difficult for the readers (Myers et al., 1994). We also learned that the destination locations in the passages (especially if those locations were not pre-established) should be semantically related (i.e., familiar) to the source location so that the readers could comprehend the relation smoothly (Heim, 2011; Abbott, 2006; Walker & Yekovich, 1987; Levine & Klin, 2001).

All of our experiments were conducted online via the internet. For Turkish experiments, as we just mentioned, we had difficulty finding sufficient number of participants, due to some reasons. In order to reach more participants in short notice, we had to change the language of our studies. Because we use Prolific as our participant recruitment tool and the majority of its users are native speakers of English, we chose English as our primary language for the remaining studies. We created all our experimental materials in English and found native speakers of English via Prolific as our participants.

Another reason for switching to English was that most of the studies in the literature on our topic (i.e., perspective taking and narrative comprehension) were conducted in

English. Therefore, we thought that it would be more in line with the relevant literature if we conduct our studies in English.

The Turkish and English experiments were nearly the same in terms of the content. Please consult Appendix A for more information about the Turkish experiments.

The rest of this chapter presents the experiments conducted in English.

Experiments in English

We conducted 10 experiments in order to test our hypotheses. In experiments 1a through 1f (six experiments), we will test hypotheses involving destination establishment. In experiments 2a through 2d (four experiments), we will test hypotheses involving source establishment.

All our experiments were conducted online. All of the participants were recruited from Prolific (www.prolific.com). Prolific is a well-known online participant recruiting website (see, Peer et al., 2021; Douglas, Ewell, & Brauer, 2023, for the evaluation). In Experiment 1a section, we will describe in detail how we designed the experimental setup, how we selected the participants, and how we collected the data. This whole process would apply to the experiments that followed it.

Moreover, since all our experiments test hypotheses about comprehension of narratives involving location, establishment, and point-of-view, we labeled each experiment in accordance with these terms. Note that the movement verbs (i.e., come and go) were not mentioned in the experiment labels because these verbs were manipulated within the experiments, not between the experiments.

Our 10 experiments and their specific labels:

- Experiment 1a: destination non-established, third-person PoV.
- Experiment 1b: destination non-established, first-person PoV.
- Experiment 1c: destination established, third-person PoV.
- Experiment 1d: destination established, first-person PoV.
- Experiment 1e: destination established, third-person PoV, shortened.
- Experiment 1f: destination established, first-person PoV, shortened.
- Experiment 2a: source non-established, third-person PoV.
- Experiment 2b: source non-established, first-person PoV.
- Experiment 2c: source established, third-person PoV.
- Experiment 2d: source established, first-person PoV.

See also Figure 1 below for a visual diagram presenting the organization of the experiments.

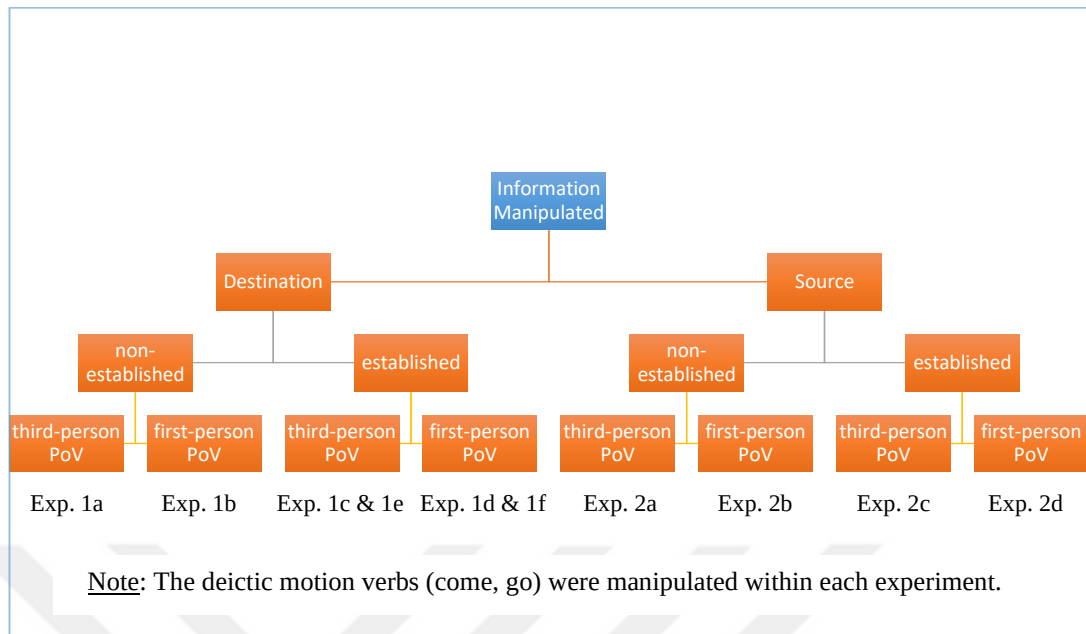


Figure 1: A visual diagram showing the organization of the experiments.

3.1. Experiment 1a

This experiment was conducted to test the hypothesis that in narratives written from third-person PoV, readers should comprehend the verb go more easily than the verb come if the movement is away from the protagonist and toward a location which was not established in the passage before.

Although we argue that readers take an omniscient narrator perspective while reading narratives written from third-person PoV, this does not mean that verbs go and come are equally suitable for use in every case. The rule for come-class verbs dictates that movements towards a previously non-established location are not eligible to be described with a come-class verb. Go-class verbs are eligible in such situations. Therefore, when a come-class verb is used in violation of this rule, readers should process it harder (e.g., slowdown in reading time) compared to a go-class verb. In other words, we expect that participants will read the sentences with the verb go more easily (i.e., faster) than the sentences with the verb come.

Consider the example in Table 1 below: The main character (“Sarah”) and the second character (“an assistant”) were talking in the faculty hallway. After their talk was over, the assistant entered the seminar room. Since the seminar room was not established in the beginning, it was not included in the mental model of the reader until the target sentence was read. Using a come verb is not acceptable in this situation. Therefore, any movement made into that room should be processed more easily with the verb go compared to the verb come.

To sum up, even though in narratives written from third-person PoV we think that readers adopt the omniscient narrator’s perspective, we do not expect equal ease of processing for come and go verbs here. This is because the rule for the come-class verbs is violated in the target sentence.

Table 1: Sample passage for Experiment 1a.

Introduction Sarah was talking to an assistant in the faculty hallway. Filler Section The assistant was wearing a stylish brown jacket. Sarah asked the assistant about last week’s midterm exam. The assistant said all students had scored high on the exam. Sarah was happy to hear that. After all, the department was like a hub for the hard-working students. The assistant and Sarah talked for a few minutes more. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing Each week, a different lecturer would give a presentation. Sarah wasn't sure if she wanted to attend the seminar. She needed to buy herself a coffee before making up her mind. Comprehension Question Had some students gotten low scores on the exam? (Y/N)

Method.

Participants.

For each experiment, we recruited around 90 participants. All of them were Prolific participants. We used some Prolific pre-screeners to select our specific audience: The participants were 19 to 35 years old. They were born in, living in, and nationals of U.S. They were English speaking monolinguals. They had no language related disorders or literacy difficulties. They were not left-handed. They had normal or corrected-to-normal vision. They had at least a high school degree.

Since our experiments were conducted online, we had to exclude several participants from our analyses for the following situations: *i*) Participants who paused a very long time within the passages (3 or more passages). *ii*) Participants who passed the lines exceptionally fast, without any hint of understanding. If this fast passing occurred in an important part of a passage or in a great portion of it, and that occurs in 3 or more

passages, we excluded that participant. *iii*) Participants whose average reading speed per line was below 1000 milliseconds or above 2800 milliseconds. *iv*) Participants who read very quickly the first couple of lines of a passage (3 or more passages). *v*) Participants who had a sloppy reading pattern. *vi*) Participants who had more than 4 outliers in the target sentences. *vii*) And lastly, participants whose score on the comprehension questions was less than %75.

With this exclusion process, we managed to keep the number of participants 64 for the first group of experiments (i.e., Experiments 1a through 1f), and 56 for the second group of experiments (i.e., Experiments 2a through 2d).

In the present experiment (Experiment 1a), participants were 64 people (47 females) who were native speakers of English (age: $M=29$, $SD=3.88$). They were each paid £1.43 for their participation.

Materials.

The materials were 16 passages (see Appendix B.1 for a full list of passages). The passages were written from third-person PoV (e.g., he, she). See Table 1 above for the example passage. Each passage consisted of five sections: introduction, filler section, target sentence, spillover sentence, and closing. In the introduction section, the protagonist (e.g., Sarah) and the secondary character (e.g., the assistant) were established as standing side-by-side at some place (e.g., faculty hallway). This place was what we called the “source location”. In all passages, the main character (i.e., protagonist) was always described with a proper name (e.g., Sarah) and the secondary character was always described with a common name (e.g., the assistant). In the filler section, the two characters were having a conversation about some topic. There was no mention of source or destination locations in this section. The filler section had a length of 3 to 6 sentences (number of words: $M=56$, $SD=16.75$). The function of the filler section was to background the location information, give the narratives a more elaborate/detailed context and to form the basis for comprehension questions. Right after the filler section, there was the target sentence. In the target sentence, the secondary character (e.g., the assistant) moved away from the protagonist and entered what we called a destination location (e.g., the seminar room). The target sentence had two versions: It described the movement either with the verb go or with the verb come (See Table 1). Across the passages, target sentences had a mean length of 42.69 characters ($SD=1.92$). The target sentence was followed by a spillover sentence. The spillover sentence was analyzed in order to see if the effect continued after the target sentence or if the effect showed itself after the target sentence. The spillover sentences had a mean length of 45.44 characters ($SD=1.31$). After the spillover sentence, there was a closing section which consisted of 2 to 3 sentences. Right after the closing section, a comprehension question appeared on the screen. The purpose of these questions was to ensure that participants were reading for comprehension. Comprehension questions were in yes-no format. The number of correct yes and no responses were equal. The questions never asked anything about the location information.

Passages were constructed in two sets. In each set, there were 16 passages: 8 passages with the verb go and 8 passages with the verb come. Although each passage appeared in each set, its condition (i.e., go or come) varied across the sets. For instance, if the passage named “Seminar Room” was written with the verb go in set 1, it was written with the verb come in Set 2.

Procedure.

The experiment was designed in OpenSesame 3.3.14 software (Mathôt, Schreij, & Theeuwes, 2012; Mathôt & March, 2022). Moreover, MindProbe (mindprobe.eu), a server for hosting online experiments, powered by JATOS (Lange et al., 2015), was used in order to generate the study links and run the experiment online.

Participants were incidentally assigned to one of the two material sets. Since all our participants were Prolific users, they reached the study links via the platform’s interface. Only the participants who satisfied the pre-screening criteria mentioned above were notified by Prolific to participate in the study. The study description appeared on the invitation page was as follows:

“You will read short stories and answer comprehension questions (in yes-no format). Please read all of the stories by paying your attention.
Please do the study in a quiet environment, away from distractions such as mobile phones.
Please read each story, from beginning to end, for comprehension.
Please do not engage in other things during the study.
When you start the study, your browser will switch to Full Screen mode and will remain that way until the end of the study.”

When participants clicked the start button, they were presented with the informed consent and the instructions (see Appendix C for the METU Ethics Committee approval of our research). After the instructions page, the trials began. Each trial consisted of reading a passage and answering a comprehension question about that passage.

The procedure was similar to the ones used in the relevant literature (e.g., Creer et al., 2019; O'Brien & Albrecht, 1992; Creer et al., 2020). Passages were presented in lines (i.e., one line shown at a time). They were, on average, 14 lines in length. Excluding the very short last lines, the lines consisted of around 8 words. The mean number of characters per line was 43.92 ($SD=3.73$). Each line ended with a complete word, but not always with a complete sentence or phrase. For the target sentences and the spillover sentences, however, care was taken to ensure that they were presented intactly, as separate single lines, without any line breaks. For each passage, the word “READY” appeared at the center of the screen. When participants felt themselves ready to start, they pressed the right arrow key on their keyboards. This action erased the “READY” screen and displayed the first line of the passage. Each press on the right arrow key displayed a new line of text. That is, participants read each passage

line-by-line, in a self-paced manner. Participants were told that they were not allowed to return back to the previous lines.

Reading time was the time between two consecutive right-arrow key presses. After the final line of each passage, the word “QUESTION” appeared at the center of the screen for 500 ms and the question then appeared automatically. Participants were required to press either Y key or N key to respond to the question. If their response was incorrect, the word “ERROR” appeared at the center of the screen for 500 ms.

Before the experimental passages, participants completed a practice session consisting of three passages so that they could familiarize themselves with the procedure. The experiment lasted about 10 minutes.

Results and Discussion.

For each participant, reading times (RTs) that were 2.5 standard deviations beyond their mean were discarded. This was done separately for target sentences and spillover sentences. Moreover, care was taken to discard target and spillover RTs which were below 700 ms or above 4000 ms. Lastly, the target sentence RTs were deleted i) if the passage beginnings where the establishment manipulation was made were passed extremely quickly (i.e., less than 600 ms) by the participants and ii) if participants paused a very long time (i.e., 13 seconds or more) on one of the lines in the filler sections. This whole elimination process resulted in the loss of less than 4% of the data for target and spillover sentences together in this experiment. Overall, the eliminated data never exceeded 5% for any experiment reported in this paper.

Participants’ performance on the comprehension questions was high. On average, participants answered 92% of the questions correctly across the ten experiments, with the least accuracy in Experiment 2c (90%) and the most accuracy in Experiment 2b (94%). This shows that participants understood the passages quite well.

Reading times for the critical sentences are shown in Table 2. In all analyses reported for this and the other experiments, t_1 and F_1 refer to the analyses at the subjects level, and t_2 and F_2 refer to the analyses at the items level (i.e., the passages). See also Figures 2 and 3 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

Table 2: Mean reading times (in milliseconds) for Experiment 1a.

	Verb	
	come	go
Target Sentence	1592 (352)	1506 (313)
Spillover Sentence	1635 (360)	1665 (370)

Standard deviations are in parentheses.

The paired-samples t-test analyses for the target sentences showed that participants read the sentences with the verb come more slowly (i.e., longer) than the sentences with the verb go. The outcome was significant both at the level of subjects, $t_1(63)=3.66, p<.001, d=0.46$, and at the level of passages, $t_2(15)=3.25, p=.005, d=0.81$. As for the spillover sentences, the analyses showed that there was no significant difference between sentences in the come and go conditions, $t_1(63)=1.24, p>.20, d=0.16$; $t_2(15)=1.25, p>.20, d=0.31$.

We also checked the normality assumption. The Shapiro-Wilk test yielded that the distribution of data was normal for target sentences (subjects: $W=0.99, p=.65$; passages: $W=0.94, p=.37$). For the spillover sentences, the distribution was normal at the passages level ($W=0.97, p=.88$) but non-normal at the subjects level ($W=0.96, p<.05$). For this non-normal situation, we conducted a Wilcoxon's signed-rank test. The analysis yielded a non-significant difference between the come ($Mdn: 1610$) and go ($Mdn: 1641$) conditions in the spillover sentences ($W=947, p=.54, r_B=0.09$). This output was consistent with the relevant paired-samples t-test analysis reported above.

The results were in line with our hypothesis. In passages written from third-person PoV, when the destination location was non-established in the passage beginnings, the sentences describing movement into that location later in the passage were comprehended longer with a come verb than with a go verb. Participants obviously experienced some processing difficulty reading the sentences with the verb come. We think this was because the rule for come-class verbs was violated in the target sentences. If the destination location is not established beforehand, the movements made into that location would be eligible to be described only with go-class verbs. Using come-class verbs instead would lead the readers to have difficulty in comprehension, as evidenced by the slowdown in reading of the target sentences with the verb come.

This experiment on its own is not sufficient to answer the question of whether readers take the protagonist perspective while reading narratives. One can argue that because the movement in the target sentence was away from the protagonist, the slowdown in the sentences describing this movement with the verb come may indicate that readers are sensitive to the protagonist perspective while reading narratives (e.g., Black et al., 1979; Rall & Harris, 2000). But, as we just said, this effect could also be the result of the violation of the rule for come-class verbs. In the following experiments, we will manipulate several variables within the narratives (e.g., establishment, narrator PoV) in order to find a more comprehensive answer to the question.

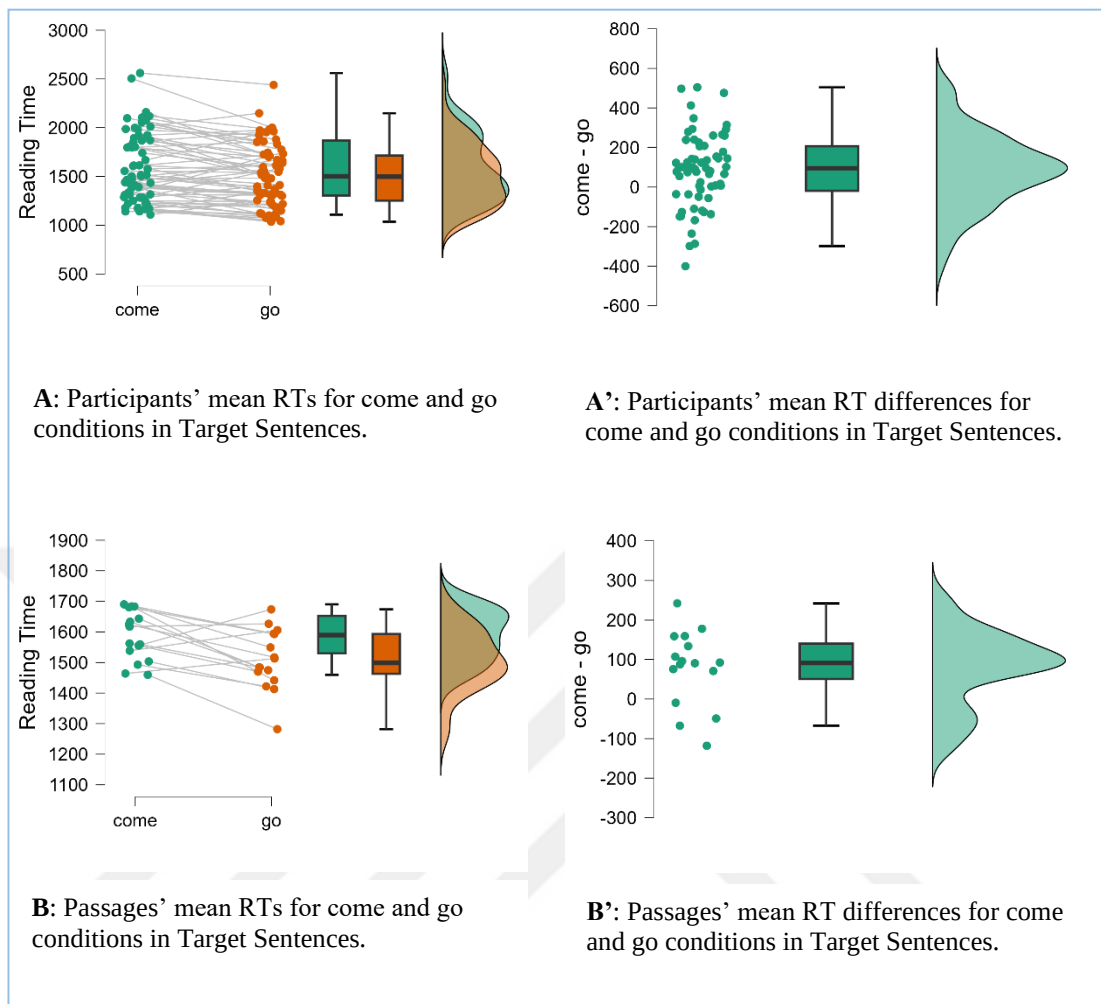


Figure 2: Raincloud Plots for Target Sentence RTs in Experiment 1a.

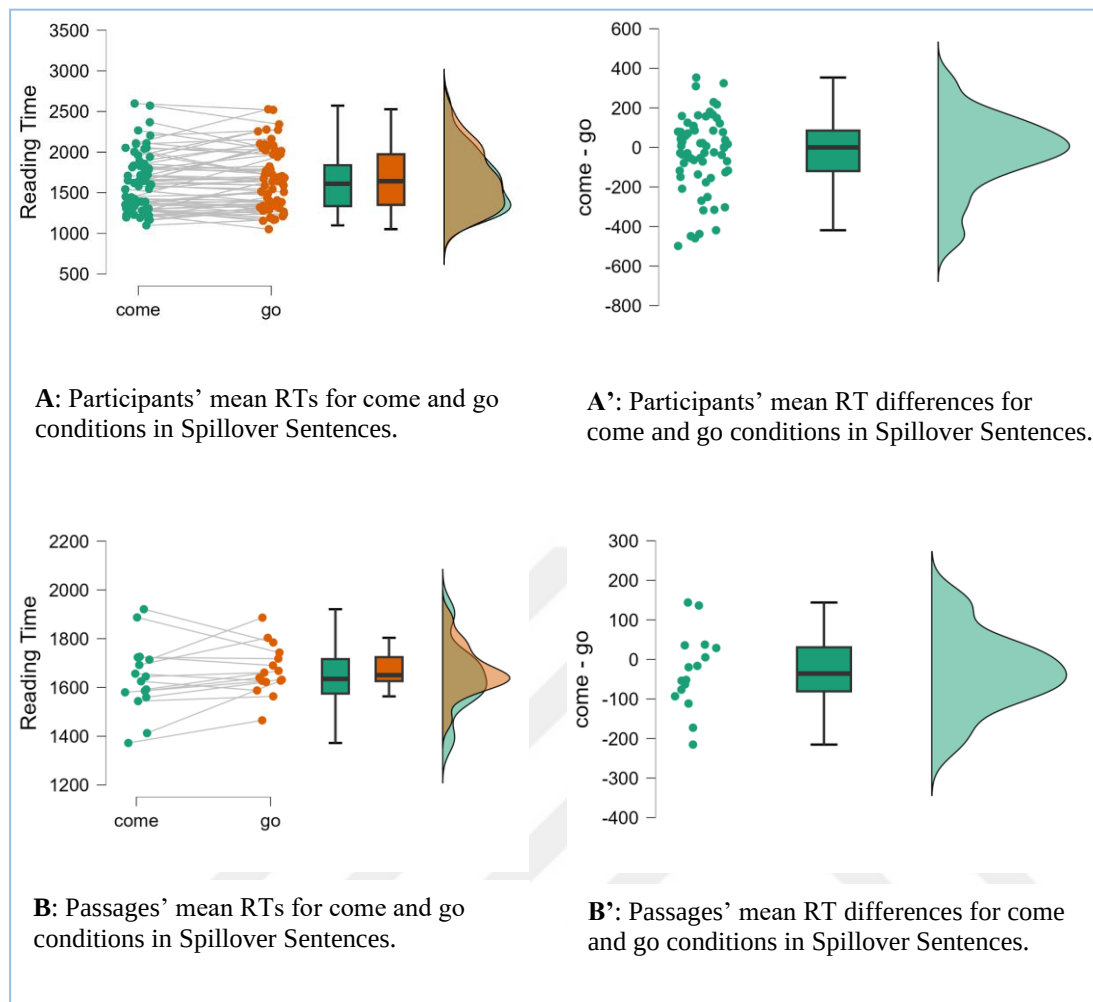


Figure 3: Raincloud Plots for Spillover Sentence RTs in Experiment 1a.

3.2. Experiment 1b

The logic of this experiment was similar to the previous one. The only difference was that all passages were written from first-person PoV (i.e., I). On the one hand, like the previous experiment, we expect that readers should comprehend the sentences with the come verbs more slowly than the sentences with the go verbs. This is because of the violation of the rule for come-class verbs in the target sentence. On the other hand, in narratives written from first-person PoV, readers should adopt a protagonist-centered perspective. In such narratives, the narrator and the protagonist are the same person; hence, taking the narrator perspective and taking the protagonist perspective are the same thing. Therefore, any movement away from the protagonist should naturally be processed more easily with the verb go.

Consider the example in Table 3 below: The main character (“I”) and the second character (“an assistant”) were talking to each other in the faculty hallway. After their

talk was over, the assistant entered the seminar room. Since the seminar room was not pre-established in the passage, it was absent in the mental model of the reader before the target sentence was read. Therefore, using a come verb here violates the rule for come-class verbs. Moreover, because of the nature of the first-person PoV narration, the protagonist and the narrator are the same person in the passages. This special type of narration should encourage readers to comprehend the passages from the protagonist's perspective. Therefore, any movement made into the seminar room should be processed more easily with the verb go compared to the verb come. To sum up, a comprehension slowdown in the come condition is expected both because of the violation of the come-class verbs in the target sentence and because of the nature of the first-person PoV narration.

Table 3: Sample passage for Experiment 1b.

Introduction I was talking to an assistant in the faculty hallway. Filler Section The assistant was wearing a stylish brown jacket. I asked the assistant about last week's midterm exam. The assistant said all students had scored high on the exam. I was happy to hear that. After all, the department was like a hub for the hard-working students. The assistant and I talked for a few minutes more. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing Each week, a different lecturer would give a presentation. I wasn't sure if I wanted to attend the seminar. I needed to buy myself a coffee before making up my mind. Comprehension Question Had some students gotten low scores on the exam? (Y/N)

Method.

Participants.

Participants were 64 people (46 females) who were native speakers of English (age: $M=28$, $SD=4.18$). They were each paid £1.43 for their participation. None of them had participated in the previous experiment.

Materials.

The materials were the same as in the previous study, with the modification that they were written from first-person PoV (e.g., I, instead of Sarah). See Table 3 above for the example passage (see Appendix B.2 for a full list of passages).

Procedure.

The procedure was the same as in the previous experiment.

Results and Discussion.

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiment. Reading times for the critical sentences are shown in Table 4 below. See also Figures 4 and 5 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

Table 4: Mean reading times (in milliseconds) for Experiment 1b.

	Verb	
	come	go
Target Sentence	1613 (357)	1529 (344)
Spillover Sentence	1742 (419)	1700 (374)

Standard deviations are in parentheses.

The paired-samples t-test analyses showed that participants read the target sentences with the verb come in a longer time than the target sentences with the verb go. The effect was significant both at the level of subjects, $t_1(63)=4.25$, $p<.001$, $d=0.53$, and at the level of passages, $t_2(15)=2.40$, $p<.05$, $d=0.60$. For the spillover sentences, there was no significant difference between the two conditions, $ps>.12$. Lastly, the Shapiro-Wilk tests yielded that the distribution of data was normal for target and spillover sentences ($ps>.45$).

The results support our hypothesis. In passages written from first-person PoV, when the destination location was not established in the passage beginnings, sentences describing movement into that location later in the passage were read longer with a come verb than with a go verb. Participants must have experienced some processing difficulty when reading the sentences with the verb come. We think this effect occurred because of two reasons. The first reason was the violation of the rule for come-class verbs in the target sentences, as was the case in the previous experiment.

The second reason was the narrator perspective. The passages in this experiment were all written from first-person PoV. That is, the protagonist and the narrator were the same person. This situation should have encouraged the participants to read the passages from the protagonist's perspective (e.g., Creer et al., 2019, 2020). When the movement was away from the protagonist, participants must have comprehended it harder with the verb come compared to the verb go.

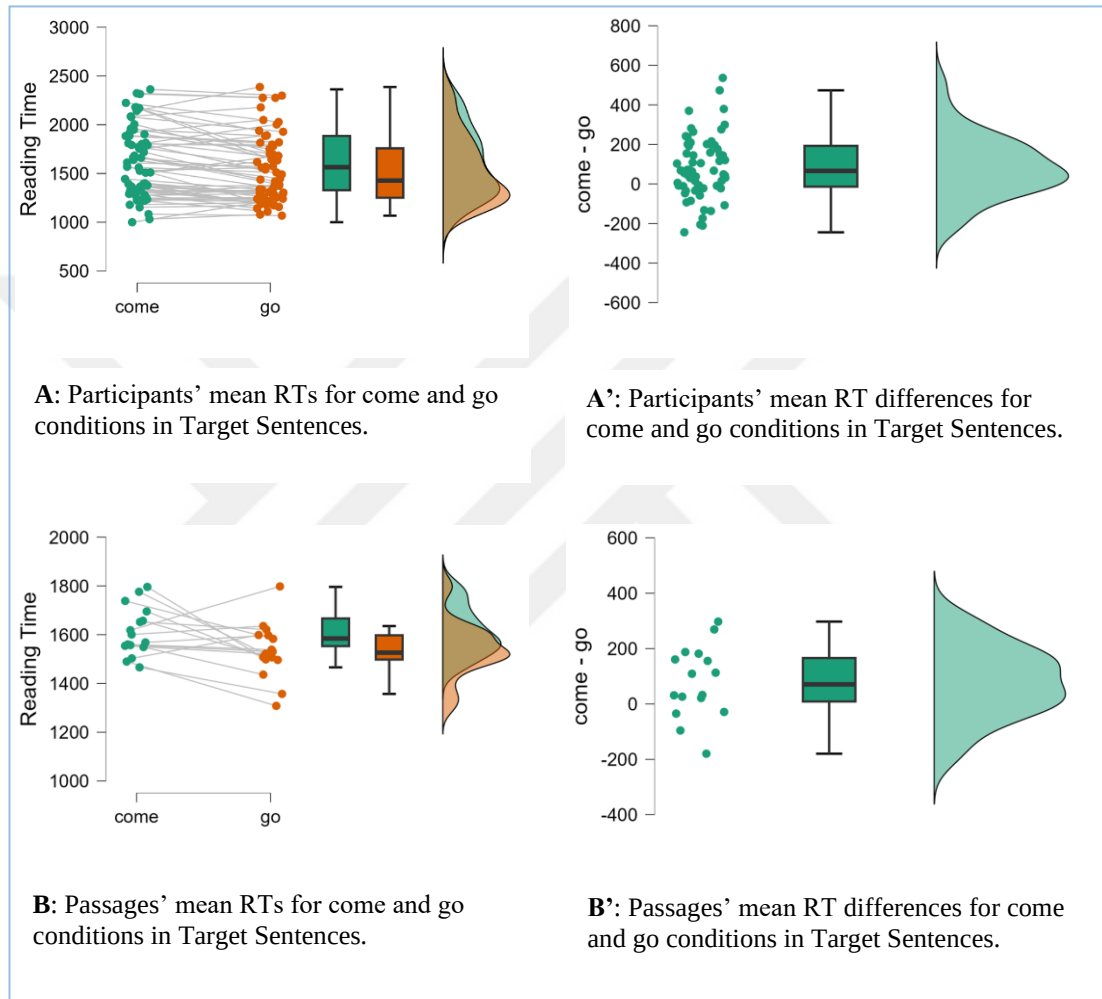


Figure 4: Raincloud Plots for Target Sentence RTs in Experiment 1b.

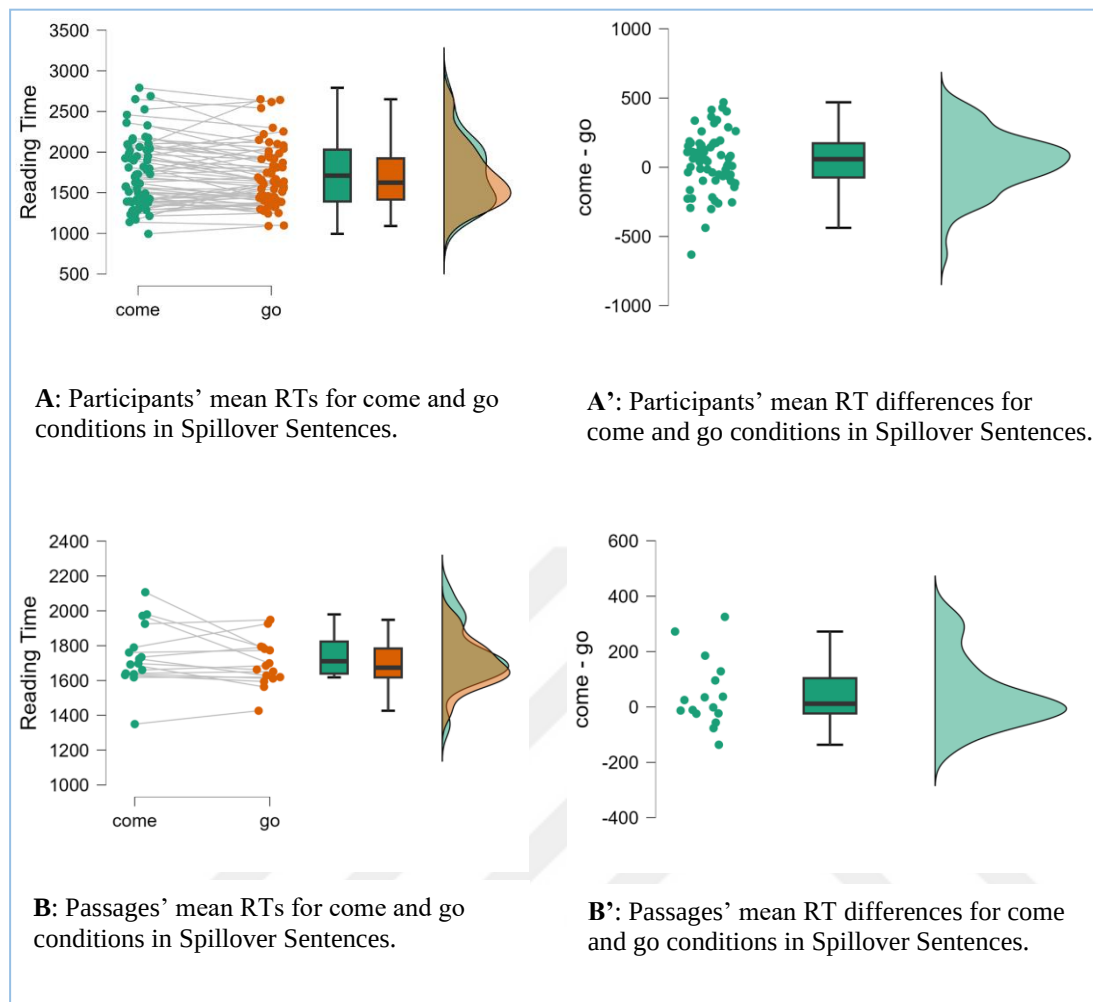


Figure 5: Raincloud Plots for Spillover Sentence RTs in Experiment 1b.

3.3. Experiment 1c

In Experiments 1a and 1b, the destination locations were always non-established in the beginning of the passages. From now on, we make them all established in the passage introductions. Passages were written from third-person PoV in Experiment 1c and from first-person PoV in Experiment 1d.

For the present experiment, our hypothesis is that when reading passages written from third-person PoV, readers should comprehend the come and go verbs equally easily if the movement is toward a location which was pre-established in the passage. We argue that readers adopt an omniscient narrator perspective while reading narratives written from third-person PoV. When the destination location was already established in the passage, a movement away from the protagonist and toward that location can be processed as easily with the verb come as with the verb go. The reason is that the omniscient narrator can access all established locations equally easily. Since the

readers should take the narrator’s perspective, they also should access all established locations equally easily, regardless of them being distant to the protagonist or not. So, come and go verbs should not yield any difference in reading time.

Consider the example in Table 5 below: The main character (“Sarah”) and the second character (“an assistant”) were talking to each other outside the seminar room. After their talk was over, the assistant entered that room. Since the seminar room was established in the beginning of the passage, it was already in the mental model of the reader. In this case, both go and come verbs are eligible from the perspective of the narrator. Thus, we expect similar reading speed for the target sentences involving these verbs.

Table 5: Sample passage for Experiment 1c.

Introduction Sarah was talking to an assistant outside the seminar room. Filler Section The assistant was wearing a stylish brown jacket. Sarah asked the assistant about last week’s midterm exam. The assistant said all students had scored high on the exam. Sarah was happy to hear that. After all, the department was like a hub for the hard-working students. The assistant and Sarah talked for a few minutes more. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing Each week, a different lecturer would give a presentation. Sarah wasn’t sure if she wanted to attend the seminar. She needed to buy herself a coffee before making up her mind. Comprehension Question Had some students gotten low scores on the exam? (Y/N)

Method

Participants.

Participants were 64 people (45 females) who were native speakers of English (age: $M=27$, $SD=3.93$). They were each paid £1.43 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the same as those used in Experiment 1a, with the modification that the destination location was established in the beginning of the passages. See Table 5 above for the example passage (see Appendix B.1 for a full list of passages). That is, instead of some general location like faculty hallway, the two characters were now standing outside the destination location (e.g., seminar room).

Procedure.

The procedure was the same as described in the previous experiments.

Results and Discussion.

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times are shown in Table 6 below. See also Figures 6 and 7 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The statistical analyses showed that it took participants longer to read the target sentences with the verb come than the target sentences with the verb go. The outcome was significant both at the level of subjects, $t_1(63)=5.42$, $p<.001$, $d=0.68$, and at the level of passages, $t_2(15)=3.37$, $p=.004$, $d=0.84$. The effect also showed itself a little bit on the spillover sentences, with a marginally significant effect at the subjects level, $t_1(63)=1.86$, $p<.07$, $d=0.23$, and a non-significant effect at the level of passages, $t_1(15)=1.71$, $p=.11$, $d=0.43$. Lastly, the Shapiro-Wilk tests yielded that the distribution of data was normal for target and spillover sentences ($ps>.09$).

Table 6: Mean reading times (in milliseconds) for Experiment 1c.

	Verb	
	come	go
Target Sentence	1592 (333)	1474 (314)
Spillover Sentence	1685 (365)	1637 (350)

Standard deviations are in parentheses.

Although we expected that participants would comprehend the sentences in the come condition and the sentences in the go condition equally easily, the results showed otherwise. Like the previous experiments, participants processed target sentences with the verb come harder than those with the verb go. This shows that the effect persists even though the destination locations were made pre-established in the passages. There may be several explanations for this unexpected result. One reason may be that the length of the filler sections (i.e., the distance between the sentence containing the establishment and the target sentence) made the participants' memory trace for the pre-

established locations weaker and that is why they comprehended the sentences as if the locations were non-established. Although there are studies which showed that the filler section length does not affect the direction of results (e.g., Smith & O'Brien, 2012; O'Brien & Albrecht, 1992), this may still be the possibility in our experiments because our experiments were conducted online. We will tackle this issue later, in Experiments 1e and 1f. Another reason for our unexpected results may be that the protagonist and the secondary character were always together and were also equally in focus in the passages up to the target sentence. The two characters were always interacting with each other (e.g., talking). This may have encouraged the readers to construct their mental models from the perspective of the two characters' mutual location (e.g., outside the seminar room). When the secondary character entered into the seminar room, this may have constituted an inconsistency as to that perspective; consequently, the readers might have comprehended the movement harder when it was described with the verb come. A more detailed explanation is left to the General Discussion chapter.

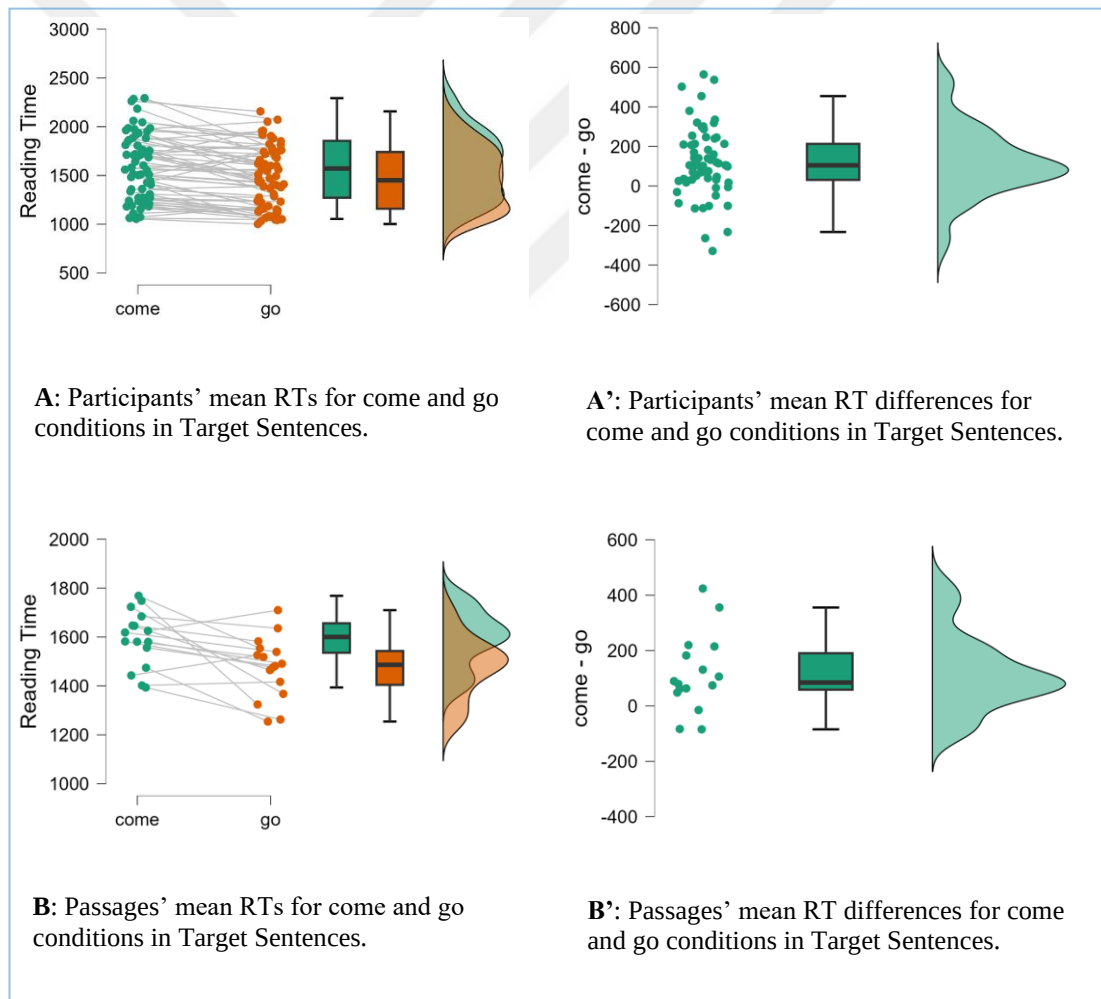


Figure 6: Raincloud Plots for Target Sentence RTs in Experiment 1c.

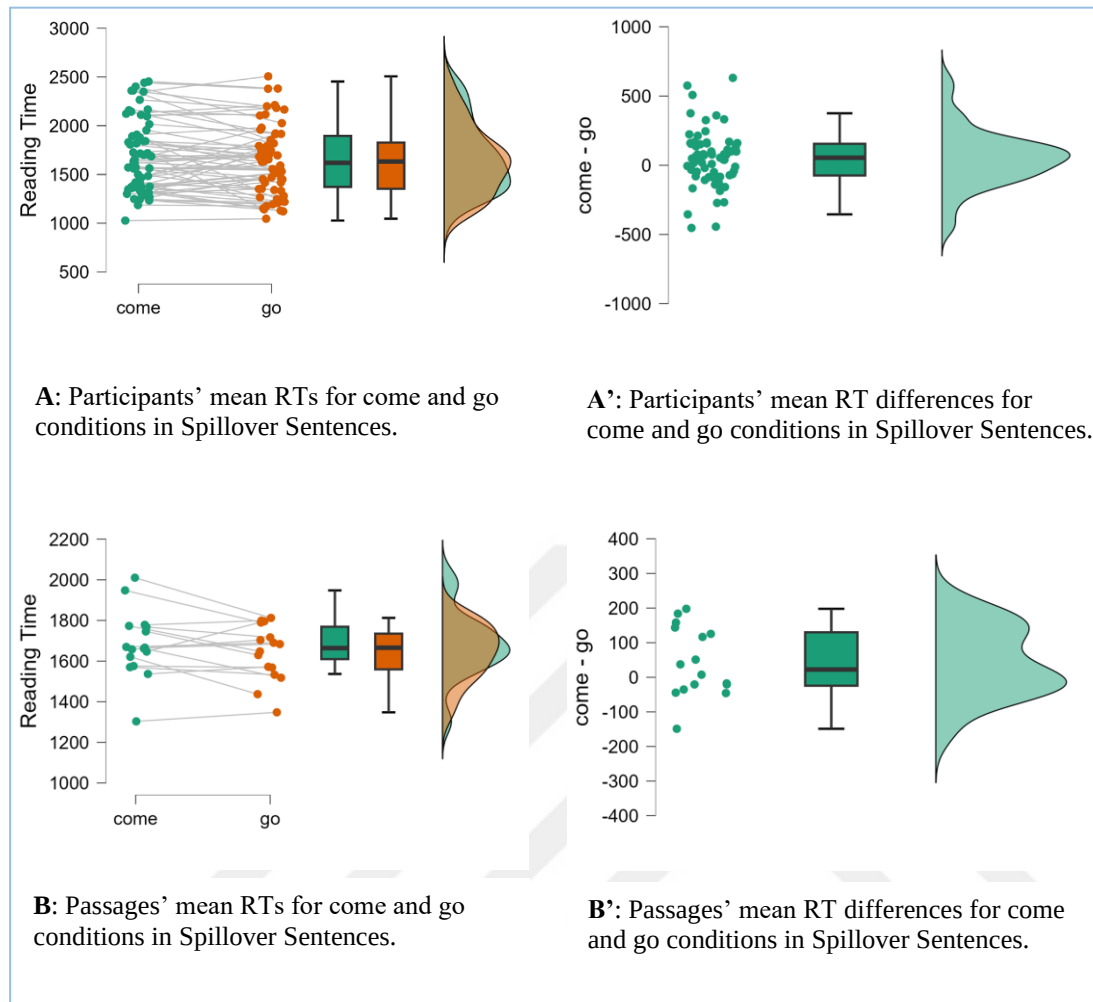


Figure 7: Raincloud Plots for Spillover Sentence RTs in Experiment 1c.

3.4. Experiment 1d

This experiment was similar to the previous one. The only difference was that all passages were written from first-person PoV (i.e., I). Since the narration is from first-person PoV, we expect that readers adopt the perspective of the protagonist, who is also the narrator. The nature of first-person narration should lead the readers to comprehend the narratives from a protagonist-centered perspective. Therefore, any movement away from the protagonist should be processed more slowly with the verb come, despite the fact that the destination location was pre-established.

Consider the example in Table 7 below: The main character (“I”) and the second character (“an assistant”) were talking outside the seminar room (i.e., destination location). When their talk was over, the assistant entered that room. Even though the destination location was pre-established in the beginning of the passage, a movement made into it should be processed harder with the verb come. This is because of the

nature of first-person narration. Since readers are expected to adopt the protagonist perspective in such narratives, they should process the sentences with the verb come harder if the sentences involve movement away from the protagonist.

Table 7: Sample passage for Experiment 1d.

Introduction I was talking to an assistant outside the seminar room. Filler Section The assistant was wearing a stylish brown jacket. I asked the assistant about last week's midterm exam. The assistant said all students had scored high on the exam. I was happy to hear that. After all, the department was like a hub for the hard-working students. The assistant and I talked for a few minutes more. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing Each week, a different lecturer would give a presentation. I wasn't sure if I wanted to attend the seminar. I needed to buy myself a coffee before making up my mind. Comprehension Question Had some students gotten low scores on the exam? (Y/N)

Method

Participants.

Participants were 64 people (42 females) who were native speakers of English (age: $M=30$, $SD=3.30$). They were each paid £1.43 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the same as those used in Experiment 1c, with the modification that they were written from first-person PoV (e.g., I, instead of Sarah). See Table 7 above for the example passage (see Appendix B.2 for a full list of passages).

Procedure.

The procedure was the same as described in the previous experiments.

Results and Discussion

The data exclusion process (3% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for this experiment are shown in Table 8 below. See also Figures 8 and 9 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The paired-samples t-tests showed that participants read the target sentences with the verb come longer than the target sentences with the verb go. The outcome was significant both at the level of subjects, $t_1(63)=3.38$, $p=.001$, $d=0.42$, and at the level of passages, $t_2(15)=3.90$, $p=.001$, $d=0.97$. The spillover sentences did not yield any significant effects, $ps>.15$. We also checked the normality assumption in our data. The Shapiro-Wilk test yielded that the distribution of data was non-normal only in the target sentences at the subjects level ($W=0.93$, $p<.001$). For this non-normal situation, we conducted a Wilcoxon's signed-rank test. The analysis yielded that come verbs ($Mdn: 1483$) were read longer than the go verbs ($Mdn: 1425$) in the target sentences ($W=1467$, $p=.004$, $r_B=0.41$). The output was comparable to the relevant paired-samples t-test reported above.

Table 8: Mean reading times (in milliseconds) for Experiment 1d.

	Verb	
	come	go
Target Sentence	1581 (328)	1488 (299)
Spillover Sentence	1712 (367)	1682 (316)

Standard deviations are in parentheses.

The results were as expected. When reading passages written from first-person PoV, readers comprehend the movement descriptions with the verb go more easily than the movement descriptions with the verb come if those movements are away from the protagonist. This happens even though the destination locations are pre-established in the passages. The results suggest that readers are sensitive to the protagonist's perspective in such narratives.

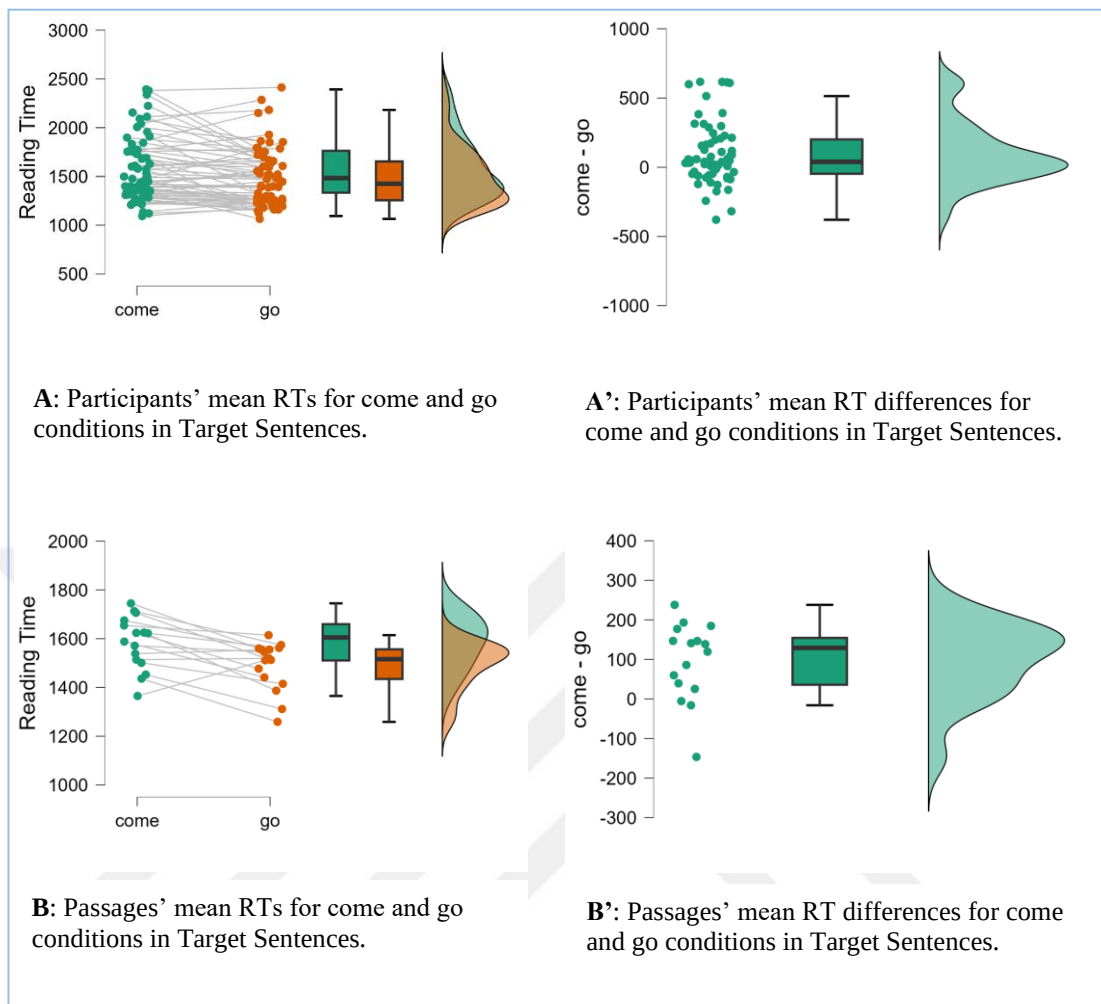


Figure 8: Raincloud Plots for Target Sentence RTs in Experiment 1d.

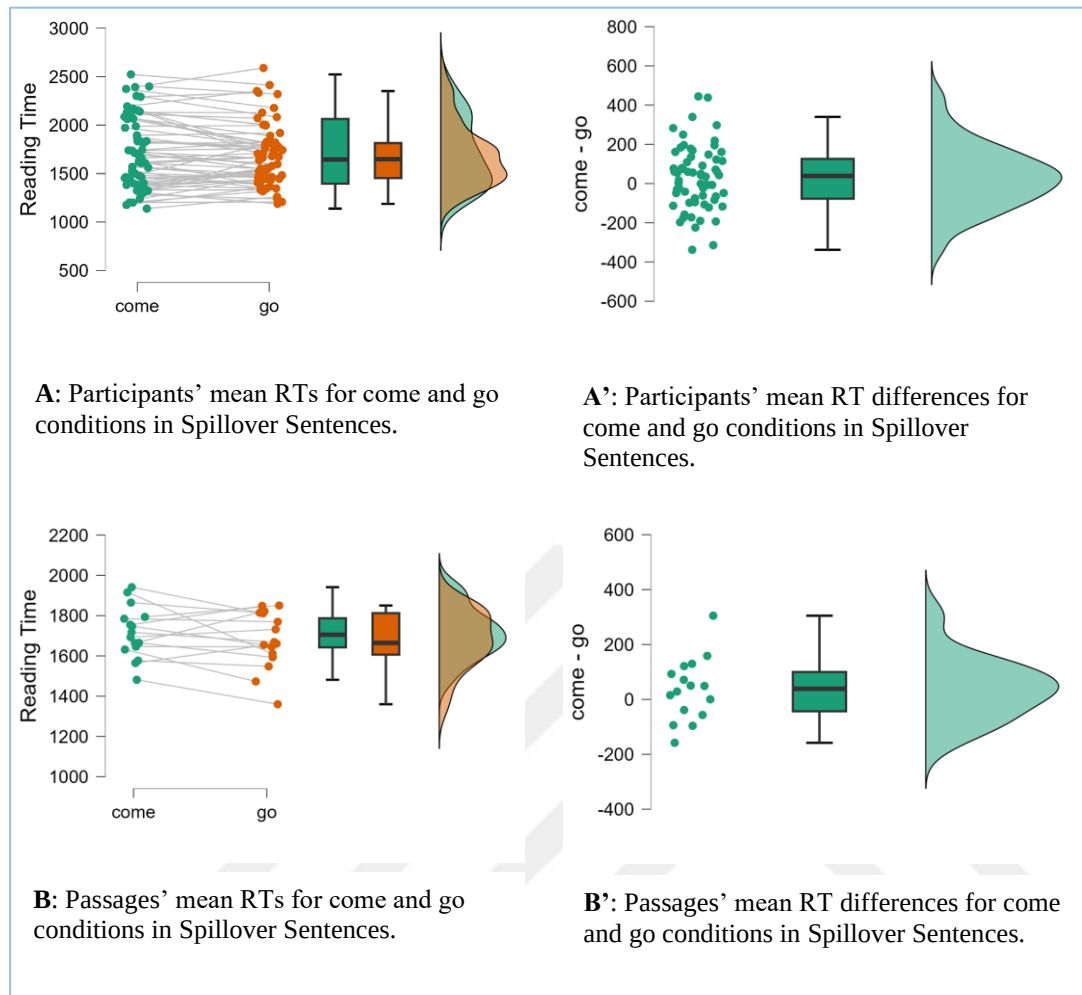


Figure 9: Raincloud Plots for Spillover Sentence RTs in Experiment 1d.

3.5. Cross-comparisons between Experiments 1a through 1d

In order to better understand the effects of destination establishment and narrator PoV on perspective taking, we analyzed the four experiments (1a through 1d) by grouping them according to these factors.

First of all, we compared the two narrator PoVs (i.e., third vs. first) for the non-established situation. That is, we grouped Experiments 1a and 1b. We conducted a mixed ANOVA in which we treated the narrator PoV as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that there was a significant effect of verb in the target sentences, $F_1(1, 126)=30.69, p<.001, \eta^2_p=.20$; $F_2(1, 30)=14.89, p<.001, \eta^2_p=.33$. That is, the verb come was read more slowly than the verb go, regardless of narrator PoV. However, this effect was not observed in the spillover sentences, $F_s<1$. Furthermore, the interaction between the narrator PoV and verb was not significant, $F_s<1$ in the target sentences. However, interestingly, it was

marginally significant in the spillover sentences, $F_1(1, 126)=3.95$, $p=.05$, $\eta^2_p=.03$; $F_2(1, 30)=3.85$, $p=.06$, $\eta^2_p=.11$. Planned contrasts on this interaction yielded that the effect of verb was greater in the first-person PoV than the third-person PoV; however, these contrasts did not reach significance, $ps>.10$. These analyses overall suggest that when the destination location was non-established, participants comprehended the sentences with the verb come harder than the sentences with the verb go, without any modulating effect of narrator PoV.

Secondly, we compared the two narrator PoVs (i.e., third vs. first) for the established situation this time. That is, we grouped Experiments 1c and 1d. We conducted a mixed ANOVA in which we treated the narrator PoV as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that in the target sentences, there was a significant effect of verb, $F_1(1, 126)=36.13$, $p<.001$, $\eta^2_p=.22$; $F_2(1, 30)=25.02$, $p<.001$, $\eta^2_p=.46$. That is, the verb come was read more slowly than the verb go, regardless of narrator PoV. This effect continued in the spillover sentences, $F_1(1, 126)=5.57$, $p=.02$, $\eta^2_p=.04$; $F_2(1, 30)=4.33$, $p<.05$, $\eta^2_p=.13$. As for the interaction, there was no significant effect, neither in the target sentences nor in the spillover sentences, all $F_s<1$. These results show that when the destination was pre-established, participants still comprehended the verb come harder than the verb go, even in the third-person PoV passages.

Third, we compared the establishment (i.e., non-established vs. established) for the first-person PoV. That is, we grouped Experiments 1b and 1d. We conducted a mixed ANOVA in which we treated the establishment as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that in the target sentences, there was a significant effect of verb, $F_1(1, 126)=27.23$, $p<.001$, $\eta^2_p=.18$; $F_2(1, 30)=18.17$, $p<.001$, $\eta^2_p=.38$. That is, the verb come was read more slowly than the verb go, regardless of the establishment status of the destination location. This effect continued in the spillover sentences, $F_1(1, 126)=4.49$, $p<.05$, $\eta^2_p=.03$; $F_2(1, 30)=3.90$, $p<.06$, $\eta^2_p=.11$. As for the interaction, there was no significant effect, neither in the target sentences nor in the spillover sentences, all $F_s<1$. These results overall show that when the passages were written from first-person PoV, participants comprehended the verb come harder than the verb go, regardless of the destination location being pre-established or not. That is, it seems that participants were consistently comprehending the narratives from the perspective of the protagonist.

Lastly, we compared the establishment (i.e., non-established vs. established) for the third-person PoV this time. That is, we grouped Experiments 1a and 1c. We conducted a mixed ANOVA in which we treated the establishment as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that in the target sentences, there was a significant effect of verb, $F_1(1, 126)=40.65$, $p<.001$, $\eta^2_p=.24$; $F_2(1, 30)=21.34$, $p<.001$, $\eta^2_p=.42$. That is, the verb come was read more slowly than the verb go, regardless of the establishment status of the destination location. This effect was not observed in the spillover sentences, $F_s<1$. As for the interaction, there was no significant effect in the target sentences, $F_s<1$; however, there was a significant

effect in the spillover sentences, $F_1(1, 126)=4.88$, $p<.05$, $\eta^2_p=.04$; $F_2(1, 30)=4.40$, $p<.05$, $\eta^2_p=.13$. The planned contrasts yielded that in the established situation, the sentences after the verb come were read more slowly than the sentences after the verb go (a marginal effect, $ps>.06$), but there was no such effect in the non-established situation ($ps>.23$). This interesting contrast (though it is marginal) may suggest that in the established condition, participants continued to process the spatial violation after the target sentence, but they did not need for that in the non-established condition. These analyses together show that the establishment factor does not have the anticipated effect on perspective taking.

3.6. Experiment 1e

Experiments 1e and 1f are similar to Experiments 1c and 1d, with the modification that the filler sections in the passages were shortened. There are some studies in the literature that tested whether the filler section length had an impact on the observed effects. Smith and O'Brien (2012) and O'Brien and Albrecht (1992), for instance, used both long and short filler sections within their experiments and found that the length did not change the direction or significance of their results.

Even though those studies found no effect of filler sentence length, we still wanted to test it in our experiments because all our experiments were conducted online. In online studies, especially those that use reading time measure for narrative comprehension, participants' performance may be different or more fragile compared to the studies conducted in controlled laboratory settings. In laboratory settings, the length may not degrade the performance, but in online experimental settings, the long filler sections may somewhat diminish the intended effect. Therefore, it may be a good idea to conduct the same experiments with shortened filler sections.

We did the shortened versions of Experiments 1c and 1d only (i.e., the experiments where the destination locations were pre-established). This is because the most critical part of our hypotheses was about the established situations: In passages written from third-person PoV we did not expect any difference between the verb conditions but in passages written from first-person PoV we did expect a difference. However, for the non-established situations, we always expected a difference between the verb conditions, regardless of the narrator PoV. For these reasons, we have made shortened replications of the established situations only.

For each passage, we rewrote the filler section. In the previous four experiments, the filler sections had a mean length of 56 words ($SD=16.75$). In the new experiments (Experiment 1e and 1f), the filler sections had an average of 26 words ($SD=6.88$). That is, across the passages, we made a 54% reduction in the filler section length (see Table 9 below for a sample passage).

In the present experiment, our hypothesis was the same as the one in Experiment 1c. In Experiment 1c, we expected to find a non-significant difference between come and go conditions, but the results showed that the difference was significant. We thought

that the long filler section might be the reason for that significant difference. When the filler section is long, participants' memory trace for the pre-established location may be weakened until they come to the target sentence. In such a case, participants' performance might be similar to the ones in the non-established conditions (e.g., Experiment 1a). If this is the reason why we obtained a significant effect in Experiment 1c, then shortening the filler sections may eliminate this effect. To sum up, in the current experiment, we expect to find no significant reading time difference between come and go conditions in the target sentences.

Table 9: Sample passage for Experiment 1e.

Introduction Sarah was talking to an assistant outside the seminar room. Filler Section The assistant was wearing a stylish brown jacket. After their talk was over, Sarah gave the folder in her hand to the assistant. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing Each week, a different lecturer would give a presentation. Sarah wasn't sure if she wanted to attend the seminar. She needed to buy herself a coffee before making up her mind. Comprehension Question Was the assistant wearing a green jacket? (Y/N)

Method

Participants.

Participants were 64 people (41 females) who were native speakers of English (age: $M=28$, $SD=4.01$). They were each paid £1.13 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the shortened versions of the 16 passages in Experiment 1c (see Appendix B for a full list of passages). This shortening was made in the filler sections so as to reduce the distance between the introduction section and the target sentence. As we mentioned above, the filler sections now have a mean length of 26 words

(SD=6.88). Lastly, the passages were, on average, 11 lines in length. Excluding the very short last lines, the lines consisted of around 8 words. The mean number of characters per line was 44.07 (SD=3.72). See Table 9 above for the example passage (see Appendix B.3 for a full list of passages).

Procedure.

The procedure was the same as described in the previous experiments.

Results and Discussion

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for target and spillover sentences are shown in Table 10 below. See also Figures 10 and 11 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The paired-samples t-test analyses showed that target sentences in the go condition were read faster than target sentences in the come condition. This difference was significant both at the level of subjects, $t_1(63)=3.06$, $p=.003$, $d=0.38$, and at the level of passages, $t_2(15)=2.87$, $p<.05$, $d=0.72$. The spillover sentences also yielded a marginally significant difference, $t_1(63)=1.85$, $p=.07$, $d=0.23$; $t_2(15)=1.80$, $p<.10$, $d=0.45$. Lastly, the Shapiro-Wilk tests yielded that the distribution of data was normal for target and spillover sentences ($ps>.15$).

Table 10: Mean reading times (in milliseconds) for Experiment 1e.

	Verb	
	come	go
Target Sentence	1749 (368)	1675 (361)
Spillover Sentence	1860 (421)	1808 (425)

Standard deviations are in parentheses.

The results were contrary to our expectations. We expected similar reading times for sentences in the come and go conditions, but the results showed a significant difference. Although we used shortened filler sections in this experiment, the results were similar to Experiment 1c. This indicates that filler section length does not change the direction of results, as shown in other studies in the literature (e.g., Smith & O'Brien, 2012). Even though the destination locations were pre-established and the filler sections were kept short, participants still experienced some processing difficulty while reading sentences in the come condition. This may suggest that while reading narratives written from third-person PoV (in this kind of passages, at least), readers

adopt a protagonist-centered perspective. A more detailed explanation will be given in the General Discussion chapter.

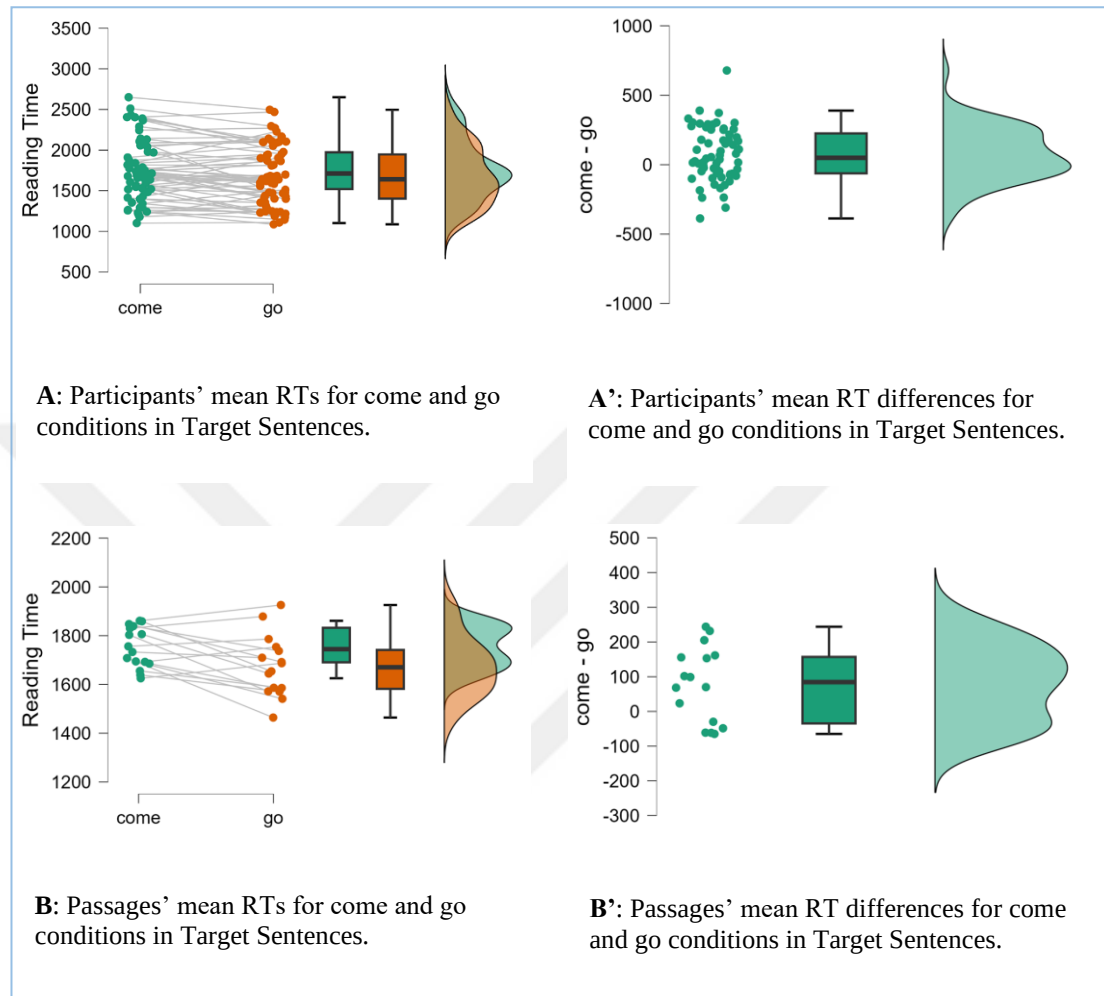


Figure 10: Raincloud Plots for Target Sentence RTs in Experiment 1e.

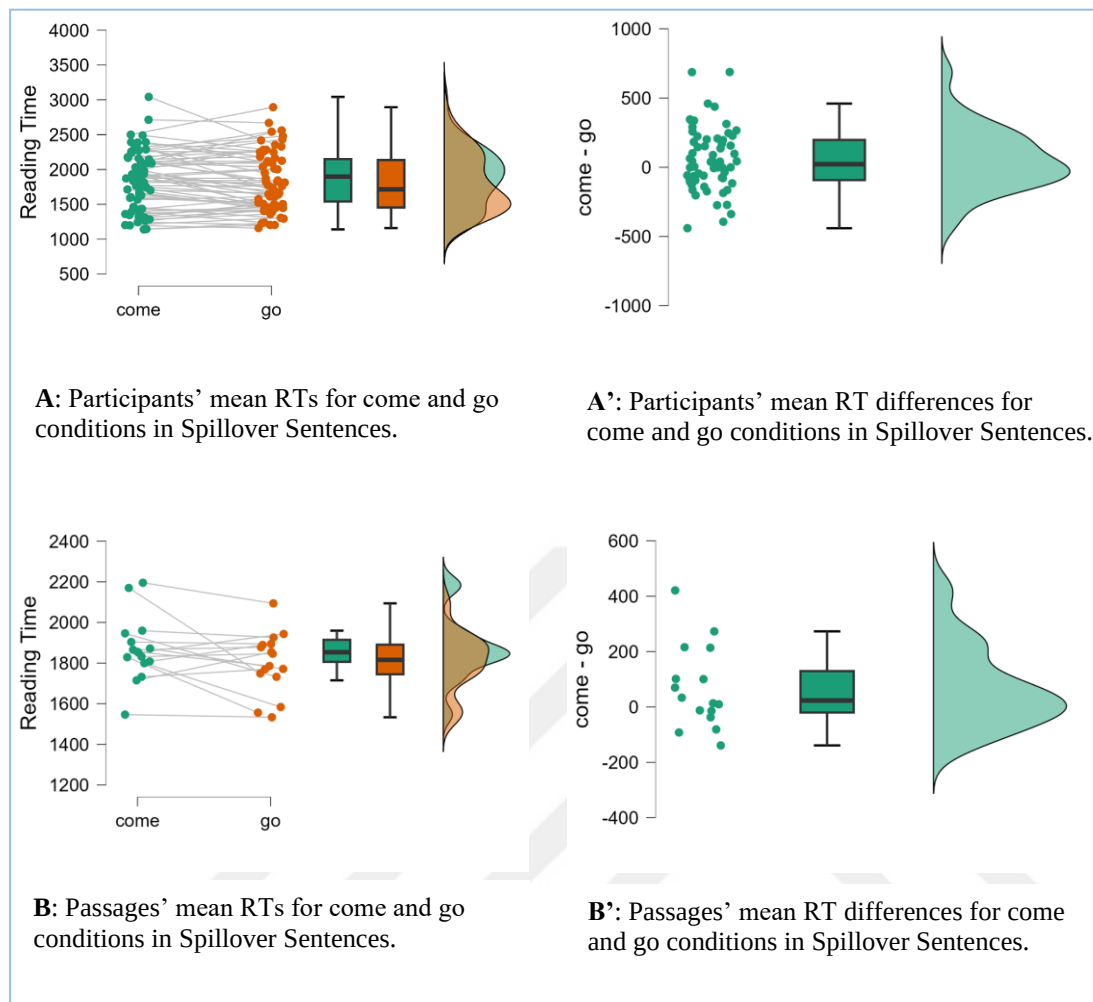


Figure 11: Raincloud Plots for Spillover Sentence RTs in Experiment 1e.

3.7. Experiment 1f

This experiment was similar to the previous one (Experiment 1e). The only difference was that the passages were written from first-person PoV (i.e., I). See Table 11 below for the example passage. Our hypothesis was the same as that in Experiment 1d. While reading passages written from first-person PoV, readers should adopt the protagonist's perspective. Therefore, sentences involving movement away from the protagonist and toward a pre-established location should be processed harder if they are written with the verb *come*, compared to the ones written with the verb *go*.

Table 11: Sample passage for Experiment 1f.

Introduction I was talking to an assistant outside the seminar room. Filler Section The assistant was wearing a stylish brown jacket. After our talk was over, I gave the folder in my hand to the assistant. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing Each week, a different lecturer would give a presentation. I wasn't sure if I wanted to attend the seminar. I needed to buy myself a coffee before making up my mind. Comprehension Question Was the assistant wearing a green jacket? (Y/N)
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Method

Participants.

Participants were 64 people (41 females) who were native speakers of English (age: $M=29$, $SD=4.59$). They were each paid £1.13 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the same as those used in Experiment 1e, with the modification that they were written from first-person PoV (e.g., I, instead of Sarah). See Table 11 above for the example passage (see Appendix B.3 for a full list of passages).

Procedure.

The procedure was the same as that described in the previous experiments.

Results and Discussion

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for the critical sentences are shown in Table 12 below. See also Figures 12 and

13 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The statistical analyses showed that target sentences in the come condition were read more slowly than target sentences in the go condition. This outcome was significant both at the level of subjects, $t_1(63)=5.77$, $p<.001$, $d=0.72$, and at the level of passages, $t_2(15)=6.13$, $p<.001$, $d=1.53$. The spillover sentences also yielded a significant difference, $t_1(63)=2.84$, $p=.006$, $d=0.36$; $t_2(15)=2.12$, $p=.05$, $d=0.53$.

We also checked the normality assumption in our data. The Shapiro-Wilk tests yielded that the distribution of data was non-normal for target ($W=0.90$, $p<.001$) and spillover ($W=0.94$, $p=.005$) sentences at the subjects level. For these two situations, we conducted Wilcoxon's signed-rank tests. The analyses yielded similar outputs to the relevant paired-samples t-tests reported above. For target sentences, significant effect of verb was found; target sentences with the verb come ($Mdn=1632$) were read longer than target sentences with the verb go ($Mdn=1445$) ($W=1824$, $p<.001$, $r_B=0.75$). As for spillover sentences, the effect was significant as well: Even though the medians may suggest otherwise (come $Mdn=1643$; go $Mdn=1659$), spillover sentences in the come condition were read longer than spillover sentences in the go condition as indicated by the Hodges–Lehmann estimate of 62 ($W=1427$, $p=.01$, $r_B=0.37$) (see Figure 13 below for the raincloud plots for spillover sentences).

Table 12: Mean reading times (in milliseconds) for Experiment 1f.

	Verb	
	come	go
Target Sentence	1701 (417)	1531 (322)
Spillover Sentence	1800 (446)	1719 (382)

Standard deviations are in parentheses.

The results were in line with our expectations. When reading passages written from first-person PoV, participants read the sentences in the come condition longer than those in the go condition: When the movement was away from the protagonist and toward a pre-established location, it was read more slowly with a come verb compared to a go verb, indicating a processing difficulty. Furthermore, shortening the filler sections did not change the direction of results. The results were in the same direction as Experiment 1d. This suggests that readers are sensitive to the protagonist perspective while reading narratives written from first-person PoV.

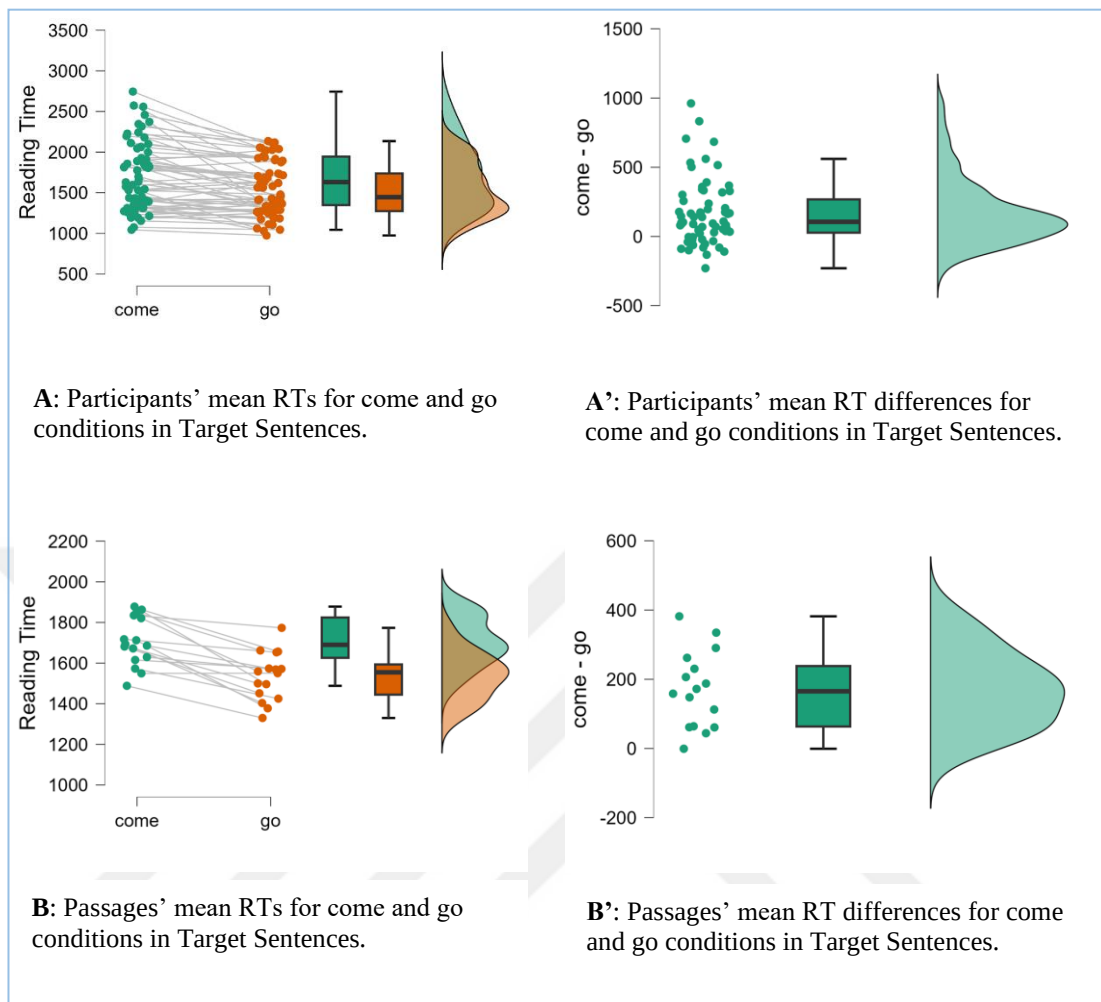


Figure 12: Raincloud Plots for Target Sentence RTs in Experiment 1f.

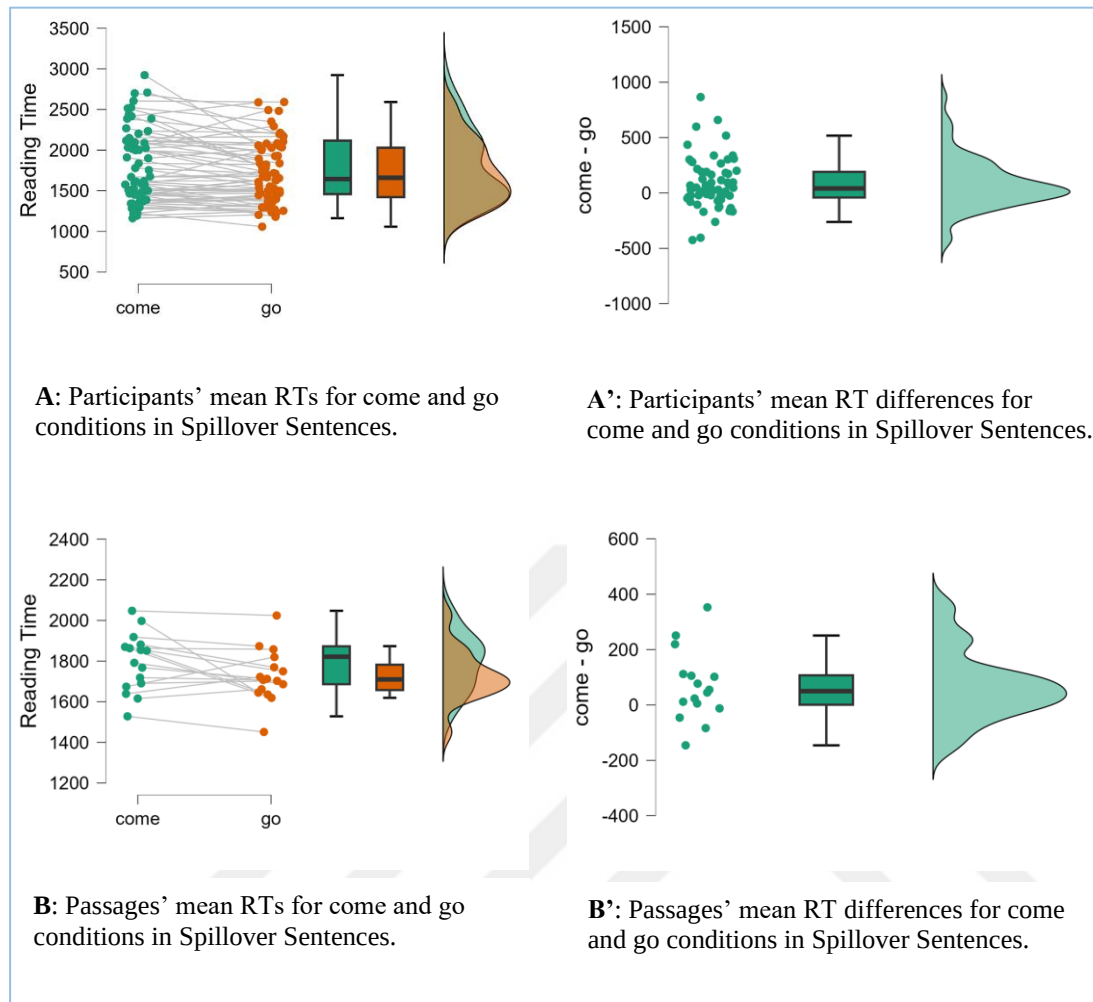


Figure 13: Raincloud Plots for Spillover Sentence RTs in Experiment 1f.

3.8. Cross-comparisons between Experiments 1e and 1f

In order to better understand the effect of narrator PoV on perspective taking, we grouped the last two experiments and analyzed them together.

We compared the two narrator PoVs (i.e., third vs. first) to see if perspective taking differs depending on these two conditions when the destination was pre-established. That is, we grouped Experiments 1e and 1f. We conducted a mixed ANOVA in which we treated the narrator PoV as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that there was a significant effect of verb in the target sentences, $F_1(1, 126)=41.05, p<.001, \eta^2_p=.25$; $F_2(1, 30)=40.75, p<.001, \eta^2_p=.58$. That is, the verb come was read more slowly than the verb go, regardless of narrator PoV. This effect was also observed in the spillover sentences, $F_1(1, 126)=11.00, p=.001, \eta^2_p=.08$; $F_2(1, 30)=7.53, p=.01, \eta^2_p=.20$. Furthermore, there was a significant interaction between narrator PoV and verb in the target sentences, $F_1(1, 126)=6.42, p=.01, \eta^2_p=.05$; $F_2(1, 30)=5.58, p<.05, \eta^2_p=.16$. Planned contrasts showed that the

effect of verb was significant for both narrator PoVs, but it was larger for the first-person PoV than the third-person PoV: First-person PoV, $t_1(126)=6.32$, $p<.001$, $d=.46$; $t_2(30)=6.18$, $p<.001$, $d=1.51$. Third-person PoV, $t_1(126)=2.74$, $p=.007$, $d=.20$; $t_2(30)=2.84$, $p=.008$, $d=.69$.

These analyses suggest that in the shortened narratives, when the destination location was pre-established, participants comprehended the sentences with the verb come harder than the sentences with the verb go, with a modulating effect of narrator PoV, such that first-person PoV narration yielded a stronger perspective taking than the third-person PoV narration. Although we had expected to find no significant effect of verb in third-person narratives, the less strong effect in this condition compared to the first-person condition may suggest that readers are more sensitive to the protagonist's perspective while reading narratives written from first-person PoV.

3.9. Experiment 2a

In Experiments 1a through 1f, we manipulated the pre-establishment of the destination location in the passages. In those experiments, the passages always began with the protagonist and the secondary character standing side-by-side at some place. We called those places “the source location” because they were the places where the secondary character was initially standing. The character then departed from that place to move into another place (i.e., the destination location). The destination location was either established in the passage introduction or not. In the experiments reported so far, we tested whether the pre-establishment of the destination location would affect the comprehension of sentences describing movement made into that location later in the passages.

From now on, we reverse this situation. In this and the subsequent experiments (2a through 2d), we separate the protagonist and the secondary character. The protagonist is now inside the destination location. She stands there from the beginning till the end of the passage. The secondary character is either standing outside that location (source established) or not (source non-established). That is, we manipulate now the presence or absence of the secondary character. Establishing the secondary character means physically placing him at some place (e.g., outside the seminar room). This place is what we call the source location because it is the place where he begins his movement. If the secondary character is not placed at a place, this means that he and his location are not established (i.e., source non-established). In the non-established situations, only the name of the secondary character is mentioned (e.g., assistant). The protagonist is just waiting for him, but there is no information regarding his whereabouts. In the present experiments, like the previous ones, the secondary character is always the agent of motion, and the protagonist is always stationary. While in the previous experiments the secondary character moves away from the protagonist, in the current experiments he moves toward the protagonist.

Experiment 2a was conducted to test the hypothesis that in narratives written from third-person PoV, readers should comprehend the sentences with the verb come more

easily than the sentences with the verb go if the movement is towards the protagonist and the agent of motion and his source location were not physically established in the passage introductions.

Although we argue that readers take an omniscient narrator perspective while reading narratives written from third-person PoV, this does not mean that come and go verbs are equally eligible for use in every situation. The rule for go-class verbs dictates that a movement can be described with a go-class verb only if its agent was already established in the narrative world. When the agent is not physically established in the narrative, his movement cannot be described with a go-class verb. Only a come-class verb is suitable in such a case. Therefore, when a go-class verb is used in violation of this rule, readers should process it harder (e.g., slowdown in reading time) compared to a come-class verb. In other words, we expect that participants will read the sentences with the verb come more easily (i.e., faster) than the sentences with the verb go.

Consider the example in Table 13 below. The main character (“Sarah”) was sitting inside the seminar room (i.e., the destination location). She was waiting to meet with the second character (“assistant”). That is, the second character was not established. There was no information regarding where he was. Only his name was mentioned. Therefore, we call this situation “source non-established”. Then, at some point in the passage (the target sentence), the second character entered into the destination location (“seminar room”). Since the second character was physically absent in the mental model of the reader up to this sentence, describing his entering into the seminar room with the verb go is not suitable according to our rules for deictic motion verbs. Only the verb come is suitable in this case. Therefore, any movement made into that room should be processed more easily with the verb come compared to the verb go.

To sum up, even though we think that in narratives written from third-person PoV readers adopt the omniscient narrator’s perspective, we do not expect equal ease of processing for go and come verbs here. This is because the rule for go-class verbs is violated in the target sentence.

Table 13: Sample passage for Experiment 2a.

Introduction Sarah was sitting inside the seminar room. She was waiting to meet with an assistant.
Filler Section While waiting, she looked at the watch on her wrist.
Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room.
Spillover Sentence The weekly presentations were about to start.
Closing The assistant sat next to Sarah. He was wearing a stylish brown jacket. They talked a little bit about last week's midterm exam. The assistant said all students had scored high on the exam. Sarah was happy to hear that.
Comprehension Question Was the assistant wearing a green jacket? (Y/N)

Method

Participants.

Participants were 56 people (36 females) who were native speakers of English (age: $M=30$, $SD=4.51$). They were each paid £1.14 for their participation. None of them had participated in the previous experiments.

Materials.

The 16 passages in Experiment 1a were modified to fit our new hypothesis (see Table 13 above for the example passage). We also wrote 2 additional passages. Thus, we had 18 passages in total for this experiment (see Appendix B.4 for a full list of passages).

The structure of the materials was similar to those in the previous experiments. Passages were, on average, 11 lines in length. Excluding the very short last lines, the lines consisted of around 8 words. The mean number of characters per line was 43.89 ($SD=4.46$). Each passage consisted of five sections: The introduction section established the protagonist at some location. She was waiting to meet with a secondary character, whose whereabouts were unknown. The filler sections were kept short, similar to Experiments 1e and 1f. Across the passages, the mean length of the filler sections was 16 words ($SD=8.41$). The target sentences had a mean length of 42.89 characters ($SD=2.40$). The spillover sentences had a mean length of 43.50 characters ($SD=2.04$). Lastly, there was a closing section which consisted of 3 to 6 sentences.

Procedure.

The procedure was the same as that described in the previous experiments.

Results and Discussion

The data exclusion process (4% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for the target and spillover sentences are shown in Table 14. See also Figures 14 and 15 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The statistical analyses showed that target sentences in the go condition were read more slowly than target sentences in the come condition. This result was significant both at the level of subjects, $t_1(55)=4.55$, $p<.001$, $d=0.61$, and at the level of passages, $t_2(17)=4.12$, $p<.001$, $d=0.97$. The spillover sentences yielded a marginally significant difference at the level of subjects, $t_1(55)=1.79$, $p=.08$, $d=0.24$, but a non-significant difference at the level of passages, $t_2(17)=1.52$, $p>.14$, $d=0.36$. Lastly, the Shapiro-Wilk tests yielded that the distribution of data was normal for target and spillover sentences ($ps>.55$).

Table 14: Mean reading times (in milliseconds) for Experiment 2a.

	Verb	
	come	go
Target Sentence	1571 (314)	1711 (315)
Spillover Sentence	1795 (367)	1854 (431)

Standard deviations are in parentheses.

The results were in line with our hypothesis. In passages written from third-person PoV, when the secondary character was non-established in the passage introductions, the sentences describing that character's movement toward the protagonist later in the passage were comprehended longer with a go verb than with a come verb. Participants obviously experienced some processing difficulty while reading the sentences with the verb go. We think this was because the rule for go-class verbs was violated in the target sentences. If the source person was not established beforehand, his movement toward the protagonist would be eligible to be described only with come-class verbs. Using go-class verbs instead would lead the readers to have difficulty in comprehension, as evidenced by the slowdown in reading of the target sentences with the verb go.

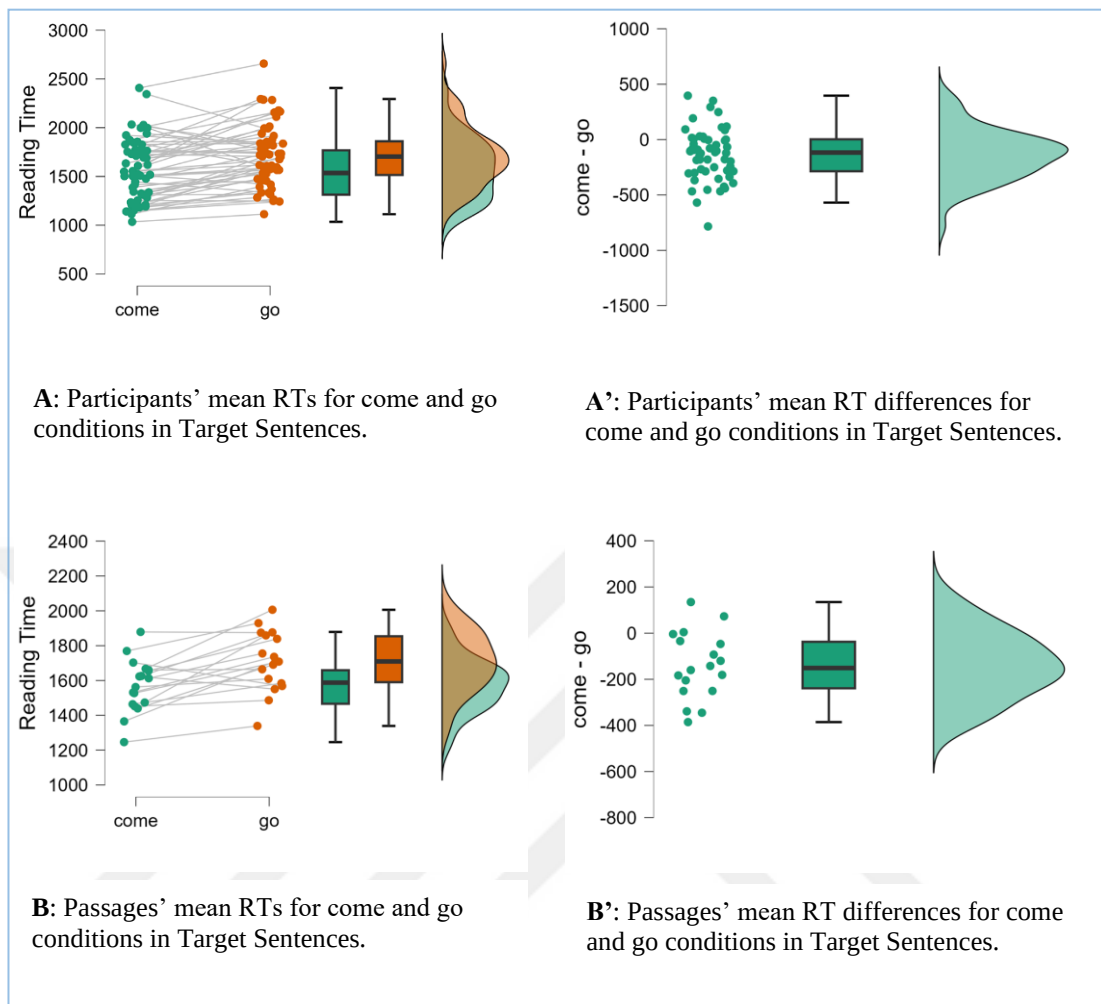


Figure 14: Raincloud Plots for Target Sentence RTs in Experiment 2a.

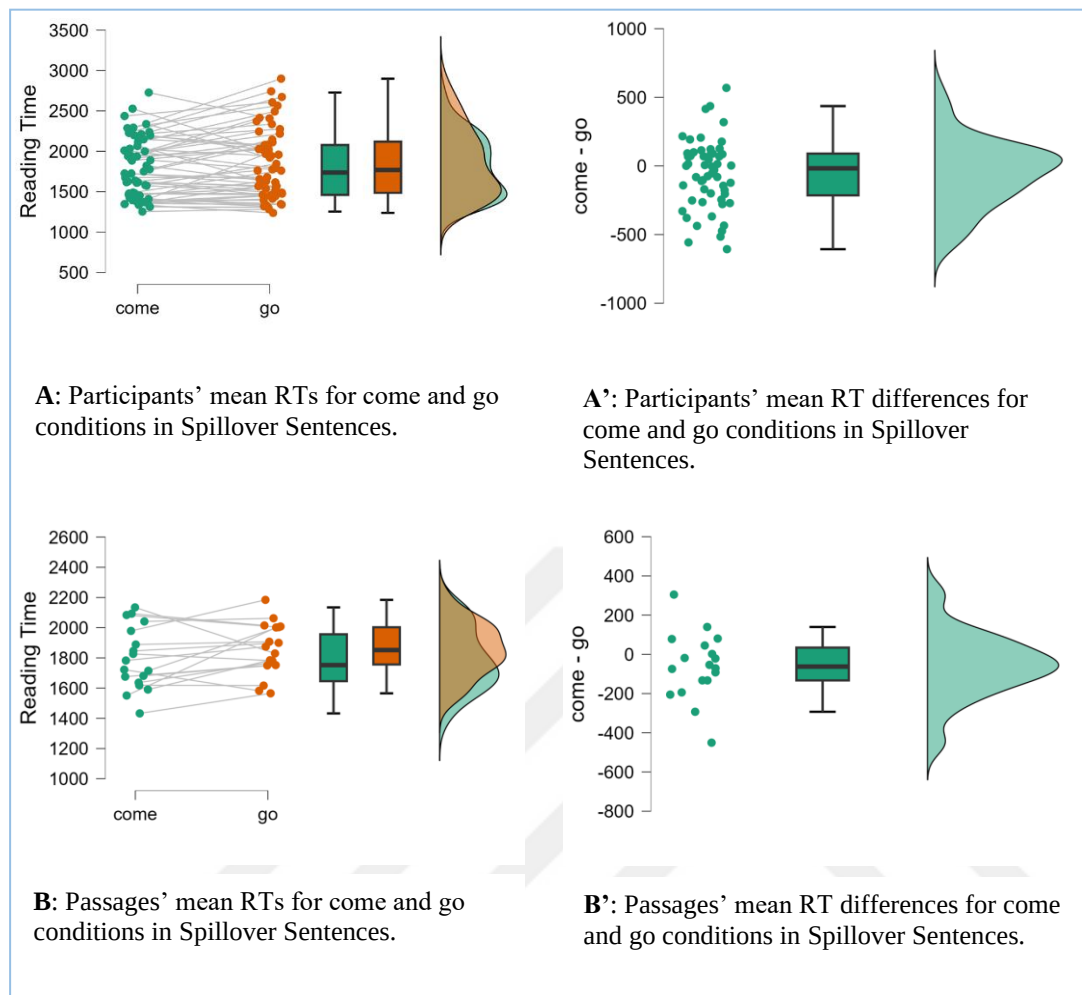


Figure 15: Raincloud Plots for Spillover Sentence RTs in Experiment 2a.

3.10. Experiment 2b

This experiment was similar to the previous one. The only difference was that all passages were written from first-person PoV (e.g., I, instead of Sarah). On the one hand, like the previous experiment, we expect that readers should comprehend the sentences with the verb go more slowly than the sentences with the verb come. This is because the rule for go-class verbs is violated in the target sentence. On the other hand, in narratives written from first-person PoV, readers should adopt a protagonist-centered perspective. In such narratives, the narrator is the same as the protagonist; therefore, taking the narrator perspective and taking the protagonist perspective are the same thing. Thus, any movement towards the protagonist should naturally be processed more easily with the verb come.

Consider the example in Table 15 below. The main character (“I”) was sitting inside the seminar room and waiting to meet with the secondary character (“an assistant”), whose location was not known (i.e., source non-established). Then, in the target

sentence, the secondary character entered the seminar room (i.e., destination location). Since the secondary character was not physically present in the mental model of the reader up to the target sentence, describing his movement into the seminar room with the verb *go* is not suitable according to our rules for deictic motion verbs. Only the verb *come* is acceptable in this situation. Furthermore, because of the nature of the first-person PoV narration, readers are expected to comprehend the passages from the perspective of the protagonist. For these reasons, sentences involving movement into the destination locations (i.e., towards the protagonist) should be processed more easily with the verb *come* than with the verb *go*.

Table 15: Sample passage for Experiment 2b.

Introduction I was sitting inside the seminar room, waiting to meet with an assistant. Filler Section While waiting, I looked at the watch on my wrist. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing The assistant sat next to me. He was wearing a stylish brown jacket. We talked a little bit about last week's midterm exam. The assistant said all students had scored high on the exam. I was happy to hear that. Comprehension Question Was the assistant wearing a green jacket? (Y/N)

Method

Participants.

Participants were 56 people (39 females) who were native speakers of English (age: $M=28$, $SD=4.04$). They were each paid £1.14 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the same as the ones used in Experiment 2a, with the modification that they were written from first-person PoV (e.g., I, instead of Sarah). See Table 15 above for the example passage (see Appendix B.4 for a full list of passages).

Procedure.

The procedure was the same as that described in the previous experiments.

Results and Discussion

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for the critical sentences are shown in Table 16 below. See also Figures 16 and 17 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The paired-samples t-tests showed that target sentences in the go condition were read more slowly than target sentences in the come condition. This result was significant both at the level of subjects, $t_1(55)=4.30$, $p<.001$, $d=0.57$, and at the level of passages, $t_2(17)=4.21$, $p<.001$, $d=0.99$. The spillover sentences did not yield any significant difference, $ps>.43$.

We also checked the normality assumption in our data. The Shapiro-Wilk tests yielded that the distribution of data was non-normal for target ($W=0.96$, $p<.05$) and spillover ($W=0.95$, $p<.05$) sentences at the subjects level. For these two situations, we conducted Wilcoxon's signed-rank tests. The analyses yielded similar outputs to the relevant paired-samples t-tests reported above. For target sentences, significant effect of verb was found; sentences with the verb go ($Mdn=1773$) were read longer than sentences with the verb come ($Mdn=1563$) ($W=1289$, $p<.001$, $r_B=0.62$). As for spillover sentences, the effect was non-significant ($p>.75$).

Table 16: Mean reading times (in milliseconds) for Experiment 2b.

	Verb	
	come	go
Target Sentence	1645 (347)	1782 (380)
Spillover Sentence	1876 (364)	1897 (370)

Standard deviations are in parentheses.

The results were as expected. In passages written from first-person PoV, when the secondary character was not pre-established in the passage, the sentences describing that character's movement toward the protagonist later in the passage were comprehended more slowly with a go verb than with a come verb. Participants must have experienced some processing difficulty while reading the sentences with the verb go. We think this occurred because of two reasons: First, the rule for go-class verbs was violated in the target sentences. As mentioned in the previous experiment, if the

source person was not established beforehand, his movement toward the protagonist would be eligible to be described only with come-class verbs. Second, the nature of the first-person narration must have encouraged the readers to adopt the protagonist perspective. So, from the perspective of the protagonist, the verb come is more suitable if a person approaches her from a distance.

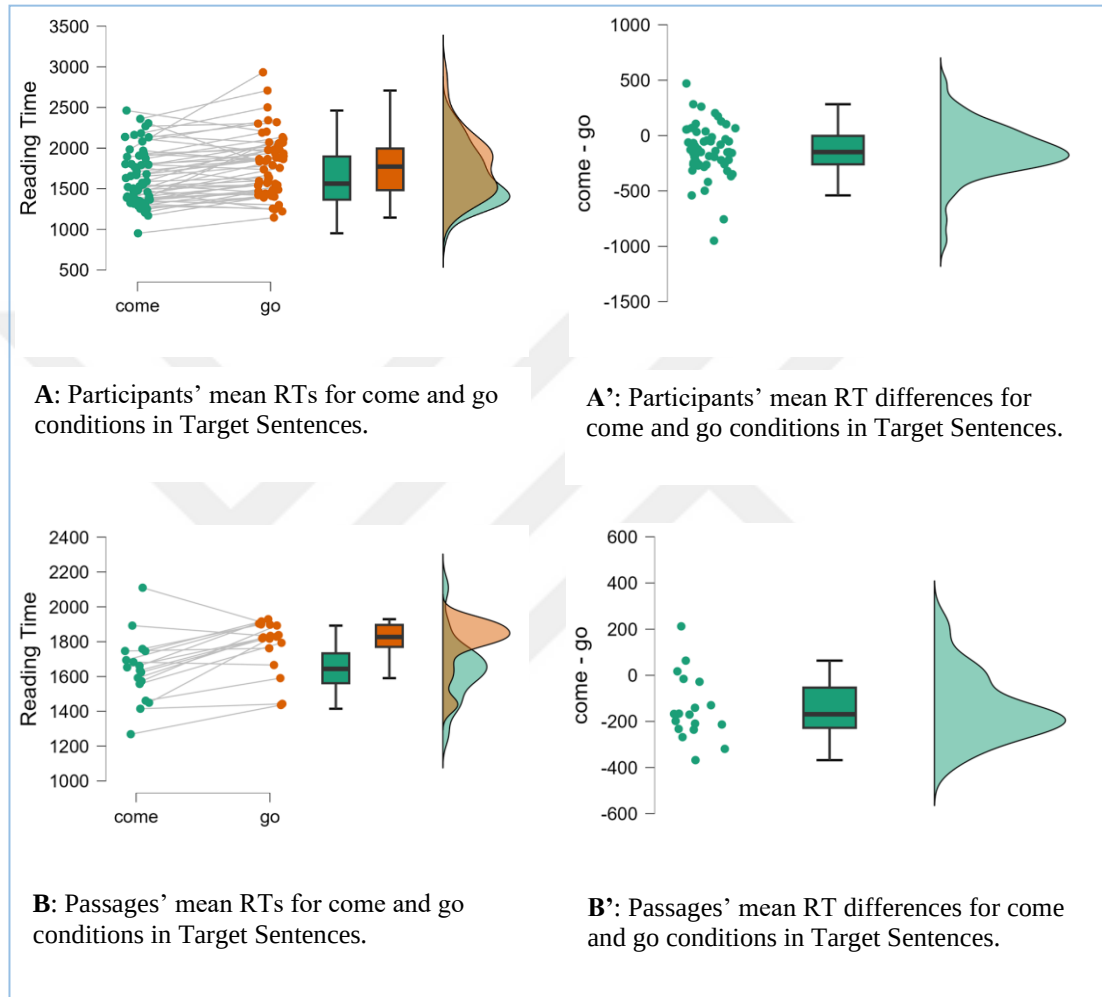


Figure 16: Raincloud Plots for Target Sentence RTs in Experiment 2b.

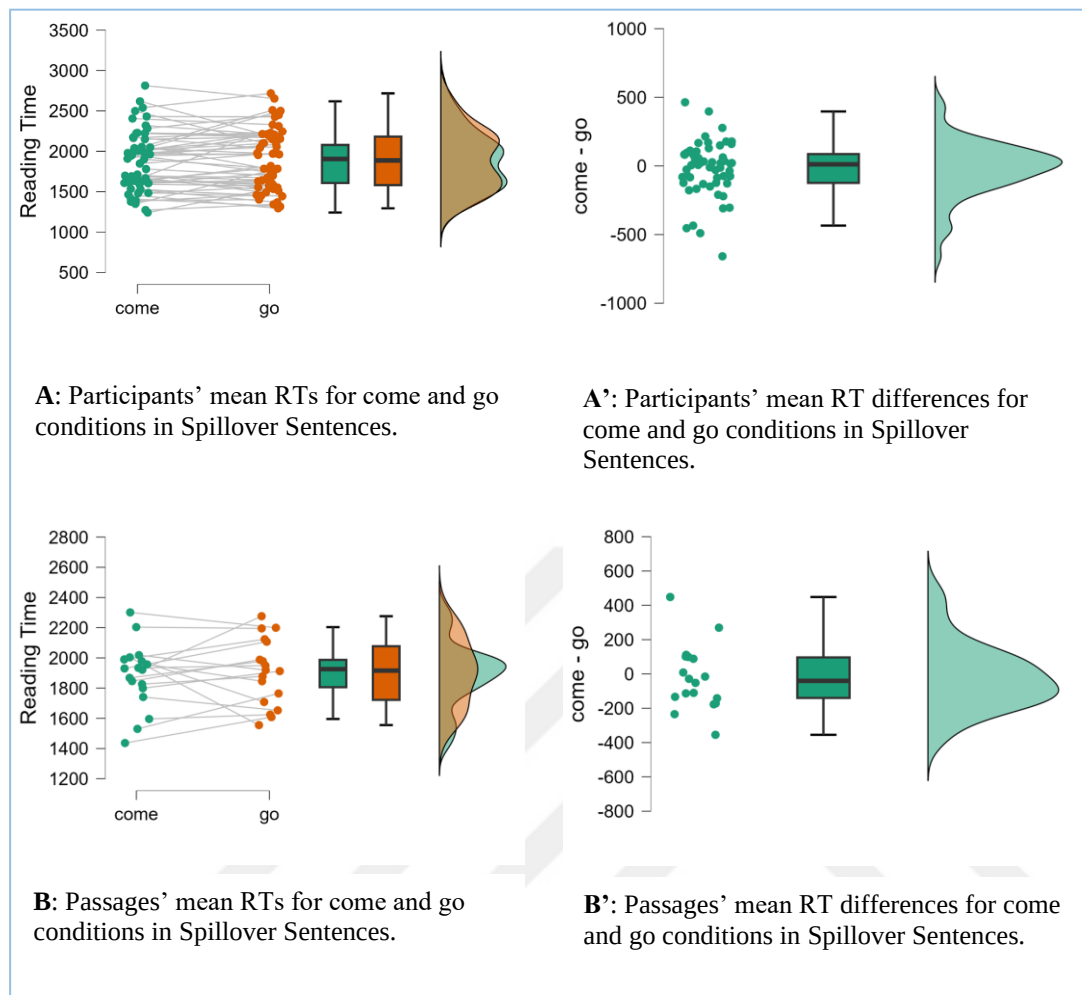


Figure 17: Raincloud Plots for Spillover Sentence RTs in Experiment 2b.

3.11. Experiment 2c

In Experiments 2a and 2b, the secondary character and his source location were always non-established in the beginning of the passages. From now on, we make them all established. Passages were written from third-person PoV in Experiment 2c and from first-person PoV in Experiment 2d.

For the present experiment, our hypothesis is that when reading passages written from third-person PoV, readers should comprehend sentences involving the verbs come and go equally easily if the movement is from an established location/person and toward the protagonist. We argue that while reading narratives written from third-person PoV, readers adopt an omniscient narrator perspective. When the source location was already established in the passage along with the agent of motion (i.e., the secondary character), the movement from that location toward the protagonist should be processed as easily with the verb come as with the verb go. The reason is that the omniscient narrator can access all established locations equally easily. Since the

readers should take the narrator's perspective, they should also access all established locations equally easily, regardless of those locations being distant to the protagonist or not. Thus, go and come verbs should not yield any difference in reading time.

Consider the example in Table 17 below. The protagonist ("Sarah") was sitting inside the seminar room and waiting for the secondary character ("assistant") who was talking on the phone just outside the door. Then, in the target sentence, the assistant entered the seminar room. Since the secondary character and his source location were established in the passage introduction, they were already in the mental model of the reader. In this case, the character's movement is eligible to be described both with go and with come verb from the perspective of the narrator. Thus, we expect similar reading speed for the target sentences involving these verbs.

Table 17: Sample passage for Experiment 2c.

Introduction Sarah was sitting inside the seminar room. An assistant was talking on the phone outside the door. Sarah was waiting for him. Filler Section While waiting, she looked at the watch on her wrist. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing The assistant sat next to Sarah. He was wearing a stylish brown jacket. They talked a little bit about last week's midterm exam. The assistant said all students had scored high on the exam. Sarah was happy to hear that. Comprehension Question Was the assistant wearing a green jacket? (Y/N)

Method

Participants.

Participants were 56 people (36 females) who were native speakers of English (age: $M=28$, $SD=3.65$). They were each paid £1.14 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the same as the ones used in Experiment 2a, with the modification that the secondary character and his source location were established in the beginning of the passages. See Table 17 above for the example passage (see Appendix B.4 for a full list of passages).

Procedure.

The procedure was the same as in the previous experiments.

Results and Discussion

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for target and spillover sentences are shown in Table 18 below. See also Figures 18 and 19 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The paired-samples t-tests showed that target sentences in the go condition were read longer than target sentences in the come condition. This difference was significant both at the level of subjects, $t_1(55)=2.54$, $p<.05$, $d=0.34$, and at the level of passages, $t_2(17)=2.15$, $p<.05$, $d=0.51$. The spillover sentences did not yield any significant difference, $ps>.35$. Lastly, the Shapiro-Wilk tests yielded that the distribution of data was normal for target and spillover sentences ($ps>.12$).

Table 18: Mean reading times (in milliseconds) for Experiment 2c.

	Verb	
	come	go
Target Sentence	1641 (371)	1718 (380)
Spillover Sentence	1805 (380)	1825 (394)

Standard deviations are in parentheses.

The results were contrary to our expectations. We had expected similar reading times for sentences in the go and come conditions, but the results showed a significant difference. Although the difference is not as strong as the previous experiment, it is still significant.

We had argued that in narratives written from third-person PoV, readers should comprehend the events from the omniscient narrator's perspective. When the source person (agent of motion) was pre-established in the beginning of the passages, participants still comprehended his movement toward the protagonist more easily with

the verb come than the verb go. This may suggest that participants were consistently taking the protagonist's perspective in third-person PoV passages, regardless of the establishment. A more detailed explanation will be in the General Discussion chapter.

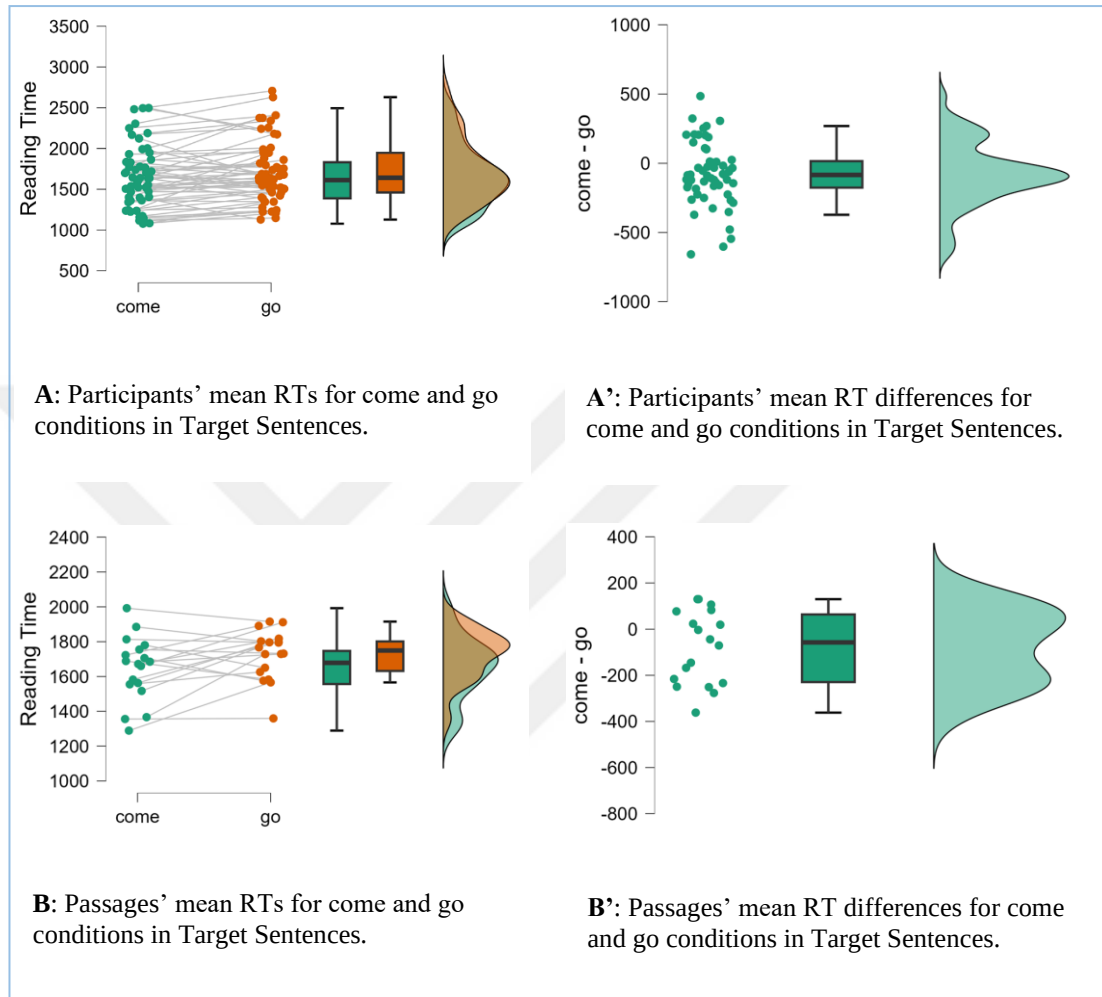


Figure 18: Raincloud Plots for Target Sentence RTs in Experiment 2c.

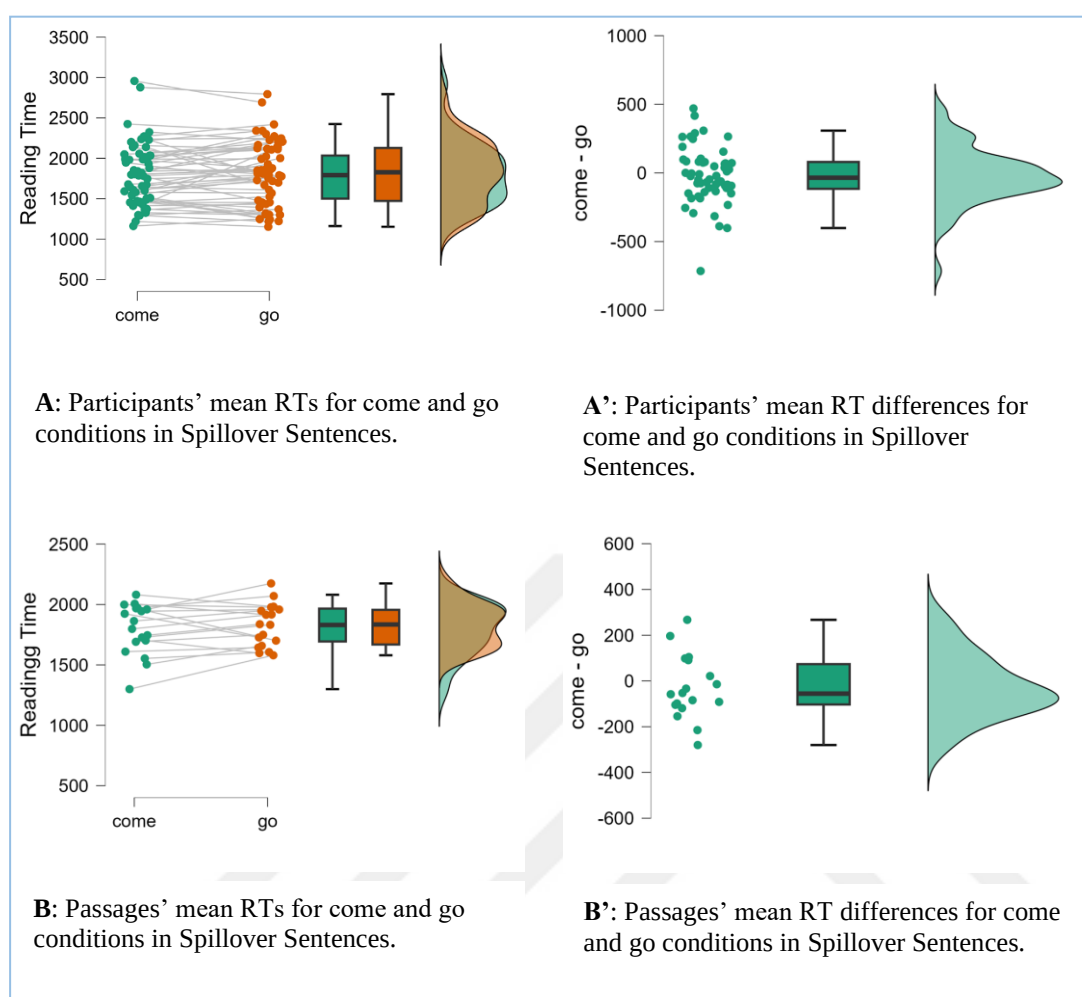


Figure 19: Raincloud Plots for Spillover Sentence RTs in Experiment 2c.

3.12. Experiment 2d

This experiment was similar to Experiment 2c. The only difference was that all passages were written from first-person PoV (i.e., I). In first-person PoV narration, the narrator and the protagonist are the same person. Thus, the nature of first-person narration should encourage the readers to comprehend the passages from a protagonist-centered perspective. Therefore, any movement towards the protagonist should be processed more slowly with the verb go. This should occur even though the source location and the agent of motion are pre-established.

Consider the example in Table 19 below. The main character (“I”) was sitting inside the seminar room while the second character (“an assistant”) was standing ‘outside the seminar room’ (i.e., source established). Then in the target sentence the assistant entered the seminar room. Even though the source location/person was established in the beginning of the passage, a movement made into the room should be processed harder with the verb go. This is because of the nature of first-person narration. Since

readers are expected to adopt the protagonist perspective in such passages, they should process the sentences with the verb go harder if the sentences involve movement towards the protagonist. That is, we expect a slowdown in reading time for the verb go in the target sentences.

Table 19: Sample passage for Experiment 2d.

Introduction I was sitting inside the seminar room. An assistant was talking on the phone outside the door. I was waiting for him. Filler Section While waiting, I looked at the watch on my wrist. Target Sentence Then the assistant <u>went into</u> / <u>came into</u> the seminar room. Spillover Sentence The weekly presentations were about to start. Closing The assistant sat next to me. He was wearing a stylish brown jacket. We talked a little bit about last week's midterm exam. The assistant said all students had scored high on the exam. I was happy to hear that. Comprehension Question Was the assistant wearing a green jacket? (Y/N)

Method

Participants.

Participants were 56 people (35 females) who were native speakers of English (age: $M=27$, $SD=3.98$). They were each paid £1.14 for their participation. None of them had participated in the previous experiments.

Materials.

The materials were the same as the ones used in Experiment 2c, with the modification that they were written from first-person PoV. See Table 19 above for the example passage (see Appendix B.4 for a full list of passages).

Procedure.

The procedure was the same as in the previous experiments.

Results and Discussion

The data exclusion process (less than 5% exclusion in this experiment) and the statistical tests used were the same as explained in the previous experiments. Reading times for the critical sentences are shown in Table 20 below. See also Figures 20 and 21 below for the raincloud plots showing the visualization of data for the target and spillover sentences.

The paired-samples t-tests showed that target sentences in the go condition were read longer than target sentences in the come condition. This difference was significant both at the level of subjects, $t_1(55)=3.72$, $p<.001$, $d=0.50$, and at the level of passages, $t_2(17)=4.51$, $p<.001$, $d=1.06$. The spillover sentences yielded a non-significant difference at the level of subjects, $p=.21$, and a marginally significant difference at the level of passages, $t_2(17)=1.87$, $p=.08$, $d=0.44$.

We also checked the normality assumption in our data. The Shapiro-Wilk tests yielded that the distribution of data was normal except for the spillover sentences at the subjects level ($W=0.91$, $p<.001$). For this specific situation, we conducted a Wilcoxon's signed-rank test. The analysis yielded a similar output to the relevant paired-samples t-test reported above. Even though the medians seemed to be different from each other (come $Mdn=1708$; go $Mdn=1810$), there was no statistically significant difference between the two verb conditions in the spillover sentences ($W=913$, $p=.35$, $r_B=0.14$) (see Figure 21 below for the raincloud plots for spillover sentences).

Table 20: Mean reading times (in milliseconds) for Experiment 2d.

	Verb	
	come	go
Target Sentence	1570 (295)	1658 (314)
Spillover Sentence	1795 (351)	1833 (360)

Standard deviations are in parentheses.

The results were as we had expected. In passages written from first-person PoV, when the secondary character was pre-established at a source location in the passage, the sentences describing that character's movement toward the protagonist later in the passage were comprehended more slowly with a go verb than with a come verb. Participants obviously experienced some processing difficulty while reading the sentences with the verb go. We think the nature of the first-person narration must have encouraged the readers to adopt the protagonist perspective. From the perspective of the protagonist, the verb come is more suitable if an established person approaches her

from a distance. This was evidenced by the faster reading of the sentences in the come condition in this experiment.

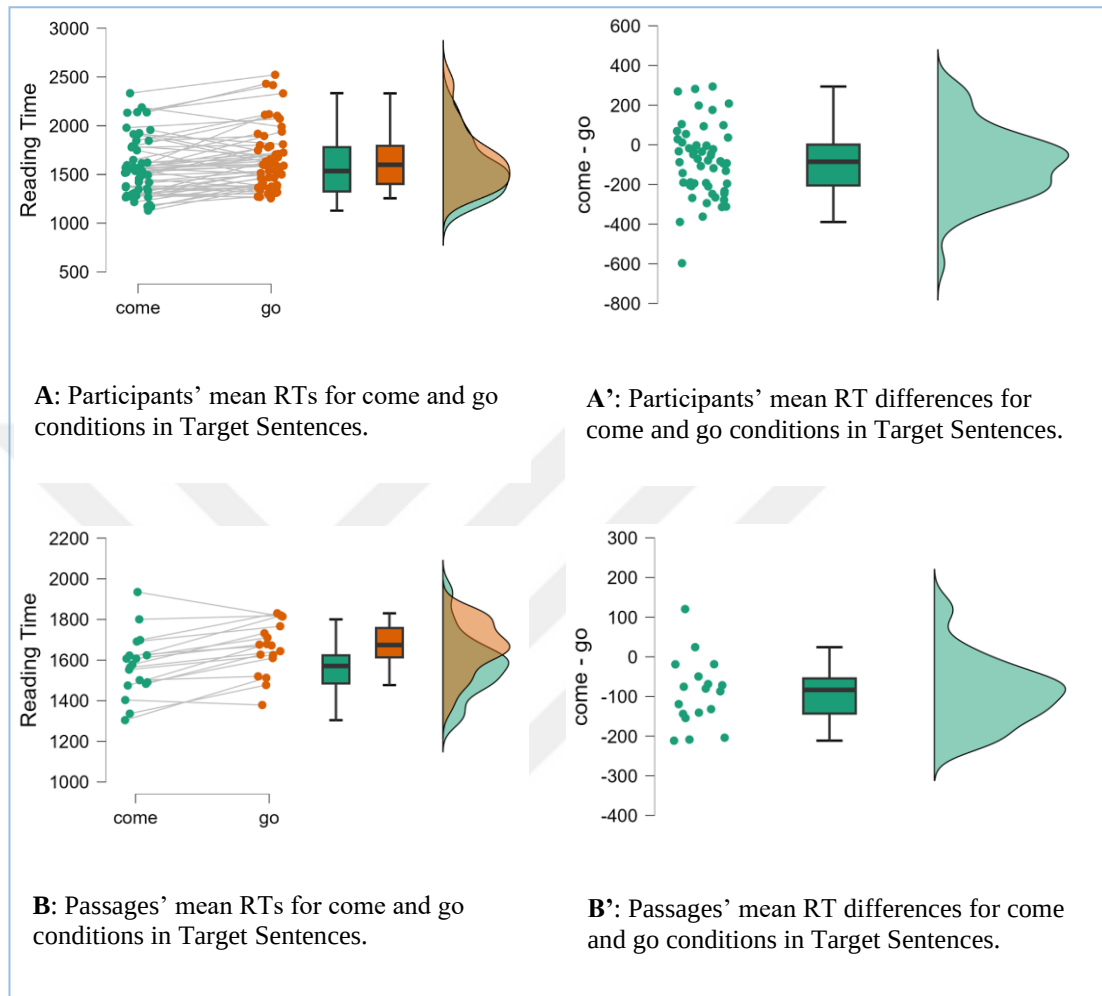


Figure 20: Raincloud Plots for Target Sentence RTs in Experiment 2d.

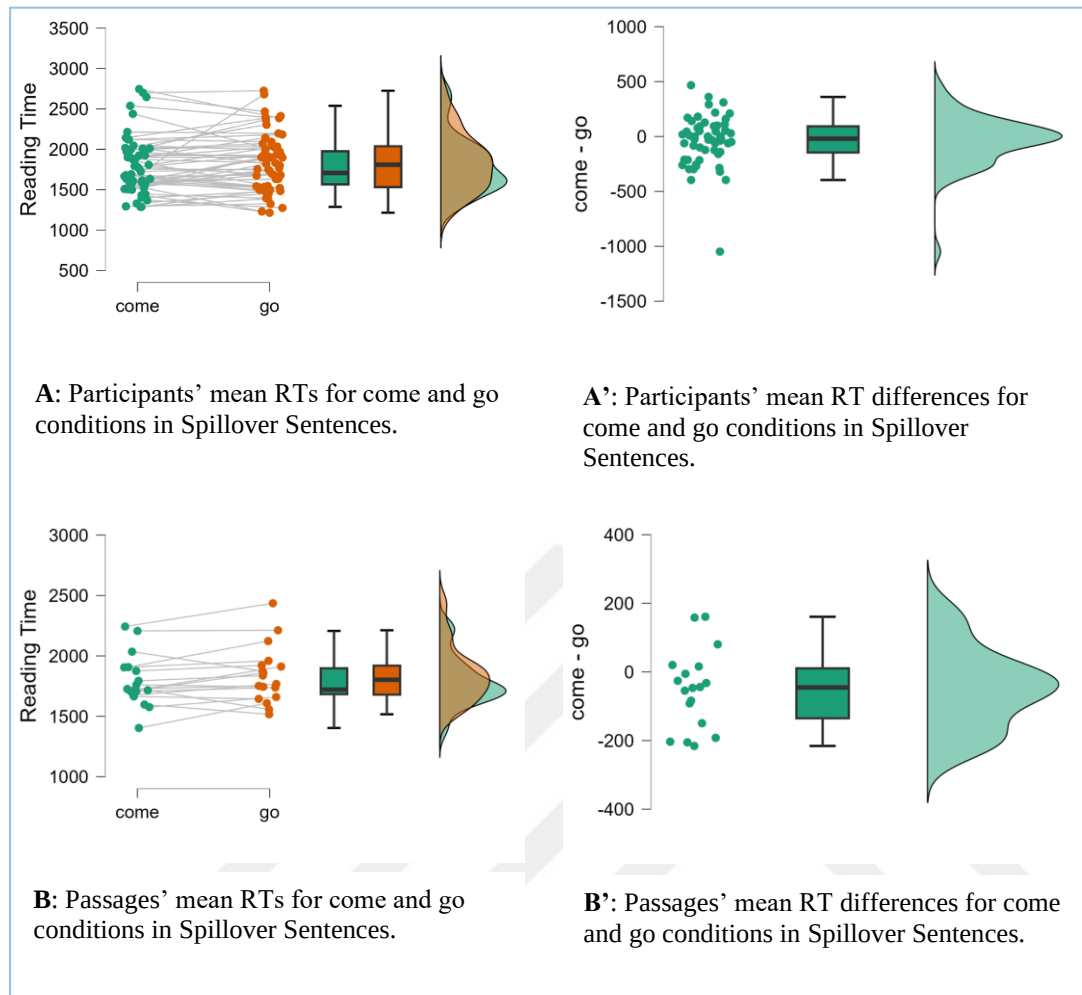


Figure 21: Raincloud Plots for Spillover Sentence RTs in Experiment 2d.

3.13. Cross-comparisons between Experiments 2a through 2d

In order to better understand the effects of source establishment and narrator PoV on perspective taking, we analyzed the four experiments (2a through 2d) by grouping them according to these factors.

First of all, we compared the two narrator PoVs (i.e., third vs. first) for the non-established situation. That is, we grouped Experiments 2a and 2b. We conducted a mixed ANOVA in which we treated the narrator PoV as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that there was a significant effect of verb in the target sentences, $F_1(1, 110)=39.10, p<.001, \eta^2_p=.26$; $F_2(1, 34)=34.66, p<.001, \eta^2_p=.50$. That is, the verb go was read more slowly than the verb come, regardless of narrator PoV. This effect was also observed in the spillover sentences, but only at the level of subjects, $F_1(1, 110)=4.27, p<.05, \eta^2_p=.04$, not at the level of passages, $F_2(1, 34)=2.21, p>.14, \eta^2_p=.06$. Furthermore, there was no interaction effect, neither in the target sentences nor in the spillover sentences, all

$F_s < 1$. These analyses suggest that when the source information was non-established, participants comprehended the sentences with the verb go harder than the sentences with the verb come, without any modulating effect of narrator PoV.

Secondly, we compared the two narrator PoVs (i.e., third vs. first) for the established situation this time. That is, we grouped Experiments 2c and 2d. We conducted a mixed ANOVA in which we treated the narrator PoV as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that in the target sentences, there was a significant effect of verb, $F_1(1, 110) = 17.68$, $p < .001$, $\eta^2_p = .14$; $F_2(1, 34) = 15.84$, $p < .001$, $\eta^2_p = .32$. That is, the verb go was read more slowly than the verb come, regardless of narrator PoV. This effect did not continue in the spillover sentences, $p_1 = .16$ and $p_2 = .07$. As for the interaction, there was no significant effect, neither in the target sentences nor in the spillover sentences, all $F_s < 1$. These results show that when the source was pre-established, participants still comprehended the verb go harder than the verb come, even in the third-person PoV passages.

Third, we compared the establishment (i.e., non-established vs. established) for the first-person PoV. That is, we grouped Experiments 2b and 2d. We conducted a mixed ANOVA in which we treated the establishment as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that in the target sentences, there was a significant effect of verb, $F_1(1, 110) = 31.17$, $p < .001$, $\eta^2_p = .22$; $F_2(1, 34) = 34.63$, $p < .001$, $\eta^2_p = .51$. That is, the verb go was read more slowly than the verb come, regardless of the establishment status of the source. This effect did not continue in the spillover sentences, $p_1 = .10$ and $p_2 = .14$. As for the interaction, there was no significant effect, neither in the target sentences ($p_1 = .20$ and $p_2 = .18$) nor in the spillover sentences (both $F_s < 1$). These results overall show that when the passages were written from first-person PoV, participants comprehended the verb go harder than the verb come, regardless of the source information being pre-established or not. That is, it seems that participants were consistently comprehending the narratives from the perspective of the protagonist.

Lastly, we compared the establishment (i.e., non-established vs. established) for the third-person PoV this time. That is, we grouped Experiments 2a and 2c. We conducted a mixed ANOVA in which we treated the establishment as the between-subjects factor and the verb as the within-subjects factor. The analyses showed that in the target sentences, there was a significant effect of verb, $F_1(1, 110) = 25.18$, $p < .001$, $\eta^2_p = .19$; $F_2(1, 34) = 18.99$, $p < .001$, $\eta^2_p = .36$. That is, the verb go was read more slowly than the verb come, regardless of the establishment status of the source. This effect was marginally observed in the spillover sentences ($p_1 = .07$ and $p_2 = .09$). As for the interaction, there was no significant effect, neither in the target sentences ($p_1 = .15$ and $p_2 = .25$) nor in the spillover sentences (both $F_s < 1$). These analyses together show that the establishment factor does not have the anticipated effect on perspective taking. That is, in passages written from third-person PoV, readers still comprehended the events from the protagonist's perspective, without any modulating effect of establishment.



CHAPTER 4

GENERAL DISCUSSION

Our main aim in this thesis was to study perspective taking in narrative comprehension in a detailed way, with several new hypotheses. By relying on the conclusions of the O'Brien and Albrecht (1992) and Creer et al. (2019) studies, we framed our main hypotheses as follows. In passages written from third-person PoV (e.g., he/she), readers should adopt the narrator's perspective, which is assumed to be omniscient. In passages written from first-person PoV (e.g., I, me), readers should still adopt the narrator's perspective, but the narrator in this kind of passages is the protagonist himself. Therefore, readers should adopt the protagonist's limited perspective while reading first-person narratives.

Our specific hypotheses were formulated by adding two more factors to the main hypotheses. One factor is the deictic motion verbs (e.g., come and go). These verbs are well-known and studied both in linguistics (Clark, 1974; Goddard, 1997; Fillmore, 1966, 1975; Wang, 2018) and in psycholinguistics (Black et al., 1979; Rall & Harris, 2000; Ziegler, Mitchell, & Currie, 2005). Since these verbs, by their nature, are related to perspective, we argued that they should be important for studying perspective taking in narrative comprehension. Although Black et al. (1979), by using these verbs, reached some conclusion that readers adopt the protagonist perspective in third-person narratives, we have spotted some possible confounding situations and limitations in their study. With the critical evaluation of that study, we found out that establishment of the locations/characters are in critical importance in the study of deictic motion verbs and perspective taking. Thus, we added "establishment" as a second factor in our specific hypotheses.

We have formulated several specific hypotheses. All of them took into account these three variables: 1) narrator point-of-view (i.e., first-person or third-person), 2) establishment (i.e., destination established or non-established; source established or non-established), and 3) deictic motion verbs (i.e., come or go).

With regards to the establishment factor, we argued that, especially for third-person PoV narrations, the established entities (i.e., locations and characters) should be deemed close to the narrator and the non-established entities should be deemed distant from the narrator. This proximity issue, we argued, was of critical importance in perspective-taking.

With regards to the deictic motion verbs, we formulated some rules (i.e., presuppositions) as to how these verbs should be used in narratives in order to fit the narrative semantics/pragmatics. These rules are dependent on the establishment factor, especially for third-person PoV narratives. For instance, movement of a character between the two established locations can be described both with *go* and with *come*. However, movement towards a non-established location cannot be described with *come* because the verb *come* presupposes that the destination be pre-established. Conversely, a non-established character's movement towards an established location cannot be described with *go* because the verb *go* presupposes that the character be pre-established (at some source location).

4.1. Discussion of Experiments 1a through 1f

In all our passages, we made a clear distinction between who the protagonist is and who the secondary character is. The protagonist (i.e., the main character) should always hold a special status in the narrative and be more foregrounded in the mental model (Anderson, Sanford, & Garrod, 1983; Sanford, Moar, & Garrod, 1988). Therefore, by following the previous work, we introduced our protagonists always with a proper name (e.g., Sarah) and our secondary characters always with a common name (e.g., assistant) (Garrod & Sanford, 1988; Sanford et al., 1988; O'Brien & Albrecht, 1992; Creer et al., 2019).

In Experiments 1a through 1f, we structured our narrative passages such that each passage began with the protagonist and the secondary character standing side-by-side at some place. We called this place the source location. That is, in Experiments 1a through 1f, the protagonist and the secondary character were established at a certain source location (e.g., in the faculty hallway). Then, at some point in the passages, the secondary character departs from the protagonist and moves into some other place, which we called the destination location. The character's movement was described either with the verb *come* or with the verb *go* (i.e., the target sentence). Besides, the destination location had been either pre-established in the passage introductions or not pre-established.

We had different predictions as to how readers comprehend the target sentences depending on the manipulations of these two factors as well as the narrator PoV factor.

For Experiments 1a and 1b, we made the destination locations non-established in the passage introductions. We hypothesized that when the secondary character made a movement towards a previously non-established location (destination location) (e.g., the assistant went/came into the seminar room), the sentence with the verb *come*

should cause a disruption in comprehension and thus be read more slowly than the sentence with the verb go. This is because the sentence with the verb come violates the rule for come-class verbs, which states that movements toward a non-established location cannot be described with come-class verbs. Go-class verbs are suitable for these situations.

We made this prediction both for the third-person PoV passages (Experiment 1a) and for the first-person PoV passages (Experiment 1b). In third-person PoV passages, even though we argued that readers adopt the omniscient narrator's perspective, the violation of the rule for come-class verbs should cause slower reading of the sentences in the come condition. On the other hand, in first-person PoV passages, the narrator is the protagonist herself and the readers should adopt her limited perspective; thus, any movement away from her and towards some other location (e.g., a non-established one in this case) should be processed more slowly with the verb come. In first-person PoV passages, therefore, both the violation of the stated rule and the adoption of the protagonist's perspective should cause comprehension difficulty in the come condition, compared to the go condition.

The results of Experiments 1a and 1b supported our expectations. When the destination location (e.g., seminar room) was non-established in the passage introductions, participants comprehended the sentences describing movement toward that location more slowly if the sentences were written with the verb come, compared to those written with the verb go. This happened both in third-person passages (Experiment 1a) and in first-person passages (Experiment 1b).

For Experiments 1c and 1d, the destination locations were all made established in the passage introductions. In third-person passages (Experiment 1c), our hypothesis was that when the secondary character made a movement towards a pre-established location (e.g., the assistant went/came into the seminar room), there should not be a significant reading time difference between the come and go conditions. That is, readers should comprehend both situations equally easily. This is because, as we mentioned earlier, the narrator in third-person passages is assumed to be omniscient. Since the locations were all pre-established and thus the narrator is equally close to them, the movements between those locations could be comprehended easily with any of these verbs, if the readers adopt the narrator's perspective. As for the first-person PoV passages (Experiment 1d), our hypothesis was that the movement of the secondary character should cause a disruption in reading time in the come condition compared to the go condition. This is because the readers are expected to adopt the protagonist's perspective in such passages. That is, movements away from the protagonist should be comprehended harder with the verb come, even though the destination locations were pre-established.

The results of Experiment 1d showed that participants read the sentences in the come condition more slowly than the ones in the go condition. This is as expected. That is, while reading passages written from first-person PoV, participants processed the sentences violating the protagonist's perspective harder than the sentences that were

in accordance with her perspective. This happened even though the destination locations were pre-established, suggesting that participants were comprehending the events from the protagonist's perspective in such passages.

The results of Experiment 1c, however, showed that the sentences in the come condition were still read more slowly than the sentences in the go condition. That is, even though the destination locations were made pre-established, participants still experienced some comprehension difficulty in the come condition while reading third-person PoV passages.

There may be several explanations for this unexpected finding. First, participants might, for some reason, have adopted the protagonist's perspective, even though the passages were written from third-person PoV. In all passages, the protagonist (e.g., Sarah) and the secondary character (e.g., assistant) were standing side-by-side at a certain place and talking to each other all the time until the target sentence. As we mentioned in the previous chapter, this interaction between the characters might have encouraged the participants to comprehend the events from the perspective of the two characters' location. If this is the case, then it is not surprising that the reading time slowed down in the come condition.

Another explanation might be that the filler sections in the passages were long. Participants, as they read the sentences, might have forgotten or had a weakened representation of the pre-established locations until they reached the target sentence. If this is the case, the slowed reading of the sentences in the come condition might be because of the de-establishment of the previously established locations, not because of adopting the protagonist's perspective.

In order to tackle this issue, we replicated Experiments 1c and 1d with shortened filler sections. We made a 54% reduction in the length of the filler sections. Although the filler section length does not affect the observed effects according to the studies in the literature (e.g., Smith & O'Brien, 2012), we still wanted to test it because our experiments were conducted online (i.e., they are not as controlled as the lab experiments).

Experiments 1e and 1f are the shortened replications of Experiments 1c and 1d, respectively. That is, in both experiments the destination locations were pre-established. In Experiment 1e, all passages were written from third-person PoV and in Experiment 1f they were written from first-person PoV.

The results, however, were still like the results of Experiments 1c and 1d. That is, regardless of the narrator PoV, participants read the sentences in the come condition more slowly than the sentences in the go condition.

Together, the results of Experiments 1a through 1f suggest that readers are inclined to comprehend the narratives from the protagonist's perspective (as evidenced by the slower reading of the sentences with the verb come), regardless of the narrator PoV and the pre-establishment of the destination location.

As mentioned before, the unexpected results in Experiment 1c as well as Experiment 1e (i.e., where the destination locations were pre-established, and the narrator PoV was third-person) can be explained like this: Although we argued that readers adopt the omniscient narrator's perspective in such passages and therefore their comprehension should not be disrupted by the verb come, the results indicated that it was. For now, the most probable explanation is that in passages where the characters are situated close and continuously foregrounded, readers tend to comprehend the events from the perspective of their location or choose the main character as their anchor point for perspective.

4.2. Discussion of Experiments 2a through 2d

In Experiments 2a through 2d, we structured our narrative passages in reverse manner: Unlike Experiments 1x, we held the protagonist and the secondary character separated in passage introductions. Each passage began with the protagonist (e.g., Sarah) standing inside a certain place (e.g., seminar room) which we called the destination location. The secondary character (e.g., assistant) was either established standing "outside the seminar room" (source established) or he was absent, and no one knew where he was (source non-established). Note that in the source non-established situation, the name of the secondary character was mentioned (e.g., Sarah was waiting to meet with an assistant), but the character was not physically established. Then, at some point in the passages, the secondary character enters the destination location (e.g., seminar room). The character's entering the destination location (i.e., the target sentence) was described either with the verb come or with the verb go.

We had different predictions as to how readers comprehend the target sentences depending on the manipulations of these two factors (i.e., establishment and verb) as well as the narrator PoV factor.

For Experiments 2a and 2b, we made the source information non-established in the passage introductions (i.e., the secondary character was absent). We hypothesized that when the secondary character made a movement into the destination location (e.g., the assistant went/came into the seminar room), the sentence with the verb go should cause a disruption in comprehension and thus be read more slowly than the sentence with the verb come. This is because the sentence with the verb go violates the rule for go-class verbs, which states that movement by a non-established entity cannot be described with go-class verbs. Come-class verbs are suitable for these situations.

We made this prediction both for the third-person PoV passages (Experiment 2a) and for the first-person PoV passages (Experiment 2b). In third-person PoV passages, even though we argued that readers adopt the omniscient narrator's perspective, the violation of the rule for go-class verbs should cause slower reading of the sentences in the go condition. On the other hand, in first-person PoV passages, the narrator is the protagonist herself and the readers should adopt her limited perspective; thus, any movement towards her (e.g., from a non-established entity in this case) should be

processed more slowly with the verb go. In first-person PoV passages, therefore, both the violation of the stated rule and the adoption of the protagonist's perspective should cause comprehension difficulty in the go condition, compared to the come condition.

The results of Experiments 2a and 2b were in line with our expectations. When the source information (e.g., the assistant and his location) was non-established in the passage introductions, participants comprehended the sentences describing that character's movement toward the protagonist more slowly if the sentences were written with the verb go, compared to those written with the verb come. This happened both in third-person passages (Experiment 2a) and in first-person passages (Experiment 2b).

For Experiments 2c and 2d, the source information (i.e., the secondary character with a location) was made established in the passage introductions. In third-person passages (Experiment 2c), our hypothesis was that when the secondary character made a movement into the protagonist's location (e.g., the assistant went/came into the seminar room), there should not be a significant reading time difference between the come and go conditions. That is, readers should comprehend both situations equally easily. This is because, as we mentioned earlier, the narrator in third-person passages is assumed to be omniscient. Since the locations and characters were all pre-established and thus the narrator is equally close to them, the movements between those locations could be comprehended easily with any of these verbs, if the readers adopt the omniscient narrator's perspective. As for the first-person PoV passages (Experiment 2d), our hypothesis was that the movement of the secondary character should cause a disruption in reading time in the go condition compared to the come condition. This is because the readers are expected to adopt the protagonist's perspective in such passages. That is, movements towards the protagonist should be comprehended harder with the verb go, even though the destination locations were pre-established.

The results of Experiment 2d showed that participants read the sentences in the go condition more slowly than the sentences in the come condition. This is as we had expected. That is, while reading passages written from first-person PoV, participants processed the sentences violating the protagonist's perspective harder than the sentences that were in accordance with her perspective. This happened even though the source information was pre-established, suggesting that participants were comprehending the events from the protagonist's perspective in such passages.

The results of Experiment 2c, however, showed that the sentences in the go condition were still read more slowly than the sentences in the come condition. That is, even though the source information (i.e., the secondary character at a certain place) was made pre-established, participants still experienced some comprehension difficulty in the go condition while reading third-person PoV passages.

The findings of Experiment 2c are in contradiction with our predictions. Although we argued that readers should adopt the omniscient narrator's perspective in such passages

and thus they should similarly process the deictic motion verbs come and go when these verbs describe movement between the established entities, the results indicated otherwise. The significant reading time difference between the come and go conditions may suggest that readers take the perspective of the protagonist while reading passages written from third-person point-of-view.

4.3. Overall Evaluation

The results so far seem to be in accordance with the earlier papers suggesting that readers adopt the protagonist's perspective while reading narratives (e.g., Black et al., 1979; Rall & Harris, 2000). But then the question arises: Why the Creer et al. (2019) and O'Brien and Albrecht (1992) studies suggest that in third-person PoV narratives readers do not adopt the protagonist's perspective? Their studies were well-controlled, and their passages were well-structured. Why then could we not reach the same conclusion as them?

In their passages, they used only the verb come, and the destination location was always pre-established. The protagonist (e.g., Kim) was standing either *outside* or *inside* that location (e.g., the health club). Then, at some point in the passage, "the instructor *came in* the door of the club" (i.e., target sentence). The secondary character (e.g., the instructor) was non-established before the target sentence. So, if the readers adopt the protagonist perspective, they should have read the target sentence (i.e., come in) more slowly in the condition that the protagonist was outside the health club. But the results showed no difference in reading times between the inside and outside conditions, suggesting that people are not sensitive to the protagonist's perspective while reading third-person passages (Creer et al., 2019; O'Brien & Albrecht, 1992).

Since our results are not in compliance with their conclusion, then maybe there is some other variable that is responsible for this discrepancy. Since our hypotheses in this study are quite complicated, maybe there is some underlying mechanism within the comprehension process that evades our attention. One possibility is that in our controversial experiments (i.e., 1c/e and 2c), establishing the secondary character from the beginning of the passages might have somehow encouraged the readers to select the main character (i.e., the protagonist) as their anchor point in comprehension, thus comprehending the passages from her perspective. However, in Creer et al. (2019) and O'Brien and Albrecht (1992) studies, since the secondary character was not established beforehand, there was no need for readers to form an anchor point in those passages.

To sum up, our experiments showed that while reading narrative passages, participants comprehended the events from the protagonist's perspective. If the movement was away from the protagonist, they processed it more easily with the verb go. Conversely, if the movement was toward the protagonist, they processed it more easily with the verb come. This happened regardless of the narrator PoV and of the establishment status of the destination or source information.

Theoretical Implications

As we mentioned earlier, discourse comprehension is a multi-level processing activity (Graesser, Millis, & Zwaan, 1997). While reading a discourse (e.g., a narrative), people not only represent mentally the verbatim information of the text but also other types of information (e.g., general world knowledge, inferences, pragmatic communication). The situation model is the level of comprehension wherein readers form a bridge between the information in the text and the extra-textual processes to form a coherent mental representation of the text (Graesser & Forsyth, 2013; Glenberg, Meyer, & Lindem, 1987; Bower & Morrow, 1990; Kintsch, 1998).

In the narrative domain, situation models consist of five aspects (i.e., protagonist, time, space, causality, intentionality) (Zwaan, Langston, & Graesser, 1995). Readers track these five aspects during reading and update their situation models as they encounter new information in the text. Of these five dimensions, space and protagonist were critical for the present study because the study's main focus (i.e., perspective taking in narrative comprehension) involves these two aspects. Whether readers mentally represent the spatial details in narratives from the protagonist's perspective was the key question in this study.

There is a debate in cognitive science literature regarding the nature of the situation models (Zwaan, 1999; Barsalou, 2008). One view states that text comprehension is in the form of amodal symbols (i.e., propositional statements), whereas the other view states that comprehension consists of perceptual symbols (i.e., analog, experience-like representations). Zwaan (2016, 2014) argues that both views can be true depending on the context, type, and demands of the text. According to this solution, a situation model of a text, especially in the narrative domain, can be composed of both propositional symbols and perceptual symbols. While readers represent some details in narratives mostly in the form of propositions, they can represent other kinds of information (e.g., perspective) mostly in the form of perceptual symbols.

Our findings of perspective-taking in this study can also be interpreted in terms of the RI-Val model of comprehension (O'Brien & Cook, 2016). RI-Val model is a theory that was constructed to explain discourse comprehension in general. According to this model, comprehension consists of three overlapping and passive processes: Resonance (R), Integration (I), and Validation (Val). In the Resonance stage, when the incoming information is read, long-term memory (LTM) is signaled with a passive resonance mechanism, and related information is activated. The activated content which is above a certain threshold is then linked with the contents in working memory. This linking stage is called the Integration stage. Then, the content of the integrated information is checked against reader's knowledge base (both contextual knowledge of text and the general world knowledge). This checking stage is called the Validation stage. So, in our experiments, when participants read information that was spatially incongruent to the protagonist's perspective (i.e., the verb "come" in Experiments 1a through 1f, and the verb "go" in Experiments 2a through 2d), the validation stage must have detected

these spatial inconsistencies and consequently caused the readers to experience some comprehension difficulty, evidenced by the slower reading times in these conditions.

Now we move on to the Conclusion chapter, where we provide the summary of the current study and give some direction for future research.





CHAPTER 5

CONCLUSION

In this thesis, we have investigated how perspective taking in narrative comprehension is affected by the use of deictic motion verbs, establishment, and narrator point-of-view. There are different views in the psycholinguistics literature on the issue of whose perspective is adopted during reading narratives. Some studies suggest that readers always take the protagonist's perspective (e.g., Black et al., 1979), while other studies suggest that it depends on several factors (e.g., Creer et al., 2019).

For instance, O'Brien and Albrecht (1992), by relying on their experimental data, suggest that people do not adopt the protagonist's perspective but instead adopt the omniscient narrator's perspective under normal reading circumstances while reading narratives written from third-person PoV (i.e., he, she). They also showed that if readers are explicitly instructed beforehand to take the protagonist's perspective, they can comprehend the events in the narratives from the protagonist's perspective (evidenced by slowed reading of the critical sentences).

Moreover, Creer et al. (2019) replicated the O'Brien and Albrecht (1992) findings and found the same results. They also showed that when the same passages were written from first-person PoV (i.e., I, me), participants were affected by the violation in the critical sentences (evidenced by the slowed reading), suggesting that they adopted the protagonist's perspective. Overall, their data suggest that under normal reading circumstances, people are sensitive to the protagonist's perspective only if the passages were written from first-person PoV. But in passages written from third-person PoV, people are not sensitive to the protagonist's perspective, unless there is an explicit instruction to do so.

In our experiments, we expanded this issue to include the deictic motion verbs and character/location establishment. We developed several hypotheses and tested them across 10 experiments. We basically argued that, under normal reading circumstances, reading first-person narratives would encourage the readers to adopt the protagonist's perspective, and reading third-person narratives would encourage the readers to

comprehend the events from the omniscient narrator's perspective (Creer et al., 2019). These were our main hypotheses.

Moreover, we developed some specific hypotheses regarding how deictic motion verbs and establishment influence the process of perspective taking in narrative comprehension. We argued that in first-person narratives, movements toward the protagonist should be comprehended more easily with the verb *come*, and movements away from the protagonist should be comprehended more easily with the verb *go*. This should happen regardless of whether certain location/character establishments are made.

We also argued that in third-person narratives, any movement toward the protagonist should be processed more easily with the verb *come*, and any movement away from the protagonist should be processed more easily with the verb *go*. However, unlike the first-person narratives, the establishment factor should be of critical importance this time. For the non-established situations, we expected the pattern of results just mentioned above. But for the established situations, we expected that there should be no difference in processing of the verbs *come* and *go*. This is because of the omniscient narrator's point of view. When all the relevant locations/characters are established, the movement between them should be comprehended equally easily with these two verbs, because the omniscient narrator are within the same distance from all established entities and hence the readers can reach them equally easily.

Our results showed that our predictions for the first-person narratives were supported. Depending on the movement's direction, participants comprehended either the verb *come* or the verb *go* more easily. This happened regardless of the establishment status. That is, in passages written from first-person PoV, readers consistently adopted the protagonist's perspective.

Our results for the third-person narratives, however, were a bit controversial. For the non-established situations, as we had expected, participants comprehended either the verb *go* or the verb *come* more easily, depending on the direction of movement. We interpreted these findings according to our rules for the deictic motion verbs. However, for the established situations, our data showed that participants still comprehended these verbs depending on the direction of the movement. That is, even though the proper establishments were made, participants still processed the verbs harder that were inconsistent with the protagonist's perspective, suggesting that they did not adopt the omniscient narrator's perspective.

We provided an explanation in the previous chapter regarding why participants did not take the omniscient narrator's perspective in third-person passages where the establishments were made beforehand. We mentioned the anchor point explanation to interpret these controversial findings. That is, when the two characters are established simultaneously in passages, readers may choose the main character as their anchor point and comprehend the events in passages from that perspective. This explanation needs to be tested. Since the only studies that support the omniscient narrator view

were the O'Brien and Albrecht (1992) and Creer et al. (2019) studies, we can replicate these studies by adding the establishment factor therein. In these studies, the secondary character was always non-established, and the results showed that readers were not affected by the protagonist's perspective. In order to see whether our anchor point explanation is true, we can make the secondary characters in these researcher's passages *established* and compare the results with the original (non-established) situation. If readers take the protagonist's perspective in this new condition, then we can be confident that our anchor point explanation might have some validity.

In short, this thesis showed us that perspective taking in narrative comprehension is quite a complicated topic. Even though we manipulated several variables to see if there are situations where readers do take the omniscient narrator's perspective, our results so far indicated that readers were consistently adopting the protagonist's perspective while reading narratives. We will continue investigating this topic by extending our hypotheses and conducting new studies to see if there are any constraints of or any additional mechanisms underlying perspective taking.

Limitations and Future Directions.

There may be some limitations of our study. One possible limitation is that all our experiments were conducted online via the internet. All participants joined the study wherever they wanted to. One downside of online studies is that the attention and involvement of participants might not be like the controlled laboratory experiments. So, in future studies, it will be a good idea to conduct these experiments in laboratories.

Improving our hypotheses by including additional mechanisms would also be a good idea to better understand why some of our predictions were not supported. Deciphering the importance of the secondary characters and the possible finer mechanisms underlying the deictic motion verbs might help us understand the perspective taking issue better. Only then, we can be confident about what our findings mean and can take a firmer position regarding how to fully grasp the perspective taking issue in narrative comprehension.

Lastly, our experiments in Turkish included very few participants (see the beginning of Chapter 3 and the Appendix A for more information). A last thing to recommend for future studies, therefore, is to recruit a sufficient number of Turkish-speaking participants to see if we can obtain findings similar to our experiments in English.



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APPENDICES

APPENDIX A

INFORMATION ABOUT TURKISH EXPERIMENTS

These experiments were similar to the English experiments 1x and 2x. We first provide some background, then hypotheses, then methodology, then results and discussions.

A.1. Turkish experiments presented in January 2022 TIK Committee.

Deictic verbs of motion.

Deictic motion verbs are verbs which describe movement according to some perspective. For instance, the verb “go” emphasizes “departure” (e.g., He *went* home around midnight), whereas the verb “come” emphasizes “arrival” (e.g., He *came* home around midnight) (Fillmore, 1975; Nakazawa, 2006). These verbs are used frequently in conversations. Conversation is a type of communication in which a speaker and an addressee take part. In conversations, people take not only their own perspective but also the perspective of the addressee. Although this is not a universal feature, it occurs in many languages (Nakazawa, 2006, 2007, 2009). In Turkish, the uses of *gel-* and *git-* are in most respects similar to those of English *come* and *go* (Gathercole, 1977). Furthermore, Turkish language, like English language, recognizes the addressee as a possible center of motion (Gathercole, 1977, 1978). That is, both English and Turkish allow locations of the speaker and the addressee to act as the deictic center both at the utterance time and the reference time. In other words, native speakers of Turkish and English can use the verb “come” (*gel*) while describing a movement towards themselves as well as towards the addressee. This occurs both for the current content of the conversation (i.e., utterance time) and for some past or future time (i.e., reference time). For instance, a child might respond to his calling

mother and say that “I am coming” (Geliyorum!), indicating that he is speaking according to his mother’s current perspective. This can also occur for a future reference time; “Are you coming to the party tonight?” (Akşama partiye geliyor musun?).

Conversations and narratives (stories) are similar in some respects in terms of the use of deictic motion verbs. However, since conversations occur in interactive environments, they may have more presuppositions than narratives. In narratives, the use of deictic motion verbs may mostly depend on the narrator’s point of view. Therefore, the logic of deictic motion verbs may somewhat be different in narratives. In order to formulate the logic of deictic motion verbs in narratives, we should first look at the narrator point of view in more detail.

Narrative comprehension and narrator perspective.

Every story has a narrator. The narrator’s position depends on the point-of-view the story is written. In third-person narratives, the narrator is some omniscient being who overlooks the story content. In first-person narratives, the narrator is the protagonist himself and therefore his perspective is the same as the protagonist. Since narrative comprehension is affected by the narrator’s perspective, we can claim that 1) third-person point of view encourages readers to comprehend the narratives from a free/broad perspective, 2) first-person point of view encourages readers to comprehend the narratives from a confined/limited perspective. With this regard, we can use the deictic motion verbs and their prerequisites to understand this difference better.

While people read stories, they create a mental representation of the story, which is also called situation model or mental model. This representation is updated as the reading goes on (Graesser, Millis, & Zwaan, 1997; Glenberg, Meyer, & Lindem, 1987; Zwaan, Langston, & Graesser, 1995).

All established characters and places occupy some space in the mental model. For instance, the protagonist is introduced and described as being at some place. At this point, the reader forms his mental model with that information. Any further information within this environment will be added to the mental model as the story goes on.

Rules for using deictic motion verbs in narratives.

The source-path-goal schema is generally used to describe the components of the motion verbs. For instance, “Ahmet was at the restaurant, then he went to the cinema”. Here, Ahmet’s source location is the restaurant. His goal or destination location is the cinema. The path information is not evident in this sentence; it can be omitted.

Describing the movements of the story characters with deictic motion verbs may be subject to some rules. These rules are the prerequisites of the deictic motion verbs for the narrative semantics. The rules are described below. Note that these rules are not valid for the first sentence of the narratives, because at the first sentence the mental model is being formed from scratch.

For *git/götür*, pre-establishing the agent with his source location is mandatory, but pre-establishing the destination location of the agent is optional. For example, in a story content, “Ahmet sinemaya gitti” is acceptable only if Ahmet has been introduced at some place in the story world earlier. Although pre-establishing Ahmet with a source location is mandatory, it is optional to establish the sinema (destination location) beforehand.

For *gel/getir*, pre-establishing the destination location is mandatory, but pre-establishing the agent with his source location is optional. For instance, in a story content, “Ahmet sinemaya geldi” is acceptable only if the sinema (destination location) has been introduced beforehand in the story world. However, pre-establishing the agent (Ahmet) with a source location is optional. Note that establishing a person means that he should be placed at some location in the story. Just mentioning the name of a person (e.g., the protagonist is thinking about his friend Ahmet) does not suffice to establish him.

Narrator perspective and deictic motion verbs.

The proper use of deictic motion verbs in a story is affected by the narrator perspective. We have some hypothesis for the interaction between the narrator perspective and the use of deictic motion verbs.

In third-person narratives, all established locations and agents are *equidistant* to the narrator. (Note that this may be valid only in small environments. In huge environmental shifts, such as geographical distances or a driving distance, the established locations may be de-established). Non-established locations and agents are more distant to the narrator than the established ones. That is, from narrator's (and thus reader's) perspective, established locations are closer than the non-established ones. One prediction then may be like this: If a movement from an established location to a non-established one occurs, then only *git/götür* are acceptable. That is, movement from a close location to a distant location allows only the use of *git/götür*. Another prediction is: If a movement from an established location to another established location occurs, then both *git/götür* and *gel/getir* are acceptable. That is, movement from a close location to another equally close location allows the use of both *git/götür* and *gel/getir* (because all established locations are equally distant to the narrator). These predictions will be tested in Experiment 1a below.

In first-person narratives, the protagonist is the narrator. Therefore, even if the locations are established, the ones close to the protagonist are coded close, and the ones distant from the protagonist are coded distant. As for the non-established locations and agents, they are assumed to be distant to the narrator and thus to the protagonist. A possible prediction then is: If a movement away from the protagonist to somewhere else (whether it is pre-established or not) occurs, only *git/götür* are acceptable. This prediction will be tested in Experiment 1b below.

In these experiments, we will also have the opportunity to test some portions of the general rules for the deictic motion verbs described above. For *git/götür*, the portion of

the rule was that pre-establishing the destination location is optional. So, we predict that reading times for sentences describing movements to a pre-established destination location will be no different than those describing movements to a destination location which is not pre-established. As for *gel/getir*, the portion of the rule was that pre-establishing the destination location is mandatory. So, we predict that reading times for sentences describing movements to a pre-established destination location will be faster than those describing movements to a destination location which is not pre-established.

Experiment 1a (Turkish)

In Experiment 1a, we will test our predictions for third-person narratives. Since we claim that in such narratives, the narrator is an overlooking/omniscient person whose perspective the readers adopt, our predictions are as follows: 1) any movement away from the protagonist to a non-established location (i.e., a distant location) will be processed more easily with the verbs *git/götür* than the verbs *gel/getir*. 2) any movement away from the protagonist to an established location (i.e., a distant location for the protagonist but a close one for the omniscient narrator) will be processed equally well with the verbs *git/götür* and *gel/getir*. We will use reading times to measure processing difficulty.

See Table 1 for a sample passage. The protagonist, Harun, was sitting in the park. His friend Zeynep is also sitting next to him. That is, both characters are established at the source location. In one condition, the destination location is pre-established (e.g., there is a clothing store across from the park), whereas in the other condition, the destination location is not pre-established. After the protagonist (Harun), his friend Zeynep (secondary character and the agent of motion), and their location was introduced, there are 4-to-5 filler sentences. These filler sentences are about the protagonist's recent life experiences. Right after the filler sentences, the target sentence appears. The target sentence describes the movement of the secondary character (e.g., Zeynep) to a location which is either pre-established or not (e.g., clothing store). Right after the target sentence, there is a spillover sentence. This sentence is measured in order to see if there is any late effect of processing difficulty. Then there are a few sentences to conclude the passage.

Table 1. Sample passage for Experiment 1a (third-person point-of-view).

Introduction Harun parkta oturmuş kahvesini içiyordu. (<u>destination location not established</u>) Harun, giyim mağazasının karşısındaki parkta oturmuş kahvesini içiyordu. (<u>destination location established</u>) Arkadaşı Zeynep de Harun'un yanında oturmuş, elindeki elbise paketini kontrol ediyordu. Filler Sentences Harun bugün çok çalışmıştı. İş yerinde senelik izne çıkan iki kişi vardı ve Harun onların işlerini de yapmak zorundaydı. Neyse ki pratik bir yapısı olduğu için işleri geciktirmeden tamamlayabiliyordu. Kahvesi bitmek üzereydi. Target Sentece O sırada Zeynep paketi giyim mağazasına götürdü. O sırada Zeynep paketi giyim mağazasına getirdi. Conclusion Geçen hafta satın aldığı ürün biraz küçük çıkmıştı. (Spillover Sentence) Onu bir beden büyüğü ile değiştirmek istiyordu. Comprehension Question İş yerinde senelik izne çıkan iki kişi mi vardı?

One prediction is that when the destination location (e.g., clothing store) is pre-established, the movement of the second character (Zeynep) to that location will be suitable both for the getir and götür verbs. The reason is that the narrator is equally close to the park and to the clothing store. Readers are expected to take the narrator's perspective; therefore, Zeynep's movement to the clothing store can be described both with getir and götür. So, the reading times will be similar.

A second prediction is that when the destination location is not pre-established, the movement of Zeynep to the clothing store will be suitable only for the verb götür. Since the clothing store is not present in the narrated world (and hence not in the reader's mental model) before the target sentence, the movement to the store can be described only with the verb götür. So, the reading time for the sentence with getir will be slower than the sentence with götür.

Black et al. (1979) and relevant research, since they are in favor of the protagonist-perspective view, would predict that the sentences with getir would be read more slowly regardless of the pre-establishment of the destination location. This experiment, therefore, gives us an opportunity to test their theory as well.

Method

Participants.

Sixteen people (12 females) ($M=27.6$, $SD=3.50$) were recruited in the experiment. Most of them were university undergraduates or graduates. All of the participants were native Turkish speakers. Of these 16 participants, 10 of them were recruited from prolific.co. While the other participants did not receive any reward for their participation, the prolific.co participants were paid £2.25 for their participation.

Materials.

The materials were 24 experimental passages and 8 filler passages. Filler passages did not contain any deictic motion verb; they were designed to prevent participants from detecting the purpose of the study. Only the experimental passages were analyzed. All passages were written from third-person point-of-view (e.g., he, she). Materials were created to be used in a 2 (destination: pre-established, not pre-established) by 2 (verb: come-class, go-class) within-subjects design.

See Table 1 for a sample passage. In each passage, the first sentence stated the location of the protagonist (e.g., Harun was at the park). This location was the source location. In half of the passages, the destination location was also stated (i.e., established) at the beginning of the passages (e.g., the clothing store). The secondary character (e.g., Zeynep) (i.e., the agent of motion) was always established as sitting next to the protagonist. In half of the passages, the secondary character was someone related to the protagonist and was described with a proper noun (e.g., his friend Zeynep), while in the other half of the passages, he was just another person and was described with a common noun (e.g., a postman). The following four-to-five sentences (i.e., filler sentences) were about the protagonist's recent life experiences and did not mention the location of the protagonist or anything about the secondary character. The filler sentences were designed to give a context to the stories and to form the basis for comprehension questions. After the filler sentences, the target sentence re-introduced the secondary character as she moves (e.g., Then Zeynep took/brought the package to the clothing store). Half of the passages had target sentences with a basic verb (i.e., gel, git); the other half of the passages had target sentences with a causative verb (i.e., getir, götür). The basic and causative verbs are analyzed together according to their deixis. That is, verbs gel and getir are analyzed together and they are called come-class verbs. Also, verbs git and götür are analyzed together and they are called go-class verbs. Although each passage has two versions of target sentence (i.e., both come-class and go-class), they have only one of the two verb types (i.e., either a basic verb or a causative verb). Target sentences were on the average 42.7 characters ($SD=6.97$). The target sentence was followed by a conclusion part consisting of a few sentences. Right after the last conclusion sentence, a comprehension question appeared at the center of the screen. Comprehension questions were in yes-no format. The number of correct yes and no responses were equal.

Passages were constructed in four sets. In each set, there were 24 experimental passages. Each set contained 6 passages in each of the four conditions: established/come-class, non-established/come-class, established/go-class, non-established/go-class. Each passage appeared only once in each set, but its condition varied across the four sets.

Procedure.

The experiment was designed in OpenSesame 3.3.10 software. Moreover, JATOS, an online tool for conducting experiments, was used in order to generate links and run the experiment online.

Participants were incidentally assigned to one of the four material sets. Since the experiment was conducted via the internet, a single-use link was generated and sent to each participant's e-mail address. Prolific.co participants, however, reached the study link via the platform's interface. When participants clicked their links, the experiment screen opened on their web browsers in full screen mode.

Participants first read the informed consent and the instructions. After the Instructions page, the trials began. Each trial consisted of reading a passage and answering a comprehension question about that passage.

For each passage, the word "BAŞLA" appeared at the center of the screen. When participants felt themselves ready to start, they pressed the right arrow key on their keyboards. This action erased the "BAŞLA" screen and displayed the first line of the passage. Each press on the right arrow key displayed a new line of text. That is, participants read each passage line-by-line, in a self-paced manner.

Comprehension time was the time between two consecutive right-arrow key presses. After the final line of each passage, the word "SORU" appeared at the center of the screen for 500 ms and the question then appeared automatically. Participants were required to press either E key or H key to respond to the question. If their response was incorrect, the word "YANLIŞ!" appeared at the center of the screen for 500 ms.

Before the experimental passages, participants completed a practice session consisting of two practice passages so that they could familiarize themselves with the procedure. The experiment lasted approximately 20 minutes.

Results

For each participant, reading times that were ± 2.5 standard deviations beyond the mean of their target sentence or spillover sentence were discarded. This resulted in the loss of less than 4% of the data across the two experiments.

Participants' performance on the comprehension questions was high. On average, participants answered 84% of the questions correctly across the two experiments. This shows that they understood the passages well.

Reading times are shown in Table 2. Since the target sentences had differing lengths (mean number of characters=42.7, SD=6.97), we used the reading time per syllable to control for the noise. A 2 x 2 repeated-measures ANOVA was conducted to test the effects. F1 and

t1 refer to the analyses at the subjects level; F2 and t2 refer to the analyses at the items level (i.e., the passages).

Table 2. Mean reading times per syllable (in milliseconds) for experiment 1a.

	Passage condition			
	established		non-established	
	come-class	go-class	come-class	go-class
Target Sentence	99 (25)	94 (22)	98 (25)	102 (28)
Spillover Sentence	104 (31)	97 (24)	102 (31)	93 (24)

Standard deviations are in parentheses.

The analyses for the target sentences showed that there are no significant main effects or an interaction effect at the level of subjects (all $ps > .18$). At the level of items (i.e., passages), the main effects were insignificant ($ps > .33$), but the interaction effect is somewhat marginally significant, $F2(1,23)=3.36$, $p=.08$. Planned contrasts showed that the effect is because of the go-class verbs. Go-class verbs in the non-established condition was read more slowly than the go-class verbs in the established condition, $t2(45.96)=2.007$, $p=.05$. This effect was unexpected in terms of our hypothesis. Since the interaction and the follow-up contrast is marginal, the effect is difficult to interpret.

The analyses for the spillover sentences showed that at the level of subjects, only the main effect of Verb was significant, $F1(1,15)=7.78$, $p=.01$, $\eta^2_p=.34$. That is, spillover sentences after the come-class verbs were read more slowly than those after the go-class verbs. At the level of items, only the main effect of Verb was significant, $F2(1,23)=10.58$, $p<.01$, $\eta^2_p=.32$. That is, the same effect on the subjects level were evident at the level of passages. These effects were also unexpected in terms of our hypotheses.

Experiment 1b (Turkish)

In experiment 1b, all the passages were the same except that they were written from first-person point-of-view (e.g., I, me). The predictions are as follows: Since the narrator is the protagonist himself, then any movement away from the protagonist to somewhere else should be described with a go-class verb (e.g., götür). This should be the case whether the destination location was pre-established or not. Therefore, come-class verbs (e.g., getir) should always be read more slowly than the go-class verbs. See Table 3 for a sample passage.

Table 3. Sample passage for Experiment 1b (first-person point-of-view).

Introduction Parkta oturmuş kahvemi içiyordum. (<u>destination location not established</u>) Giyim mağazasının karşısındaki parkta oturmuş kahvemi içiyordum. (<u>destination location established</u>) Arkadaşım Zeynep de benim yanımda oturmuş, elindeki elbise paketini kontrol ediyordu. Filler Sentences Ben bugün çok çalışmıştım. İş yerinde senelik izne çıkan iki kişi vardı ve ben onların işlerini de yapmak zorundaydım. Neyse ki pratik bir yapım olduğu için işleri geciktirmeden tamamlayabiliyordum. Kahvem bitmek üzereydi. Target Sentece O sırada Zeynep paketi giyim mağazasına götürdü. O sırada Zeynep paketi giyim mağazasına getirdi. Conclusion Geçen hafta satın aldığı ürün biraz küçük çıkmıştı. (Spillover Sentence) Onu bir beden büyüğü ile değiştirmek istiyordu. Comprehension Question İş yerinde senelik izne çıkan iki kişi mi vardı?

Method

Participants.

Twenty people (11 females) ($M=26.7$, $SD=5.47$) were recruited in the experiment. Most of them were university undergraduates or graduates. All of the participants were native Turkish speakers. Of these 20 participants, 8 of them were recruited from prolific.co. While the other participants did not receive any reward for their participation, the prolific.co participants were paid £2.25 for their participation.

Materials.

The same materials in the Experiment 1a were used, with the exception that they were written from first-person point-of-view (e.g., I, me).

Procedure.

The procedure was the same as described in Experiment 1a.

Results

The same processes described in the previous experiment were applied in the analyses of this experiment. Reading times per syllable are shown in Table 4.

The analyses for the target sentences showed that at the level of subjects, the main effects were insignificant ($ps > .30$). However, there was a significant verb x destination interaction. $F(1,19)=4.52$, $p < .05$, $\eta^2_p = .19$. Planned contrasts showed that the only significant effect was among the come-class verbs. That is, come-class verbs in the non-established condition were read more slowly than the come-class verbs in the established condition, $t(36,8)=2.30$, $p < .05$. At the level of items, the only significant effect was on the interaction, $F(1,23)=4.56$, $p < .05$, $\eta^2_p = .17$. The planned contrasts, however, did not yield any significant comparisons (all $ps > .13$).

The analyses for the spillover sentences showed that at the level of subjects, all effects were insignificant ($ps > .16$). At the level of items, there was no significant effect (all $ps > .21$).

Table 4. Mean reading times per syllable (in milliseconds) for experiment 1b.

	Passage condition			
	established		non-established	
	come-class	go-class	come-class	go-class
Target Sentence	97 (27)	104 (32)	105 (31)	101 (29)
Spillover Sentence	111 (31)	109 (31)	116 (40)	109 (36)

Standard deviations are in parentheses.

Discussion

We had different predictions for the passages written from third-person point-of-view and for the passages written from first-person point-of-view.

In third-person passages, we argued that the narrator has an omniscient (broad) perspective and hence readers take that perspective while they read stories. Since the deictic motion verbs (e.g., *gel*, *git*, *götür*, *getir*) are related to perspective, we thought these verbs could be used to study perspective-taking in narrative comprehension. We also set some rules for the deictic motion verbs for narrative semantics and argued that these rules interact with the narrative comprehension.

We predicted that, in the third-person passages, when the destination location was not pre-established, any movement to that location should be described only with a go-class verb. Therefore, reading the description with a come-class verb should disrupt the

comprehension and lead to a slower reading time. Moreover, if the destination was pre-established, then there should be no difference between the go-class and come-class descriptions because the narrator can easily access to that location due to his broad perspective.

The results, however, did not support our hypothesis. The only significant effect was on the spillover sentences after the verbs. That is, sentences after the come-class verbs were read more slowly than sentences after the go-class verbs. If this effect had been on the first-person passages, it may be relevant, but it is hard to interpret it in third-person passages. One explanation may be that people adopt the protagonist perspective in such stories (i.e., a contradiction to our hypotheses). Another explanation may be that the spillover sentences mostly refer back to the protagonist; that is, the target sentence turned the focus on the secondary character, and then spillover sentence turned the focus back on the protagonist again, this may lead to a disturbance of topic shift, especially after the come-class verbs. Another explanation may be the rules for *gel/getir*. That is, when the destination location is not pre-established, any movement towards that location described with the verbs *gel/getir* will be processed more slowly than when it is pre-established. However, this would make more sense if it occurred in the target sentence.

In first-person passages, we argued that the narrator is the protagonist himself. Therefore, he is the same limited perspective as the protagonist. Therefore, we predicted that any movement away from the protagonist will be processed more easily with the go-class verbs than with the come-class verbs. This should occur whether the destination location is pre-established or not.

The results, however, did not support our hypothesis. We predicted that regardless of the destination location's pre-establishment, the come-class verbs should be read more slowly than the go-class verbs in first-person passages. However, the results did not show this. But we had one interesting interaction contrast: Come-class verbs in the non-established condition were read more slowly than the come-class verbs in the established condition. This may be taken as support for our rule of *gel/getir*. That is, establishing the destination location beforehand is mandatory for come-class verbs; therefore, come-class sentences will be processed more easily when the destination location is pre-established than when it is not pre-established, as shown in the results. Moreover, the indifference between the go-class sentences between the established and non-established conditions may also be taken as evidence for our *git/götür* rule. That is, pre-establishing the destination location is optional; therefore, there should be no difference in terms of processing difficulty in the go-class sentences whether the destination location was pre-established or not. This was shown in the results by the insignificant comparison between these two conditions.

All in all, our hypotheses were mostly not supported. There may be several reasons, both theoretical and methodological. One theoretical reason may be that people may not be sensitive to the distinction between the come-class verbs and go-class verbs as we thought they are. Another reason may be that the filler sentences in the stories may have complicated the processing of the movement of the secondary character (i.e., the agent

of motion). The filler sentences were all about the protagonist's life. Then the target sentence appeared and described the secondary character as moving to a location. A successful comprehension should take into account the previously stated position of that character, which was described before the filler sentences. When readers see and read the target sentence, they should access that character's first location (i.e., source location) so that they can clearly comprehend the trajectory of his movement. If the filler sentences somehow caused the readers to fail to integrate that knowledge, then this may be the reason why our hypotheses were not supported. So, as a future direction, we can re-arrange the passages such that the secondary character will stay in focus during the filler sentences so that his source location will be sufficiently active in the mental model of the reader.

A.2. Turkish experiments presented in June 2022 TIK Committee.

In the previous semester, we tested these hypotheses using different narratives, but our expectations were not supported. We thought that this happened because the filler sentences put the secondary character out of focus and consequently disrupted his later integration to the mental model. Therefore, in the present study, we designed the filler sentences such that both the protagonist and the secondary character stayed in focus (see also Myers et al., 1994). Moreover, in the previous study, the relation between the source and destination locations was not always typical. In the non-established condition, this might have caused the target sentence to seem odd, because it described the destination location with a definite noun. To eliminate this problem, in each narrative, we made the location relation familiar. With this modification, describing the destination location at the target sentence with a definite noun should not seem odd in the non-established condition (see also Heim, 2011; Abbott, 2006; Walker & Yekovich, 1987).

Experiment 1a (Turkish, v2)

In Experiment 1a (version 2), we will test our predictions for third-person narratives. The hypotheses are the same as in the previous semester. Only the content of the passages was changed in order to hold the secondary character in narrative focus during the filler sections.

Table 1. Sample passage for Experiment 1a (v2) (third-person point-of-view).

Introduction Hande, elindeki çiçek buketi ile fakültenin içinde yürüyordu. Bir sınıfın önünde, asistanlardan birini gördü. (non-established) Seminer salonunun karşısındaki sınıfın önünde, asistanlardan birini gördü. (established) Hande hemen asistanın yanına koştu ve ona yapılması gereken işleri anlatmaya başladı. Filler Sentences Bölüm kurucularından olan emekli bir hoca, öğleden sonra bir sunum yapacaktı. Hande, asistana sunum öncesinde halledilmesi gereken işleri tarif etti. Çiçekleri de sunum bitiminde hocaya vermesini rica etti. Asistan, Hande'nin söylediklerini not ettikten sonra Target Sentence çiçekleri alıp seminer salonuna götürdü. (go-class) çiçekleri alıp seminer salonuna getirdi. (come-class) Spillover Sentence Sunum, yarım saat içinde başlayacaktı. Closing Hande, işlerin beklediğinden de kolay halloluyor olmasına sevindi. Sunum başlamadan önce kendisine bir kahve ısmarlamaya karar verdi. Comprehension Question Sunumu yeni hocalardan biri mi yapacaktı? H

Method

Participants.

Twenty people (8 males) (age: $M=30.4$, $SD=3.8$) participated in the experiment. They were all native speakers of Turkish. All of them except three were recruited from prolific.co. The prolific.co participants were each paid £1.75 for their participation.

Materials.

The materials were 24 passages. All passages were written from third-person point-of-view (e.g., he, she). Materials were created to be used in a 2 (destination: established, non-established) by 2 (verb: come-class, go-class) within-subjects design.

Each passage consisted of five sections: Introduction, Filler Sentences, Target Sentence, Spillover Sentence, Closing. See Table 1 for a sample passage.

In the Introduction, the protagonist (e.g., Hande) was introduced. There was also a secondary character (e.g., the assistant). The protagonist and the secondary character were

standing side-by-side at some location (i.e., source location). The source location was stated either on its own (e.g., bir sınıfın önü) or in relation to some other place (e.g., seminer salonunun karşısındaki sınıfın önü). We call the former “non-established” and the latter “established” to specify the two conditions of the ‘destination’ variable.

After the Introduction, there was a filler section. This section consisted of four sentences on average (mean number of words=31). This section was designed to background the location information, to give a context to the stories, and to form the basis for comprehension questions. In this section, the protagonist and the secondary character engage in some activity or dialogue.

Right after the filler section, there appears the target sentence. In this sentence, the secondary character moves towards another location (i.e., destination location). This location was either pre-established in the Introduction section or not. The movement was described either with a come-class verb or with a go-class verb. In half of the passages, the verbs were basic (i.e., gel, git); in the other half, they were causative (i.e., getir, götür). The target sentences were on average 38.6 characters ($SD=2.5$).

Right after the target sentence, there is a spillover sentence (character length: $M=39.4$, $SD=2.6$). This sentence is measured in order to see if there is any late effect of processing difficulty.

The spillover sentence was followed by a brief conclusion consisting of a few sentences. Right after the last conclusion sentence, a comprehension question appeared at the center of the screen. Comprehension questions were in yes-no format. The number of correct yes and no responses were equal.

Passages were constructed in four sets. In each set, there were 24 passages. Each set contained 6 passages in each of the four conditions: established/come-class, non-established/come-class, established/go-class, non-established/go-class. Each passage appeared only once in each set, but its condition varied across the four sets.

Procedure.

The procedure was the same as described in the experiments conducted in the last semester.

Results

For each participant, reading times that were 3 standard deviations beyond the mean of their target sentence or spillover sentence were discarded. This resulted in the loss of 4% of the data in this experiment. Participants’ performance on the comprehension questions was high. On average, participants answered 90% of the questions correctly in this experiment. This shows that they understood the passages well.

Reading times are shown in Table 2. A 2 x 2 repeated-measures ANOVA was conducted to test the effects. We tested the effects both at the subjects level and at the passages level. However, we only report analyses at the subjects level because none of the analyses at the passages level were significant. This may probably because of the low number of subjects (i.e., 20). Since each passage has 4 versions and any subject can see only one version of a passage, the number of subjects per version was 5. However, ideally, there should be at least 10 subjects per version, demanding a total number of at least 40 subjects for the experiment. But since this is a pilot study and the current results are informative, we can still interpret the results with some confidence.

Table 2. Mean reading times (in milliseconds) for experiment 1a.

	Passage condition			
	established		non-established	
	come-class	go-class	come-class	go-class
Target Sentence	1383 (299)	1381 (279)	1503 (347)	1391 (343)
Spillover Sentence	1350 (293)	1344 (270)	1435 (425)	1389 (320)

Standard deviations are in parentheses.

Since our hypotheses require analyzing the two factors (i.e., destination and verb) together, we looked only to the interaction effect. For the target sentences, although the pattern of data are consistent with our expectations, the interaction effect did not reach significance ($F(1,19)=2.36$, $p=.14$, $\eta^2_p=.11$). This non-significant interaction may be because of the low number of subjects. However, we still wanted to break down this weak interaction to figure out how the two factors were influenced by each other. Planned comparisons showed that when the destination location was not pre-established, come-class verbs were read more slowly than the go-class verbs ($F(1,19)=5.02$, $p<.05$, $\eta^2_p=.21$). When it was pre-established, however, there is no significant difference between the reading times of the two verbs ($F(1,19)=0.002$, $p>.96$, $\eta^2_p=.001$). These results are consistent with our hypotheses. Lastly, the analyses showed that there are no significant effects at the spillover sentences ($.20<ps<.35$).

Experiment 1b (Turkish, v2)

In experiment 1b (version 2), all the passages were the same except that they were written from first-person point-of-view (e.g., I, me). The predictions are as follows: Since the narrator is the protagonist himself, then any movement away from the protagonist to somewhere else should be processed more easily with a go-class verb (e.g., götür). This should be the case whether the destination location was pre-established or not. Therefore, come-class verbs (e.g., getir) should always be read more slowly than the go-class verbs. See Table 3 for a sample passage.

Table 3. Sample passage for Experiment 1b (v2) (first-person point-of-view).

Introduction Elimdeki çiçek buketi ile fakültenin içinde yürüyordum. Bir sınıfın önünde, asistanlardan birini gördüm. (non-established) Seminer salonunun karşısındaki sınıfın önünde, asistanlardan birini gördüm. (established) Hemen asistanın yanına koştum ve ona yapılması gereken işleri anlatmaya başladım. Filler Sentences Bölüm kurucularından olan emekli bir hoca, öğleden sonra bir sunum yapacaktı. Asistana, sunum öncesinde halledilmesi gereken işleri tarif ettim. Çiçekleri de sunum bitiminde hocaya vermesini rica ettim. Asistan, söylediklerimi not ettikten sonra Target Sentence çiçekleri alıp seminer salonuna götürdü. (go-class) çiçekleri alıp seminer salonuna getirdi. (come-class) Spillover Sentence Sunum, yarım saat içinde başlayacaktı. Closing İşlerin beklediğimden de kolay halloluyor olmasına sevindim. Sunum başlamadan önce kendime bir kahve ısmarlamaya karar verdim. Comprehension Question Sunumu yeni hocalardan biri mi yapacaktı? H
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Method

Participants.

Sixteen people (5 males) (age: $M=31.4$, $SD=3.99$) participated in the experiment. All of the participants were native Turkish speakers. They were recruited from prolific.co. They were each paid £1.75 for their participation.

Materials.

The same materials in the Experiment 1a were used, with the exception that they were written from first-person point-of-view (e.g., I, me).

Procedure.

The procedure was the same as described in Experiment 1a.

Results

Participants' performance on the comprehension questions was high. On average, participants answered 92% of the questions correctly in this experiment. This shows that they understood the passages well.

The same processes described in the previous experiment were applied in the analyses of this experiment. For each participant, reading times that were 3 standard deviations beyond the mean of their target sentence or spillover sentence were discarded. This resulted in the loss of less than 3% of the data in this experiment.

Reading times are shown in Table 4. The analyses for the target sentences showed that there is a marginally significant interaction effect ($F(1,15)=3.72$, $p=.07$, $\eta^2_p=.20$). Planned comparisons were conducted to see the nature of this interaction. When the destination location was not pre-established, come-class verbs were read more slowly than the go-class verbs ($F(1,15)=8.34$, $p=.01$, $\eta^2_p=.39$). This was consistent with our expectation. We also expected the same pattern for the established condition, but the analyses showed that there is no significant difference between the two verbs in this condition ($F(1,15)=0.1$, $p=.75$, $\eta^2_p=.009$). We wondered if the effect was delayed to the next sentence. To test this, we analyzed the reading times of the spillover sentences. Although the difference between the verbs was greater in the spillover sentence relative to the target sentence, the outcome was not significant ($p=.35$). We discuss this unexpected result in the discussion section.

Table 4. Mean reading times (in milliseconds) for experiment 1b (v2).

	Passage condition			
	established		non-established	
	come-class	go-class	come-class	go-class
Target Sentence	1395 (309)	1375 (410)	1567 (488)	1395 (428)
Spillover Sentence	1457 (481)	1384 (411)	1443 (372)	1442 (498)

Standard deviations are in parentheses.

Tests of the rules for deictic motion verbs.

We described above that we had also some rules for the deictic motion verbs. Our passages allowed us to test some portions of these rules. We conducted simple effects analyses to test these rules. The analyses for the go-class verbs showed that subjects processed these verbs equally easily for the established and the non-established conditions. You can refer back to Figure 1 and Figure 2 to see that go-class verbs were read almost at the same speed, regardless of the establishment. This was the case both for the third-person PoV

passages ($F(1,19)=0.45$, $p=.84$, $\eta^2_p=.002$) and the first-person PoV passages ($F(1,15)=0.15$, $p=.71$, $\eta^2_p=.009$). That is, pre-establishment of the destination location does not affect the ease of processing of the go-class verbs. This supports the rule that pre-establishing the destination location is optional for the go-class verbs. On the other hand, the analyses for the come-class verbs showed that subjects processed these verbs more easily at the established condition than at the non-established condition. You can refer to Figure 1 and 2 to see that come-class verbs were read more quickly at the established condition. This was the case both for the third-person PoV passages ($F(1,19)=4.57$, $p<.05$, $\eta^2_p=.19$) and the first-person PoV passages ($F(1,15)=8.27$, $p=.01$, $\eta^2_p=.39$). That is, pre-establishment of the destination location affects the ease of processing of the come-class verbs. This supports the rule that pre-establishing the destination location is mandatory for the come-class verbs.

Discussion

We had different predictions for the passages written from third-person PoV and for the passages written from first-person PoV.

In third-person passages, we argued that the narrator has an omniscient (broad) perspective and hence readers take that perspective while they read the stories. Since the deictic motion verbs (e.g., *gel*, *git*, *götür*, *getir*) are related to perspective, we thought these verbs could be used to study perspective-taking in narrative comprehension. We also set some rules for the deictic motion verbs for narrative semantics and argued that these rules interact with the narrative comprehension.

We predicted that, in the third-person passages, when the destination location was not pre-established, any movement to that location should be described only with a go-class verb. Therefore, reading the description with a come-class verb should disrupt the comprehension and lead to a slower reading time. Moreover, if the destination was pre-established, then there should be no difference between the go-class and come-class descriptions because the narrator can easily access to that location due to his broad perspective.

The results supported our hypotheses. When the destination location was pre-established, there were not significant reading time differences between the go-class and come-class verbs. But when it was not pre-established, the come-class verbs were read more slowly, suggesting a processing difficulty.

In first-person passages, we argued that the narrator is the protagonist himself. Therefore, he has the same limited perspective as the protagonist. Therefore, we predicted that any movement away from the protagonist will be processed more easily with the go-class verbs than with the come-class verbs. This should occur whether the destination location is pre-established or not.

The results were partially supported. When the destination location was not pre-established, the come-class verbs were read more slowly than the go-class verbs. However, when it was pre-established, there were no significant reading time differences between the two verbs. This latter result was surprising because we expected the come-class verbs to be read more slowly in the established condition as well. There may be several reasons for this unexpected result. One explanation is that in the established condition, readers interpreted the come-class verbs as neutral (non-deictic), such as “to arrive”. Another reason may be that the protagonist perspective is not strict and there is some free perspective in the first-person PoV passages, similar to the third-person PoV passages. This is a weak probability because there are some studies in the literature which clearly demonstrated the protagonist-centered nature of the first-person narratives (e.g., Creer et al. (2019)). Another possibility is that participants did not properly retain and retrieve the location relations in the established condition. The location descriptions in the established condition were more complex than those in the non-established condition. For example, “seminer salonunun karşısındaki sınıfın önü” vs. “bir sınıfın önü”. It is quite possible that participants cannot always successfully retain and retrieve the complex location information in the established condition, especially after reading several filler sentences.

If we consider this last explanation as the main reason for our unsupported hypothesis, then the same explanation can be made about the established condition in the third-person PoV passages as well. That is, it may not be the omniscient perspective, as we interpreted, but the processing failure that caused the results in the established condition in the third-person PoV passages.

In order to solve this issue, we plan to conduct a control study which should consist only of the established condition, both at the third-person PoV passages and at the first-person PoV passages. This control study should include very short passages in order to ease the retaining of the location information. Also, the establishment should be very simple so that participants can process it without much effort. A sample passage can be like this: First-person PoV: “Seminer salonunun karşısında durdum. Yanımdaki asistana elimdeki çiçekleri verdim. Asistan çiçekleri seminer salonuna götürdü/getirdi. Birazdan sunum başlayacaktı...”. The third-person PoV: “Hande, seminer salonunun karşısında durdu. Yanımdaki asistana elindeki çiçekleri verdi. Asistan çiçekleri seminer salonuna götürdü/getirdi. Birazdan sunum başlayacaktı...”

With this kind of simplification, we hope to eliminate the previously discussed problems. We plan to conduct this control study at summer. If the results come out as expected, then we will continue with our remaining hypotheses.

A.3. Turkish experiments presented in January 2023 TIK Committee.

In the previous term, we had conducted two experiments (Experiments 1a and 1b, versions 2). In these experiments, there were two characters in the stories. One is the protagonist (e.g., Hande) and the other one is the secondary character (the moving agent, e.g., the assistant). The two characters were standing next to each other and then the secondary character moved toward a destination location.

In the first experiment, all the narratives were written from third-person PoV. We found that when the destination location was pre-established (e.g., Hande was standing across from the “seminar hall”), the movement towards that location was equally easily processed with the go-class and come-class verbs (e.g., The assistant took/brought the flowers to the seminar hall), suggesting that readers take a broad (omniscient) perspective while reading third-person narratives. We also found that when the destination location was *not* pre-established (e.g., nothing mentioned about the “seminar hall”), participants had some difficulty processing come-class verbs compared to the go-class verbs, suggesting that pre-establishment of the destination location is obligatory for the come-class verbs.

In the second experiment, the passages were the same except that they were written from first-person PoV (e.g., I was standing across from the seminar hall). We had expected that in such first-person narratives, readers always adopt the protagonist’s perspective (e.g., I, me). Therefore, regardless of the establishment, all movements towards the destination location would be easier to process with a go-class verb compared to a come-class verb. The results showed that when the destination location was *not* pre-established, go-class verbs were processed easier than the come-class verbs, as we had expected. However, when the destination was pre-established, there was no significant difference between the come- and go-class verbs. This was unexpected.

We had some speculations. 1) Readers may have interpreted the come-class verbs as non-deictic (e.g., arrive) in the pre-established conditions. 2) They may have been not so sensitive to the first-person perspective. 3) The wording and length of the passages may have disrupted the readers; that is, they may not have attended sufficiently to the critical parts of the passages.

In order to address the third speculation, we have conducted a control experiment this semester (Experiment 1c below). In this control experiment, we have shortened the descriptions of the locations of the characters. We have made them shorter and simpler to read. We also shortened the number of the filler sentences (e.g., the sentences passing between the initial location description and the target sentence). We thought that with these simplifications, participants would be more likely attend to the critical parts of the passages.

Experiment 1c (Turkish)

We have 24 passages. Half of them were written from third-person PoV, the other half were written from first-person PoV. That is, the narrator PoV is manipulated in the same experiment. Moreover, the experiment consisted entirely of the pre-established narratives because all the problem in the previous experiment lies in this condition.

We hypothesize that in third-person narratives, since the narrator is omniscient and readers adopt his perspective, there should be no difference between the come-class and go-class verbs. In the first-person narratives, however, we expect that readers should read the come-class verbs longer, because they should stick to the first-person perspective and the come-class verbs violate this perspective. In other words, we expect an interaction effect, wherein the effect of verb is modulated by the narrator PoV.

Method.

Participants.

Sixteen participants were recruited from prolific.co. They were all native speakers of Turkish. Each participant was paid £1.35. None of them had participated in the previous experiments.

Materials.

The materials were 24 passages. Materials were created to be used in a 2 (narrator PoV: third-person, first-person) by 2 (verb: come-class, go-class) within-subjects design.

See Table 1 below for a sample passage. There were two characters, Hande (the protagonist) and the assistant (the secondary character / the moving agent). These two characters were standing side-by-side and they were at some distance from an established location (e.g., ...seminer salonunun karşısında durdu.). Then the secondary character moves to the destination location. The movement is described either with a come-class verb (e.g., getir) or a go-class verb (e.g., götür). The same passage is also written from first-person PoV (e.g., I, me), as can be seen in the table.

At the end of each passage, a comprehension question appeared at the center of the screen. Comprehension questions were in yes-no format. The number of correct yes and no responses were equal.

Passages were constructed in four sets. In each set, there were 24 passages. Each set contained 6 passages in each of the four conditions: third-person-PoV & come-class, third-person-PoV & go-class, first-person-PoV & come-class, first-person-PoV & go-class. Each passage appeared only once in each set, but its condition varied across the four sets.

Table 1. Sample passage for Experiment 1c

Third-person PoV:

Hande, seminer salonunun karşısında durdu.
Elindeki çiçekleri yanındaki asistana verdi.
Onları, sunum yapacak hocaya vermesini söyledi.
Asistan çiçekleri seminer salonuna **götürdü / getirdi**.
Sunum, yarım saat içinde başlayacaktı.
Sunumu yapacak kişi, bölüm kurucularından olan emekli bir hocaydı. Hande, sunumun çok güzel geçeceğinden emindi. Sunum başlamadan önce kendisine bir kahve ısmarlamaya karar verdi.

First-person PoV:

Seminer salonunun karşısında durdum.
Elimdeki çiçekleri yanımdaki asistana verdim.
Onları, sunum yapacak hocaya vermesini söyledim.
Asistan çiçekleri seminer salonuna **götürdü / getirdi**.
Sunum, yarım saat içinde başlayacaktı.
Sunumu yapacak kişi, bölüm kurucularından olan emekli bir hocaydı. Ben sunumun çok güzel geçeceğinden emindim. Sunum başlamadan önce kendime bir kahve ısmarlamaya karar verdim.

Comprehension Question

Sunumu yeni hocalardan biri mi yapacaktı? H

Procedure.

The procedure was the same as in the previous experiments.

Results and Discussion

For each participant, reading times that were 3 standard deviations beyond the mean of their target sentence or spillover sentence were discarded. This resulted in the loss of less than 5% of the data in this experiment. Participants' performance on the comprehension questions was high. On average, participants answered 87% of the questions correctly in this experiment. This shows that they understood the passages well.

Reading times are shown in Table 2 below. A 2 x 2 repeated-measures ANOVA was conducted to test the effects.

Table 2. Mean reading times (in milliseconds) for experiment 1c (Turkish).

	Passage condition			
	Third-person PoV		First-person PoV	
	come-class	go-class	come-class	go-class
Target Sentence	1396 (312)	1421 (344)	1403 (351)	1358 (306)
Spillover Sentence	1348 (327)	1273 (323)	1314 (337)	1315 (278)

The analyses on the target sentences showed that there was no interaction effect ($p > .25$). We still broke down this insignificant interaction to see whether there was some effect within the conditions. Planned comparisons revealed that none of the effects were significant (all $ps > .25$). Similarly, the spillover sentences did not yield any significant effects either (all $ps > .23$).

Although the passages were simplified (compared to the experiments in previous semester), come-class verbs still did not yield a significant effect in first-person PoV passages.

There may be several explanations regarding why our expectations were not supported for first-person PoV passages. One possible objection might be about the target sentence describing the movement of the secondary character (e.g., the assistant). One might say that the assistant moved, and perhaps the protagonist moved with him as well towards the seminar hall, and this might be the reason why the come-class verbs did not cause reading time disruption in first-person PoV passages. The sample passage in Table 1 (i.e., Asistan çiçekleri seminer salonuna getirdi) can make one think that this might be the case. However, in most of the passages (22 out of 24 passages), the target sentence clearly emphasized the departure of the secondary character from the protagonist (e.g., “İhtiyar sonra kalkıp taksi durağına geldi”, “Gazeteci sonra kalkıp baskı odasına geldi”, “...yerinden kalktı ve soyunma odasına geldi”, etc.).

A second explanation for our unsupported expectations might be that readers do not stick sufficiently to the first-person PoV while reading.

A third reason may be that readers might not be sensitive to the deictic verbs when the destination location was pre-established. They might have interpreted these verbs as non-deictic (i.e., to arrive) in this case.

Addressing the third explanation would require a finer testing of the verbs in future studies. A non-deictic interpretation of a come-class verb might perhaps occur with a “to”

preposition (i.e., come to), but it should be very unlikely with a “into” preposition (i.e., come into). If we do this discrimination in Turkish language, it would be unnatural in most situations. But we can do this in English. English language has a natural way of discriminating subtle dimension changes in the deictic sense (e.g., come into, go into). So, an English passage would be like this:

Sarah was standing outside the seminar hall with the assistant. ...

Then the assistant went into/came into the seminar hall.

In this example, since it is a third-person PoV narrative and thus induces readers to have an omniscient perspective, there should be no difference between the “came into” and “went into” verbs.

However, in the example below;

I was standing outside the seminar hall with the assistant. ...

Then the assistant went into/came into* the seminar hall.

In this example, since it is a first-person PoV narrative and thus induce readers to adopt the protagonist’s perspective, the “came into” verb must be read more slowly than the “went into” verb.

This candidate experiment may be conducted this term or may be left as a future study.

Experiments 2a and 2b (Turkish)

Up to now, we have tested the situations where the protagonist and the secondary character are standing *side-by-side*. In this regard, the come-class verbs were critical for describing the movements.

In a new hypothesis, to further explore the relation between perspective and deictic motion verbs, we reverse this situation. That is, the two characters are standing *far from each other*. In this new situation, the go-class verbs should be critical in terms of perspective.

Moreover, in the Experiment 1 series, we had manipulated the destination location (i.e., established, non-established). However, in Experiment 2 series, we manipulate the source location (i.e., where the movement starts).

In these new experiments, the protagonist is always present at a destination location (e.g., seminer salonunun önü). The secondary character (the moving agent) (e.g., asistan) is, however, either absent physically or present at a distant location from the protagonist.

The reason for this configuration is to further explore the relation between perspective adoption and the comprehension of deictic motion verbs.

Our new hypotheses for third-person PoV passages are:

1) if the agent with a source location is present, then his movement towards the protagonist can be equally easily described with go-class and come-class verbs. This is because the third-person PoV should induce a broad/omniscient perspective (i.e., one that does not strictly stick to the protagonist).

2) if the agent with a source location is absent, then only come-class verbs are acceptable. This is because of the supposed rule of the go-class verbs. The rule was that the proper use of go-class verbs requires the agent and his source location be physically pre-established in the narrative and thus in the mental model of the reader. If they are not established, then only come-class verbs remain suitable for the situation.

Our new hypotheses for first-person PoV passages are:

1) Since the narrator is the protagonist himself (i.e., I), any movement of the agent towards the protagonist should be described only with a come-class verb. Go-class verbs in this case are not appropriate.

2) This should be the case whether the agent is physically pre-established or not. That is, both in the established and in the non-established situations, only the come-class verbs should be acceptable in this kind of first-person PoV passages.

Experiment 2a (Turkish)

We test in this experiment our hypotheses for the third-person PoV passages. See Table 3 below for a sample passage. Hande (the protagonist) is standing in front of a seminar hall. And right across from her (i.e., at a distant place), there is an assistant. So, the movement of the agent (the assistant) towards the protagonist (Hande) can be described equally easily with a go-class verb and a come-class verb, because of the omniscient perspective. However, if the agent is absent (i.e., he is not pre-established physically. He is just in the mind of the protagonist), then, his movement towards the protagonist with a go-class verb is inappropriate. This is because the rule for the go-class verbs requires the pre-establishment of the agent. In this case, only the come-class verbs should be appropriate.

That is, we expect no significant reading time difference between the go- and-come-class verbs in the established condition. But we expect a significant difference between these verbs in the non-established condition.

Table 3. Sample passage for Experiment 2a (Turkish)

Hande, seminer salonunun önünde bekliyordu.
Karşıdaki sınıfın önünde de bir asistan, telefonla konuşuyordu... (*established*)
Birazdan bir asistanla buluşacaktı... (*non-established*)
Hande, beklemeye devam ederken kolundaki saate baktı.
O esnada asistan, seminer salonuna **geldi** / **gitti**. (*Target Sentence*)
Sunumun başlamasına az bir süre kalmıştı. (*Spillover Sentence*)
Sunumu yapacak kişi, bölüm kurucularından olan emekli bir hocaydı. Hande, sunumun çok güzel geçeceğinden emindi. Sunum başlamadan önce kendisine bir kahve ısmarlamaya karar verdi.

Comprehension Question
Sunumu yeni hocalardan biri mi yapacaktı? H

Method

Participants.

Nineteen subjects were recruited from prolific.co. They were all native speakers of Turkish. Each participant was paid £1.49. None of them had participated in the previous experiments.

Materials.

The materials were 24 passages. Materials were created to be used in a 2 (source location: established, non-established) by 2 (verb: come-class, go-class) within-subjects design.

See Table 3 above for a sample passage. There were two characters: Hande (the protagonist) and the assistant (the secondary character / the moving agent). In half of the cases, these two characters were standing far from each other (i.e., established condition). In the other half of the cases, the agent and his source location were absent (i.e., non-established condition). In this case, the agent was referenced only with respect to the protagonist's mental state (e.g., She is waiting for the assistant).

Although we had used both basic (gel, git) and causative (getir, götür) verbs in the previous experiments, we use only basic verbs in the current experiment. This is because it is difficult to construct passages, especially in the non-established source condition, with the causative verbs. Since the target sentence should be the same in each condition, specifying an object to carry without first mentioning it would seem weird and costly to process in the non-established condition. Therefore, we use only basic verbs.

At the end of each passage, a comprehension question appeared at the center of the screen. Comprehension questions were in yes-no format. The number of correct yes and no responses were equal.

Passages were constructed in four sets. In each set, there were 24 passages. Each set contained 6 passages in each of the four conditions: established & come-class, established & go-class, non-established & come-class, non-established & go-class. Each passage appeared only once in each set, but its condition varied across the four sets.

Procedure.

The procedure was identical to the previous experiments.

Results and Discussion

The outliers were detected in the same way as in the previous experiment. This resulted in the loss of 5% of the data.

Participants answered 89% of the comprehension questions correctly.

The results for the critical sentences are shown below in Table 4.

Table 4. Mean reading times (in milliseconds) for experiment 2a (Turkish).

	Passage condition			
	established		non-established	
	come-class	go-class	come-class	go-class
Target Sentence	1313 (309)	1394 (361)	1297 (284)	1392 (373)
Spillover Sentence	1429 (388)	1379 (298)	1396 (365)	1404 (348)

The analyses for the target sentences showed that the interaction was insignificant ($p=.87$). However, unexpectedly, the main effect of verb was significant, $F(1, 18)=7.16$, $p=.02$. That is, go verbs were read more slowly than the come verbs, regardless of the establishment.

Lastly, there was no significant effect on the spillover sentences.

The results show that our hypotheses were not supported. We had expected that the processing of the go verbs would be influenced by the establishment variable, but it seems that this is not the case.

Experiment 2b (Turkish)

The experiment was identical to Experiment 2a, except that the passages were written from first-person PoV.

Our hypothesis was that since the readers should adopt the perspective of the first-person narrator (who is also the protagonist), any movement towards her must be more easily processed with a come-class verb than a go-class verb. This should be the case whether the moving agent and his source location was pre-established or not. See Table 5 for a sample passage.

Table 5. Sample passage for Experiment 2b (Turkish)

Seminer salonunun önünde bekliyordum.
Karşıdaki sınıfın önünde de bir asistan, telefonla konuşuyordu... (*established*)
Birazdan bir asistanla buluşacaktım... (*non-established*)
Beklemeye devam ederken kolumdaki saate baktım.
O esnada asistan, seminer salonuna **geldi** / **gitti**. (*Target Sentence*)
Sunumun başlamasına az bir süre kalmıştı. (*Spillover Sentence*)
Sunumu yapacak kişi, bölüm kurucularından olan emekli bir hocaydı. Ben, sunumun çok güzel geçeceğinden emindim. Sunum başlamadan önce kendime bir kahve ısmarlamaya karar verdim.

Comprehension Question

Sunumu yeni hocalardan biri mi yapacaktı? H

Method

For now, we have only 5 participants. Because of the technical difficulties we have encountered (i.e., internet server problem and the participants taking it slowly to be willing to participate these days), we could not reach our ideal number of 20 participants. Since the experiment is divided into 4 sets, each set should be conducted one after another. We have just collected data from Set 1 yet. But the data collection continues.

The procedure is the same as in the previous experiment.

Results and Discussion

The outliers were detected in the same way as in the previous experiment. This resulted in the loss of less than 5% of the data.

Participants answered 88% of the comprehension questions correctly.

The results for the critical sentences are shown below in Table 6.

Table 6. Mean reading times (in milliseconds) for experiment 2b (Turkish).

	Passage condition			
	established		non-established	
	come-class	go-class	come-class	go-class
Target Sentence	1503 (358)	1429 (342)	1463 (334)	1488 (377)
Spillover Sentence	1707 (416)	1620 (485)	1669 (417)	1629 (376)

The analyses for the target sentences showed that none of the effects were significant (all $ps > .15$). But the trend of the data is weird. It looks like in the established condition, the come verbs were read more slowly than the go verbs. This is just the opposite of what we have been expecting. Moreover, in the non-established condition, there is no difference between the two verbs, which is also surprising. Lastly, there was no significant effect on the spillover sentences.

The results are contradictory to our expectations. But collecting more data (up to 20 participants) may change the outcome perhaps. Since we have only 5 participants and we collected data for only set 1 up to now, we cannot interpret the data conclusively.



APPENDIX B

PASSAGES WRITTEN IN ENGLISH

B.1. Passages for Experiments 1a and 1c.

Destination information was *non-established* in passage introductions in Experiment 1a.

Destination information was *established* in passage introductions in Experiment 1c.

Passage 1:

Introduction

Non-established: Anna was talking to a young football player *at the football club*.

Established: Anna was talking to a young football player *outside the locker room*.

Filler Section

The player was sweaty because he had just played a practice match with his teammates. Anna asked the player what position he was playing these days. The player said he was recently playing in the forward position, but from next week on, he would be playing in defense. Anna wished the player good luck for next week's matches.

Target Sentence

Then the player went into / came into the locker room.

Spillover Sentence

He was tired and needed to change his clothes.

Closing

Anna wanted to meet other football players, but she had things to do during the day. She decided to talk to them another time.

Comprehension Question

Was the footballer playing in forward position recently? Y

Passage 2:

Kim was talking to a police officer **at the police station**.

Kim was talking to a police officer **outside the interrogation room**.

The officer and Kim had known each other for years. Kim asked the officer about the shooting incident that took place the previous day. The officer told Kim that the case had not been resolved yet. While they kept talking, a message arrived on the officer's phone.

The officer went into / came into the interrogation room.

It must have been about another investigation.

Kim actually wanted to ask the officer more questions, but apparently today wasn't her lucky day. She began to pack her bag. She would try her luck another time.

...

Had the shooting case been resolved? N

Passage 3:

Ben was sitting on a bench, **enjoying the beautiful sunny day on campus**.

Ben was sitting on a bench **outside the campus cafeteria**.

Then a student approached him. Ben recognized the student immediately. She had taken a class from him the previous year. The student sat next to Ben, and they started to talk. Ben asked the student about her graduation. The student said she had one more year to graduate. As they continued talking, the student said she was thirsty and asked Ben if he wanted something to drink. Ben said a bottle of water would be great.

Then the student went into / came into the cafeteria.

It was always crowded at this time of the day.

While Ben was waiting, he started to think how long it had been since he started teaching at this college. It had been seven years. He was surprised how quickly the years passed.

...

Had the student graduated? N

Passage 4:

John was talking to an actress **in the theater building**.

John was talking to an actress **outside the dressing room**.

While they were talking, the actress was also working on her role from the paper in her hand. In order to help the actress to study more efficiently, John told her to read aloud the parts she had memorized so far. The actress read a short excerpt from the part she had memorized. John liked her performance. It was very successful. John congratulated the actress and wished her good luck with the play.

Then the actress went into / came into the dressing room.

The rehearsal was about to start in minutes.

John wanted to stay and watch the rehearsal, but he had other things to do. He promised himself that he would definitely see the play when it premiered.

...

Did the actress read the parts she memorized? Y

Passage 5:

Nancy was talking to an old man **on the sidewalk**.

Nancy was talking to an old man **outside the post office**.

The old man had a box in his hand. He said he was supposed to send it to a relative today. Nancy noticed that the old man was trying to read the writing on the box but couldn't because his eyesight was poor. In order to help, Nancy read the writing to the old man. The old man thanked Nancy for her kindness. Nancy said she was happy to help.

Then the old man went into / came into the post office.

He was supposed to ship the box within the day.

Meanwhile, Nancy was to meet her friends in half an hour. While she was waiting, she felt that she was thirsty. She took out her water bottle from her bag and started drinking.

...

Did the old man have low eyesight? Y

Passage 6:

Adam was a middle school student. On Friday morning,

he was talking to the newly appointed art teacher **in the school hallway**.

he was talking to the newly appointed art teacher **outside the art classroom**.

The teacher was a young blonde woman of 25 years old. Adam asked the teacher what kind of paintings they would do this semester. The teacher said this semester there would be pencil drawing, watercolor, and glass painting. Adam was good at the other two, but he couldn't say the same for pencil drawing. After their talk was over,

the teacher went into / came into the art classroom.

Her class was about to start in a few minutes.

Adam really liked this new teacher. He hoped she would stay in school till the end of the year.

...

Was watercolor included in this semester's class? Y

Passage 7:

Jane was the manager of a large hotel. On Monday afternoon,

she was standing **at the back of the ground floor**, talking to the hotel's cook.

she was standing **outside the hotel's kitchen**, talking to the hotel's cook.

Jane asked the cook about the special of the day. The cook said it was sea bass with mango salsa. He also said he was planning to prepare chocolate brownie for dessert. These were Jane's favorite dishes. Jane wished the cook good luck.

Then the cook went into / came into the kitchen to start

the preparations. He was supposed to make the

meal ready in two hours... Jane really loved her job. She had been the manager here for two years. Even though things were very busy, she always felt energetic.

...

Was the dessert mango brownie? N

Passage 8:

Betty was talking to a young lawyer **in the hallway of the courthouse.**

Betty was talking to a young lawyer **outside the courtroom.**

The lawyer asked Betty for advice regarding a divorce case he was dealing with. Betty, who had been divorced twice in the past, gave a few tips to the lawyer. She said that in such cases, the lawyer's communication with the other party contributes to the peaceful divorce of both parties. The lawyer thanked Betty for the advice and said it was very helpful. Betty gave the lawyer her new number and told him he could call if he had any further questions.

Then the lawyer went into / came into the courtroom.

He had another trial starting in a few minutes.

Meanwhile, Betty took out her notebook from her bag and looked at the things she had to do during the day. Before leaving the building, she bought herself a milk coffee from the vending machine.

...

Was the advice about a divorce case? Y

Passage 9:

Paul was **at home**, talking to the maid.

Paul was talking to the maid **outside the laundry room.**

The maid looked tired. Paul told her that she could take the day off if she wanted to. But the maid said she was fine... They talked a little bit more.

Then the maid went into / came into the laundry room.

She was supposed to wash the sheets and towels.

Meanwhile, Paul picked up his phone and called his cousin. His cousin was going to get married next month. Paul told his cousin to let him know if he needed anything beforehand.

...

Did the maid say she was fine? Y

Passage 10:

Lisa was talking to a carpenter **at the bazaar**.

Lisa was talking to a carpenter **outside the carpenter's workshop**.

They were drinking tea while talking. Lisa took her drawings out of her bag and showed them to the carpenter. She wanted to see them in real-life wooden format. The carpenter looked at the drawings carefully and said that he could process them into wood. Lisa was very happy to hear that.

Then the carpenter went into / came into his workshop.

The drawings would take a few days to process.

Lisa realized that she hadn't talked to the carpenter about money. But that wasn't all that important. She was going to pay for it anyway when the job was done.

...

Did the carpenter get the money in advance? N

Passage 11:

Sarah was talking to an assistant **in the faculty hallway**.

Sarah was talking to an assistant **outside the seminar room**.

The assistant was wearing a stylish brown jacket. Sarah asked the assistant about last week's midterm exam. The assistant said all students had scored high on the exam. Sarah was happy to hear that. After all, the department was like a hub for the hard-working students. The assistant and Sarah talked for a few minutes more.

Then the assistant went into / came into the seminar room.

The weekly presentations were about to start.

Each week, a different lecturer would give a presentation. Sarah wasn't sure if she wanted to attend the seminar. She needed to buy herself a coffee before making up her mind.

...

Had some students gotten low scores on the exam? N

Passage 12:

Kelly was talking to a plumber **in the basement of the building.**

Kelly was talking to a plumber **outside the boiler room.**

The plumber was a young man in his late 20s. Kelly told the plumber that only regular maintenance was needed and that there was no need for anything else.

Then the plumber went into / came into the boiler room.

He had to start the maintenance immediately.

The maintenance would take half an hour at most. In the meantime, Kelly took out her notebook from her bag and checked her to-do list. There were two more things that needed to be done for the building.

...

Was the plumber in his late 20s? Y

Passage 13:

Ashley was talking to an editor **in the newspaper building.**

Ashley was talking to an editor **outside the printing room.**

The editor looked tired because he had worked hard the last couple of days. Ashley asked the editor about the recent scandal surrounding a famous pop singer. The editor said what had been claimed so far were all false and that the singer was a victim of her rivals. Ashley kept asking questions, and the editor answered all of them. Ashley thanked the editor for the valuable information he provided.

Then the editor went into / came into the printing room.

He had files to print before the day was off.

Meanwhile, Ashley started to think about her career goals. Since she enjoyed asking questions and getting answers, maybe she could be a reporter.

...

Was the scandal about a famous actor? N

Passage 14:

David was talking to a nurse **in the hospital corridor**.

David was talking to a nurse **outside the emergency room**.

He had known the nurse for some time because the nurse had helped him with his mother's medication reports in the past. David asked the nurse about the blood test he had had the other day. The nurse said the results were not out yet and that he should wait a few more days. The nurse also said she would text him when the results were out. David thanked the nurse for her guidance and support.

Then the nurse went into / came into the emergency room.

She was supposed to check on the new patients.

While David was still in the hospital, his phone rang. It was his sister. She asked David to make an appointment with the eye doctor for her.

...

Were the blood test results out? N

Passage 15:

Lucy was standing **in the yard**. She was accompanying the gardener who was mowing the lawns.

Lucy was standing **outside the house**. She was accompanying the gardener who was mowing the lawns in the yard.

The gardener was a tall man in his 50s. Lucy started to ask the gardener lots of questions about plants and soil. The gardener answered all her questions patiently. After finishing the mowing,

the gardener went into / came into the house to wash

his hands. It was quite a tiring day for him.

In the meantime, Lucy picked up her phone and called her mother. She told her that she was about to start preparing the dinner.

...

Was the gardener a tall man? Y

Passage 16:

Mike was talking with the secretary **in the office corridor**.

Mike was talking with the secretary **outside the manager's room**.

The secretary was anxious because she was late today. She asked Mike if the meeting date had been set. Mike said the meeting was scheduled for next week. The secretary was glad to hear that. This way, she would have sufficient time to prepare for the meeting. After their talk was over,

the secretary went into / came into the manager's room.

She had files to hand over to the manager.

It had been ten years since Mike started working in this company. Long working hours would not bother him because he loved his job. He would get a promotion every two years and that would make him more committed to his job.

...

Was the meeting scheduled for the next day? N

B.2. Passages for Experiments 1b and 1d.

These are the first-person versions of the passages used in Experiments 1a and 1c.

Destination information was **non-established** in passage introductions in Experiment 1b.

Destination information was **established** in passage introductions in Experiment 1d.

Passage 1:

I was talking to a young football player **at the football club**.

I was talking to a young football player **outside the locker room**.

The player was sweaty because he had just played a practice match with his teammates. I asked the player what position he was playing these days. The player said he was recently playing in the forward position, but from next week on, he would be playing in defense. I wished the player good luck for next week's matches.

Then the player went into / came into the locker room.

He was tired and needed to change his clothes.

I wanted to meet other football players, but I had things to do during the day. I decided to talk to them another time.

...

Was the footballer playing in forward position recently? Y

Passage 2:

I was talking to a police officer **at the police station**.

I was talking to a police officer **outside the interrogation room**.

The officer and I had known each other for years. I asked the officer about the shooting incident that took place the previous day. The officer told me that the case had not been resolved yet. While we kept talking, a message arrived on the officer's phone.

The officer went into / came into the interrogation room.

It must have been about another investigation.

I actually wanted to ask the officer more questions, but apparently today wasn't my lucky day. I began to pack my bag. I would try my luck another time.

...

Had the shooting case been resolved? N

Passage 3:

I was sitting on a bench, **enjoying the beautiful sunny day on campus**.

I was sitting on a bench **outside the campus cafeteria**.

Then a student approached me. I recognized the student immediately. She had taken a class from me the previous year. The student sat next to me, and we started to talk. I asked the student about her graduation. The student said she had one more year to graduate. As we continued talking, the student said she was thirsty and asked me if I wanted something to drink. I said a bottle of water would be great.

Then the student went into / came into the cafeteria.

It was always crowded at this time of the day.

While I was waiting, I started to think how long it had been since I started teaching at this college. It had been seven years. I was surprised how quickly the years passed.

...

Had the student graduated? N

Passage 4:

I was talking to an actress **in the theater building**.

I was talking to an actress **outside the dressing room**.

While we were talking, the actress was also working on her role from the paper in her hand. In order to help the actress to study more efficiently, I told her to read aloud the parts she had memorized so far. The actress read a short excerpt from the part she had memorized. I liked her performance. It was very successful. I congratulated the actress and wished her good luck with the play.

Then the actress went into / came into the dressing room.

The rehearsal was about to start in minutes.

I wanted to stay and watch the rehearsal, but I had other things to do. I promised myself that I would definitely see the play when it premiered.

...

Did the actress read the parts she memorized? Y

Passage 5:

I was talking to an old man **on the sidewalk**.

I was talking to an old man **outside the post office**.

The old man had a box in his hand. He said he was supposed to send it to a relative today. I noticed that the old man was trying to read the writing on the box but couldn't because his eyesight was poor. In order to help, I read the writing to the old man. The old man thanked me for my kindness. I said I was happy to help.

Then the old man went into / came into the post office.

He was supposed to ship the box within the day.

Meanwhile, I was to meet my friends in half an hour. While I was waiting, I felt that I was thirsty. I took out my water bottle from my bag and started drinking.

...

Did the old man have low eyesight? Y

Passage 6:

I was a middle school student. On Friday morning,

I was talking to the newly appointed art teacher **in the school hallway**.

I was talking to the newly appointed art teacher **outside the art classroom**.

The teacher was a young blonde woman of 25 years old. I asked the teacher what kind of paintings we would do this semester. The teacher said this semester there would be pencil drawing, watercolor, and glass painting. I was good at the other two, but I couldn't say the same for pencil drawing. After our talk was over,

the teacher went into / came into the art classroom.

Her class was about to start in a few minutes.

I really liked this new teacher. I hoped she would stay in school till the end of the year.

...

Was watercolor included in this semester's class? Y

Passage 7:

I was the manager of a large hotel. On Monday afternoon,

I was standing **at the back of the ground floor**, talking to the hotel's cook.

I was standing **outside the hotel's kitchen**, talking to the hotel's cook.

I asked the cook about the special of the day. The cook said it was sea bass with mango salsa. He also said he was planning to prepare chocolate brownie for dessert. These were my favorite dishes. I wished the cook good luck.

Then the cook went into / came into the kitchen to start

the preparations. He was supposed to make the

meal ready in two hours... I really loved my job. I had been the manager here for two years. Even though things were very busy, I always felt energetic.

...

Was the dessert mango brownie? N

Passage 8:

I was talking to a young lawyer **in the hallway of the courthouse.**

I was talking to a young lawyer **outside the courtroom.**

The lawyer asked me for advice regarding a divorce case he was dealing with. I, who had been divorced twice in the past, gave a few tips to the lawyer. I said that in such cases, the lawyer's communication with the other party contributes to the peaceful divorce of both parties. The lawyer thanked me for the advice and said it was very helpful. I gave the lawyer my new number and told him he could call if he had any further questions.

Then the lawyer went into / came into the courtroom.

He had another trial starting in a few minutes.

Meanwhile, I took out my notebook from my bag and looked at the things I had to do during the day. Before leaving the building, I bought myself a milk coffee from the vending machine.

...

Was the advice about a divorce case? Y

Passage 9:

I was **at home**, talking to the maid.

I was talking to the maid **outside the laundry room.**

The maid looked tired. I told her that she could take the day off if she wanted to. But the maid said she was fine... We talked a little bit more.

Then the maid went into / came into the laundry room.

She was supposed to wash the sheets and towels.

Meanwhile, I picked up my phone and called my cousin. My cousin was going to get married next month. I told my cousin to let me know if he needed anything beforehand.

...

Did the maid say she was fine? Y

Passage 10:

I was talking to a carpenter **at the bazaar**.

I was talking to a carpenter **outside the carpenter's workshop**.

We were drinking tea while talking. I took my drawings out of my bag and showed them to the carpenter. I wanted to see them in real-life wooden format. The carpenter looked at the drawings carefully and said that he could process them into wood. I was very happy to hear that.

Then the carpenter went into / came into his workshop.

The drawings would take a few days to process.

I realized that I hadn't talked to the carpenter about money. But that wasn't all that important. I was going to pay for it anyway when the job was done.

...

Did the carpenter get the money in advance? N

Passage 11:

I was talking to an assistant **in the faculty hallway**.

I was talking to an assistant **outside the seminar room**.

The assistant was wearing a stylish brown jacket. I asked the assistant about last week's midterm exam. The assistant said all students had scored high on the exam. I was happy to hear that. After all, the department was like a hub for the hard-working students. The assistant and I talked for a few minutes more.

Then the assistant went into / came into the seminar room.

The weekly presentations were about to start.

Each week, a different lecturer would give a presentation. I wasn't sure if I wanted to attend the seminar. I needed to buy myself a coffee before making up my mind.

...

Had some students gotten low scores on the exam? N

Passage 12:

I was talking to a plumber **in the basement of the building.**

I was talking to a plumber **outside the boiler room.**

The plumber was a young man in his late 20s. I told the plumber that only regular maintenance was needed and that there was no need for anything else.

Then the plumber went into / came into the boiler room.

He had to start the maintenance immediately.

The maintenance would take half an hour at most. In the meantime, I took out my notebook from my bag and checked my to-do list. There were two more things that needed to be done for the building.

...

Was the plumber in his late 20s? Y

Passage 13:

I was talking to an editor **in the newspaper building.**

I was talking to an editor **outside the printing room.**

The editor looked tired because he had worked hard the last couple of days. I asked the editor about the recent scandal surrounding a famous pop singer. The editor said what had been claimed so far were all false and that the singer was a victim of her rivals. I kept asking questions, and the editor answered all of them. I thanked the editor for the valuable information he provided.

Then the editor went into / came into the printing room.

He had files to print before the day was off.

Meanwhile, I started to think about my career goals. Since I enjoyed asking questions and getting answers, maybe I could be a reporter.

...

Was the scandal about a famous actor? N

Passage 14:

I was talking to a nurse **in the hospital corridor**.

I was talking to a nurse **outside the emergency room**.

I had known the nurse for some time because the nurse had helped me with my mother's medication reports in the past. I asked the nurse about the blood test I had had the other day. The nurse said the results were not out yet and that I should wait a few more days. The nurse also said she would text me when the results were out. I thanked the nurse for her guidance and support.

Then the nurse went into / came into the emergency room.

She was supposed to check on the new patients.

While I was still in the hospital, my phone rang. It was my sister. She asked me to make an appointment with the eye doctor for her.

...

Were the blood test results out? N

Passage 15:

I was standing **in the yard**, accompanying the gardener who was mowing the lawns.

I was standing **outside the house**, accompanying the gardener who was mowing the lawns in the yard.

The gardener was a tall man in his 50s. I started to ask the gardener lots of questions about plants and soil. The gardener answered all my questions patiently. After finishing the mowing,

the gardener went into / came into the house to wash

his hands. It was quite a tiring day for him.

In the meantime, I picked up my phone and called my mother. I told her that I was about to start preparing the dinner.

...

Was the gardener a tall man? Y

Passage 16:

I was talking with the secretary **in the office corridor**.

I was talking with the secretary **outside the manager's room**.

The secretary was anxious because she was late today. She asked me if the meeting date had been set. I said the meeting was scheduled for next week. The secretary was glad to hear that. This way, she would have sufficient time to prepare for the meeting. After our talk was over,

the secretary went into / came into the manager's room.

She had files to hand over to the manager.

It had been ten years since I started working in this company. Long working hours would not bother me because I loved my job. I would get a promotion every two years and that would make me more committed to my job.

...

Was the meeting scheduled for the next day? N

B.3. Passages for Experiments 1e and 1f.

These experiments are the shortened versions of Experiments 1c and 1d.

Destination locations were pre-established in both experiments.

Passages in Experiment 1e were written from third-person PoV (e.g., Anna, she, her), whereas passages in Experiment 1f were written from first-person PoV (e.g., I, me, my).

Here, for convenience, we present the materials of these two experiments together, by separating the narrator PoVs with slashes.

Passage 1:

Anna / I was talking to a young football player outside the locker room.

The player was sweaty because he had just played a practice match with his teammates.

Anna and the player / The player and I talked about the team's recent achievements.

Then the player went into / came into the locker room.

He was tired and needed to change his clothes.

Anna / I wanted to meet other football players, but **she / I** had things to do during the day.

She / I decided to talk to them another time.

...

Had the player played a practice match with the teammates? Y

Passage 2:

Kim / I was talking to a police officer outside the interrogation room.

The officer and Kim / I had known each other for years. While they / we kept talking, a message arrived on the officer's phone.

The officer went into / came into the interrogation room.

It must have been about a recent investigation.

Kim / I actually wanted to ask the officer some questions, but apparently today wasn't her / my lucky day. She / I began to pack her / my bag. She / I would try her / my luck another time.

...

Was she able to ask the officer her questions? N

Passage 3:

Ben / I was sitting on a bench outside the campus cafeteria.

A student of his / mine sat next to him / me and they / we started to talk. The student asked Ben / me if he / I wanted something to drink. Ben / I said a bottle of water would be great.

Then the student went into / came into the cafeteria.

It was always crowded at this time of the day.

While Ben / I was waiting, he / I started to think how long it had been since he / I started teaching at this college. It had been seven years. He / I was surprised how quickly the years passed.

...

Did he start teaching at this college 17 years ago? N

Passage 4:

John / I was talking to an actress outside the dressing room.

The actress read John / me a short excerpt from the part she had just memorized. It was very successful. John / I congratulated the actress and wished her good luck with the play.

Then the actress went into / came into the dressing room.

The rehearsal was about to start in minutes.

John / I wanted to stay and watch the rehearsal, but he / I had other things to do. He / I promised himself / myself that he / I would definitely see the play when it premiered.

...

Did the actress read from the part she memorized? Y

Passage 5:

Nancy / I was talking to an old man outside the post office.

The old man had a box in his hand. He tried to read the writing on it but couldn't because his eyesight was poor. In order to help him, Nancy / I read the writing to the old man.

Then the old man went into / came into the post office.

He was supposed to ship the box within the day.

Meanwhile, Nancy / I was to meet her / my friends in half an hour. While she / I was waiting, she / I felt that she / I was thirsty. She / I took out her / my water bottle from her / my bag and started drinking.

...

Did the old man have low eyesight? Y

Passage 6:

Adam / I was a middle school student. On Friday morning, he / I was talking to the newly appointed art teacher outside the art classroom.

The teacher was a young blonde woman of 25 years old. Adam / I asked the teacher some questions about this semester's class. After their / our talk was over,

the teacher went into / came into the art classroom.

Her class was about to start in a few minutes.

Adam / I really liked this new teacher. He / I hoped she would stay in school till the end of the year.

...

Was the teacher a blonde woman? Y

Passage 7:

Jane / I was the manager of a large hotel. On Monday afternoon, she / I was standing outside the hotel's kitchen, talking to the hotel's cook.

Jane / I asked the cook what was for dessert today. The cook said it was chocolate brownie. This was Jane's / my favorite. Jane / I wished the cook good luck.

Then the cook went into / came into the kitchen to start

the preparations. He was supposed to make the

meal ready in two hours... Jane / I really loved her / my job. She / I had been the manager here for two years. Even though things were very busy every day, she / I always felt energetic.

...

Was the dessert mango brownie? N

Passage 8:

Betty / I was talking to a young lawyer outside the courtroom.

The lawyer asked Betty / me for advice regarding a divorce case he was dealing with. Betty / I, as an expert, gave the lawyer a few tips.

Then the lawyer went into / came into the courtroom.

He had another trial starting in a few minutes.

Meanwhile, Betty / I took out her / my notebook from her / my bag and looked at the things she / I had to do during the day. Before leaving the building, she / I bought herself / myself a milk coffee from the vending machine.

...

Was the advice about a divorce case? Y

Passage 9:

Paul / I was talking to the maid outside the laundry room.

The maid looked tired. Paul / I told her to take the day off, but the maid said she was fine. The maid and Paul / I talked a little bit more.

Then the maid went into / came into the laundry room.

She was supposed to wash the sheets and towels.

Meanwhile, Paul / I picked up his / my phone and called his / my cousin. His / my cousin was going to get married next month. Paul / I told his / my cousin to let him / me know if he needed anything beforehand.

...

Did the maid say she was fine? Y

Passage 10:

Lisa / I was talking to a carpenter outside the carpenter's workshop.

They / We were drinking tea while talking. Lisa / I showed her / my drawings to the carpenter. The carpenter said he could process them into wood. Lisa / I was very happy to hear that.

Then the carpenter went into / came into his workshop.

The drawings would take a few days to process.

Lisa / I realized that she / I hadn't talked to the carpenter about money. But that wasn't all that important. She / I was going to pay for it anyway when the job was done.

...

Did the carpenter get the money in advance? N

Passage 11:

Sarah / I was talking to an assistant outside the seminar room.

The assistant was wearing a stylish brown jacket. After their / our talk was over, Sarah / I gave the folder in her / my hand to the assistant.

Then the assistant came into / went into the seminar room.

The weekly presentations were about to start.

Each week, a different lecturer would give a presentation. Sarah / I wasn't sure if she / I wanted to attend the seminar. She / I needed to buy herself / myself a coffee before making up her / my mind.

...

Was the assistant wearing a green jacket? N

Passage 12:

Kelly / I was talking to a plumber outside the boiler room.

The plumber was a young man in his late 20s. Kelly / I told the plumber that only regular maintenance was needed for today.

Then the plumber came into / went into the boiler room.

He had to start the maintenance immediately.

The maintenance would take half an hour at most. In the meantime, Kelly / I took out her / my notebook from her / my bag and checked her / my to-do list. There were two more things that needed to be done for the building.

...

Was the plumber in his late 20s? Y

Passage 13:

Ashley / I was talking to an editor outside the printing room.

The editor looked tired. Ashley / I quickly asked the editor her / my questions.

Then the editor came into / went into the printing room.

He had files to print before the day was off.

Meanwhile, Ashley / I started to think about her / my career goals. Since she / I enjoyed asking questions and getting answers, maybe she / I could be a reporter.

...

Did the editor look energetic? N

Passage 14:

David / I was talking to a nurse outside the emergency room.

He / I had known the nurse for a long time. David / I asked the nurse about the blood test he / I had had the other day. The nurse said she would text him / me when the results were out. David / I thanked the nurse for her support.

Then the nurse came into / went into the emergency room.

She was supposed to check on the new patients.

While David / I was still in the hospital, his / my phone rang. It was his / my sister. She asked David / me to make an appointment with the eye doctor for her.

...

Were the blood test results out? N

Passage 15:

Lucy was standing outside the house. She was accompanying the gardener who was mowing the lawns in the yard. / I was standing outside the house, accompanying the gardener who was mowing the lawns in the yard.

The gardener was a tall man in his 50s. Lucy and the gardener / We had known each other for years. After finishing the mowing,

the gardener came into / went into the house to wash

his hands. It was quite a tiring day for him.

In the meantime, Lucy / I picked up her / my phone and called her / my mother. She / I told her that she / I was about to start preparing the dinner.

...

Was the gardener a tall man? Y

Passage 16:

Mike / I was talking with the secretary outside the manager's room.

The secretary was late today. Mike / I told her the good news: the meeting was scheduled for next week. The secretary was glad to hear that... After their / our talk was over,

the secretary went into / came into the manager's room.

She had files to hand over to the manager.

It had been ten years since Mike / I started working in this company. Long working hours would not bother him / me because he / I loved his / my job. He / I would get a promotion every two years and that would make him / me more committed to his / my job.

...

Was the meeting scheduled for the next day? N

B.4. Passages for Experiments 2a through 2d.

Here, for convenience, we present the materials of our second group of experiments (2a through 2d) together. We have 18 passages in total. These passages were the modified versions of the 16 passages in Experiments 1x, with the addition of 2 new passages. Like previous experiments, the passages were the same across the experiments in terms of content, except for the manipulations of establishment and narrator PoV.

In these experiments, the source information was either *non-established* or *established* in passage introductions. Also, the narrator PoV was either third-person (e.g., Anna, she, her) or first-person (e.g., I, me, my).

Please note that in the non-established situations, the first two sentences in the passages were presented as two separate sentences for the third-person PoV (e.g., Anna was standing inside the locker room. She was waiting to meet with a football player). But when

transforming these sentences into the first-person PoV, we had to make them one unified sentence (e.g., I was standing inside the locker room, waiting to meet with a football player). This way, we thought, our participants would have a smoother reading experience. Please apply this logic to all of the first-person passages below.

Passage 1:

Introduction

Anna / I was standing inside the locker room.

Non-established: She / I was waiting to meet with a football player.

Established: A football player was just outside the door, talking to his teammates. Anna / I was waiting for him.

Filler section

While waiting, Anna / I checked her / my phone to see if she / I got any new messages from the app.

Target Sentence

Then the player came into / went into the locker room.

Spillover Sentence

He was tired and needed to change his clothes.

Closing

Anna / I didn't want to trouble the player. She / I quickly asked him her / my questions so that the player's next week matches could be properly arranged. The player would play in forward position from next week on and he had to work out accordingly.

Comprehension Question

The player would play in forward position? Y

Passage 2:

Kim / I was standing inside the interview room.

She / I was waiting to meet with a police officer.

A police officer was just outside the door, talking to his co-workers. Kim / I was waiting for him.

While waiting, Kim / I felt a little thirsty. She / I took the water bottle out of her / my bag and started drinking.

Then the officer went into / came into the interview room.

He was busy with investigations these days.

Kim / I immediately got to the point. She / I wanted to counsel the officer about a case she / I was dealing with. The case had not been resolved yet, but Kim / I would rely on the officer's instincts... After looking into the files, the officer gave Kim / me a few tips. Kim / I thanked the officer for his help.

...

Did the police officer refuse to help? N

Passage 3:

Ben / I was sitting inside the campus cafeteria.

He / I was waiting to meet with a student.

A student of his / mine was just outside the door, talking on the phone. Ben / I was waiting for her.

While waiting, Ben / I checked his / my notebook.

Then the student came into / went into the cafeteria.

She said she was sorry for being so late.

They / We started to talk about a recent course project. The student was in her last year to graduate, and this was her last chance to pass the course. Ben / I reassured the student that everything was going great and there was nothing to worry about.

...

Was the student a graduate? N

Passage 4:

John / I was sitting inside the dressing room.

He / I was waiting to meet with an actress.

An actress was standing outside the door. John / I was waiting for her.

While waiting, he / I took off his / my glasses and wiped them.

Then the actress went into / came into the dressing room.

The rehearsal was about to start in minutes.

John / I told the actress to read aloud the part she had memorized. The actress read John / me the part. It was very successful. John / I congratulated the actress and wished her good luck with the play.

...

Did the actress read the part she memorized? Y

Passage 5:

Nancy / I was standing inside the post office.

She / I was waiting to meet with an old man.

An old man was just outside the door. Nancy / I was waiting for him.

While waiting, Nancy / I looked at her / my phone. She / I saw that she / I got a new message from her / my boss. Nancy / I quickly read the message.

Then the old man came into / went into the post office.

He was going to ship the box in his hand.

Nancy / I noticed that the old man tried to read the writing on the box but couldn't because his eyesight was poor. In order to help him, Nancy / I read the writing to the old man. The old man thanked Nancy / me for her / my kindness.

...

Did the old man have low eyesight? Y

Passage 6:

Adam / I was a middle school student. On Friday morning, he / I was sitting inside the art classroom,

waiting to meet with the arts teacher.

The arts teacher was outside the door, talking to other students.

Adam / I was anxious because he / I couldn't do the glass painting homework. The deadline was today. He / I was thinking about how to explain it to the teacher...

Then the teacher went into / came into the classroom.

The class was about to start in a few minutes.

Adam / I gathered himself / myself and decided to tell the truth. It was not that he / I couldn't do the homework because of some inconvenience, it was that he / I played video games with his / my friends last night and therefore he / I forgot to do it. He / I was going to be honest with the teacher and ask for an extra day.

...

Was the homework about glass painting? Y

Passage 7:

Jane / I was standing inside the hotel's kitchen.

She / I was waiting to meet with the hotel's cook.

The hotel's cook was just outside the door, talking on his phone. Jane / I was waiting for him.

While waiting, she / I poured herself / myself a coffee.

Then the cook came into / went into the kitchen nervously.

He had to make the meal ready in two hours.

Jane / I asked him what was for dessert today. The cook said it was chocolate brownie. Jane / I was happy to hear that. Although her / my favorite was mango brownie, Jane / I also liked the chocolate brownie very much.

...

Was today's dessert mango brownie? N

Passage 8:

Betty / I was sitting inside the courtroom.

She / I was waiting to meet with a lawyer.

The lawyer was outside the door, talking with other clients. Betty / I was waiting for him.

While waiting, Betty / I rummaged through her / my bag.

Then the lawyer went into / came into the courtroom.

The hearing was about to start in minutes.

Betty and the lawyer / The lawyer and I talked a little bit before the hearing started. The lawyer asked Betty / me for advice regarding a divorce case he was recently dealing with. Betty / I, as someone who had been divorced twice, gave the lawyer a few tips.

...

Was the advice about a divorce case? Y

Passage 9:

Paul / I was inside the laundry room.

He / I was waiting to meet with the maid.

The maid was in the hall, arranging other stuff. Paul / I was waiting for her.

While waiting, he / I sorted his / my dirty clothes.

Then the maid went into / came into the laundry room.

She had to wash the sheets and the towels.

The maid looked tired. Paul / I told her to take the day off, but the maid said she was fine. Paul's / My phone rang at that moment. It was his / my cousin. He was going to get married next month. He asked Paul / me for help with a few things related to the wedding.

...

Did the maid say she was fine? Y

Passage 10:

Lisa / I was sitting inside a carpenter's workshop.

She / I was waiting to meet with the carpenter.

The carpenter was just outside the door, smoking a cigarette. Lisa / I was waiting for him.

While waiting, Lisa / I took her / my drawings out of her / my bag and started to look at them.

Then the carpenter came into / went into the workshop.

He said he was ready now to talk about work.

Lisa / I quickly showed her / my drawings to the carpenter. She / I wanted to see them in real-life wooden format. After carefully examining the drawings, the carpenter said he could process them into wood in a week. Lisa / I was happy to hear that.

...

Did the carpenter refuse to process the drawings? N

Passage 11:

Sarah / I was sitting inside the seminar room.

She / I was waiting to meet with an assistant.

An assistant was talking on the phone outside the door. Sarah / I was waiting for him.

While waiting, she / I looked at the watch on her / my wrist.

Then the assistant went into / came into the seminar room.

The weekly presentations were about to start.

The assistant sat next to Sarah / me. He was wearing a stylish brown jacket. They / We talked a little bit about last week's midterm exam. The assistant said all students had scored high on the exam. Sarah / I was happy to hear that.

...

Was the assistant wearing a green jacket? N

Passage 12:

Kelly / I was standing inside the boiler room.

She / I was waiting to meet with a plumber.

A plumber was just outside the door, arranging his toolbox. Kelly / I was waiting for him.

While waiting, she / I checked her / my notebook.

Then the plumber went into / came into the boiler room.

He had to start the maintenance immediately.

The plumber was a young man in his late 20s. The maintenance would take half an hour at most. While he was working, Kelly / I checked her / my notebook once again. There were two more things that needed to be done for the building.

...

Was the plumber in his late 20s? Y

Passage 13:

Ashley / I was sitting inside the printing room.

She / I was waiting to meet with an editor.

The editor was outside the door, talking with other employees. Ashley / I was waiting for him.

While waiting, she / I thought about her / my heavy workload this week. She / I needed to make a good plan to get the work done on time.

Then the editor came into / went into the printing room.

He had files to print before the day was off.

Ashley / I quickly asked the editor her / my questions. Since the editor was tired, he answered only the most important ones. He told Ashley / me that she / I could ask her / my other questions tomorrow.

...

Was the editor energetic? N

Passage 14:

David / I was standing inside the emergency room.

He / I was waiting for a nurse who had gone out to lunch.

The nurse was outside the door, talking to other workers. David / I was waiting for her.

While waiting, David / I thought about how long it had been since he / I started working in this hospital. It had been 4 years. David / I always felt lucky to have this job...

Then the nurse went into / came into the emergency room.

She was supposed to check on the new patients.

David / I quickly informed the nurse about the latest development. Three new patients were to be brought to the room. David / I must prepare the empty beds for them.

...

Two new patients to be brought to the room? N

Passage 15:

Lucy / I was standing inside the house.

She / I was waiting for their / our new gardener.

A gardener was mowing the lawns in the yard. Lucy / I was waiting for him.

While waiting, Lucy / I thought about buying new clothes for herself / myself...

Then the gardener came into / went into the house.

He had just finished the mowing and now

he needed to wash his hands. Lucy / I showed him the bathroom. The gardener was a tall man in his 50s. Meanwhile, Lucy / I called her / my mother and told her that she / I needed new clothes. Her / My mother said OK. Lucy / I was surprised. She / I never thought it would be so easy.

...

Was the gardener a tall man? Y

Passage 16:

Mike / I was sitting inside the office.

He / I was waiting for the secretary to arrive.

The secretary was just outside the door, talking on her phone. Mike / I was waiting for her.

While waiting, he / I checked today's meeting schedule. Two meetings were arranged for today. Mike / I was glad to learn that.

Then the secretary went into / came into the office.

She had files to hand over to the manager.

Mike / I immediately called out to the secretary and gave some extra documents to her.
He / I said these were for the recent project. The secretary thanked Mike / me for that.

...

Four meetings scheduled for today? N

Passage 17:

Mary / I was standing inside the fashion boutique.

She / I was waiting to meet with a photographer for a magazine shoot.

The photographer was smoking outside the door. Mary / I was waiting for him.

While waiting, Mary / I started to sort the newly arrived clothes. These were the best pieces of the season, she / I thought.

Then the photographer came into / went into the boutique.

He was supposed to take photos of the place.

Mary / I showed the photographer around, the models and some special design dresses. The photographer and Mary / I agreed upon selecting the red wedding dress for the cover page of the magazine. The shooting took about an hour. Mary / I was quite satisfied with the outcome.

...

Did they select the pink wedding dress for the cover page? N

Passage 18:

Joe / I was standing inside the grocery store.

The cashier wasn't around. He must be somewhere out there and would be here any minute, Joe / I thought.

The cashier was just outside the door, opening the new boxes.

While waiting for him, Joe / I remembered that he / I should buy chocolate bars for his / my kids. He / I picked a hazelnut bar for his / my son and a dark chocolate bar for his / my daughter.

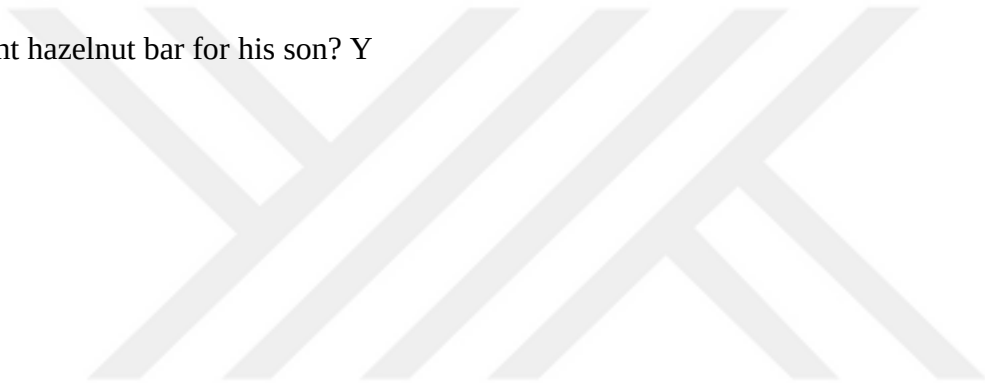
Then the cashier went into / came into the grocery store.

He quickly put the new items to the corner and

walked to the cash register. Joe / I paid for the bars and other things he / I took. He / I thought that the kids would be happy when they saw the bars.

...

Bought hazelnut bar for his son? Y



APPENDIX C

METU ETHICS COMMITTEE APPROVALS

C.1. Approval for Turkish Experiments.

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
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MIDDLE EAST TECHNICAL UNIVERSITY

Sayı: 28620816 /

14 OCAK 2022

Konu : Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi : İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Deniz Zeyrek BOZŞAHİN

Danışmanlığını yürüttüğünüz Mustafa Akkuşçu'nun "Hikaye Kavramada Bakış Açısı

Almanın Rolü" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun

görülmüş ve **0060-ODTÜİAEK-2022** protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

KVKK gereği imzalar
kapatılmıştır

Prof.Dr. Mine MISIRLISOY
İAEK Başkan

C.2. Approval for English Experiments.

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER



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Konu: Değerlendirme Sonucu

05 TEMMUZ 2024

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Deniz Zeyrek Bozşahin

Danışmanlığımı yürüttüğünüz Mustafa Akkuşçu'nun "*The Role of Perspective Taking in Narrative Comprehension*" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek 0401-ODTÜİAEK-2024 protokol numarası ile onaylanmıştır. Bilgilerinize saygılarımla sunarım.

KVKK gereği imzalar
kapatılmıştır

Prof. Dr. Ş. Halil TURAN
Başkan

KVKK gereği imzalar
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Prof. Dr. İ. Semih AKÇOMAK
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Doç. Dr. Ali Emre Turgut
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Dr. Öğretim Üyesi Müge GÜNDÜZ
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CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Akkuşçu, Mustafa

Nationality: Turkish

EDUCATION

Degree	Institution	Year of Graduation
MS	METU, Graduate School of Informatics, Department of Cognitive Science	2017
BS	Atılım University, Department of Psychology	2012

FOREIGN LANGUAGES

Native Turkish, Advanced English.

POSTER PRESENTATIONS

Akkuscu, M. & Hohenberger, A. (2018). Effects Of Social Task Setting and Scene Context on Change Detection. Poster presented at Social Cognition Conference, April 7-8, Bilkent, Ankara, Turkey.

GRANTS

100 / 2000 PhD Scholarship granted by The Council of Higher Education (YÖK) in the years between 2017 – 2021.