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Engagement with narrative characters: the role of social-cognitive abilities and linguistic viewpoint

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ABSTRACT

This article explores the role of text and reader characteristics in character engagement experiences. In an online study, participants completed several self-report and behavioral measures of social-cognitive abilities and read two literary narratives in which the presence of linguistic viewpoint markers was varied using a highly controlled manipulation strategy. Afterward, participants reported on their character engagement experiences. A principal component analysis on participants' responses revealed the multidimensional nature of character engagement, which included both self- and other-oriented emotional responses (e.g., empathy, personal distress) as well as more cognitive responses (e.g., identification, perspective taking). Furthermore, character engagement was found to rely on a wide range of social-cognitive abilities but not on the presence of viewpoint markers. Finally, and most importantly, we did not find convincing evidence for an interplay between social-cognitive abilities and the presence of viewpoint markers. These findings suggest that readers rely on their social-cognitive abilities to engage with the inner worlds of fictional others, more so than on the lexical cues of those inner worlds provided by the text.

Introduction

From desperately trying to figure out why our favorite character makes a seemingly bad decision, to cheering along when they finally succeed in reaching their goal, the ways in which we engage with the inner worlds of characters are at the heart of narrative processing. Cognitive and emotional engagement with characters has been the subject of both literary studies and the empirical study of fiction. Previous research has established that readers' trait empathy increases their tendency to engage with characters' inner lives (e.g., Koopman, 2015; Wimmer et al., 2021). Moreover, some studies tentatively suggest that perspectivization techniques also play a role in the emergence of character engagement experiences (e.g., Habermas & Diel, 2010; Sato et al., 2012). However, not much attention has been paid to the interplay between these reader and textual characteristics. Therefore, we studied how various facets of character engagement are a function of individual differences in social-cognitive abilities, linguistic viewpoint markers (i.e., textual markers that provide access to the inner worlds of characters), and their interaction.

Dimensions of character engagement

When reading narratives, readers will cognitively and emotionally engage with the minds of characters. Previous research has provided various terms and theories that can be grouped

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under the broader umbrella of character engagement to explain this process (Coplan, 2010). Among these, identification and narrative empathy are used most often. The term *identification* usually refers to the imaginative process by which readers come to lose awareness of their external role as a reader and take up the internal perspective of one of the characters (Cohen, 2001, 2008; see also, Kaufman & Libby, 2012, who have used the term experience-taking for the same process). Identification usually involves both a cognitive, affective, and perceptual dimension, as readers may align themselves with both the thoughts, beliefs, goals, as well as feelings and perceptions of characters (Cohen, 2001). In other words, identification can be seen as a form of perspective taking in which the reader takes the first-person, internal perspective of a character (Tal-Or & Cohen, 2010). However, as Carroll (2011) notes, both scholars and lay consumers of narratives can also use identification to refer to a range of other character engagement processes, such as “wanting to be like a character” or simply “liking a character.”

Focusing mostly on the emotional aspects of character engagement, others have used the concept of empathy to explain the relationship between readers and characters. Keen (2006, 2007) describes narrative empathy as the experience of sharing a character’s feelings (see also Zillmann, 1995) and argues that it should be seen as a separate process from identification. Nevertheless, she argues that it is not clear yet what the relationship between narrative empathy and identification is, and whether one necessarily follows from the other or not.

In a more elaborate account, Coplan (2004) shows that narrative empathy can co-occur with other emotional reactions and reflections in the reader, specifically stressing the importance of self-other awareness. Coplan argues that experiences of narrative empathy will leave readers aware of their own identity, even as they take on the perspective of the fictional other. As a result, readers might simultaneously experience empathy *and* discern their own emotional reactions to the story. These reactions might include feelings of sympathy, care, or compassion toward the characters (i.e., feelings that are directed at the mental states of characters but are not necessarily identical to those states). This is especially true when the reader knows more about the unfolding narrative events than the character (Coplan, 2004; Goldman, 2011; Keen, 2013; Oatley, 1995). Finally, sharing characters’ mental states, especially unpleasant ones, can also lead to feelings of personal distress in the reader (i.e., a self-oriented, aversive reaction toward characters’ experiences) (Decety & Lamm, 2009; Keen, 2013).

Altogether, it is clear that character engagement is a complex and multifaceted phenomenon. The terminology used to explain the experiences and processes involved in character engagement, however, is somewhat opaque (Cohen, 2008; Goldman, 2011). Coplan (2004, 2010) has argued that identification and empathy are often vaguely defined, used interchangeably and inconsistently, and do not do justice to the highly complex nature of character engagement. That is why some scholars have argued for a more pluralist view on character engagement (e.g., Bortolussi et al., 2018; Cohen, 2008; Coplan, 2004). On such accounts, character engagement is highly dynamic both in terms of intensity, frequency, and the target of readers’ engagement, and depends on various psychological processes that readers “move in and out of” (Cohen, 2008, p. 1). Beyond these theoretical and semantic considerations, character engagement is an important aspect of narrative processing and has been the focus of many empirical studies as well.

Determinants of character engagement

Empirical research on the determinants of character engagement has focused on both reader-related and text-related aspects. Readers differ in their tendency to engage with the mental worlds of characters. Although not much research has been conducted on these individual differences (but see Rain & Mar, 2021 for a recent example), empirical research has established that trait empathy positively affects sympathy and empathy for characters (Habermas & Diel, 2010; Koopman, 2015, 2016), empathic concern for and perspective taking with characters (van Lissa et al., 2018), and identification with characters (Koopman, 2016; Wimmer et al., 2021). These relationships suggest

that engaging with the minds of “fictional others” at least partially depends on readers’ real-life social-cognitive abilities (see also, Eekhof et al., 2021).

Compared to the limited literature on the relationship between reader characteristics and character engagement, there is a large body of work investigating how textual aspects of narratives influence character engagement (for a theoretical account see, e.g., Keen, 2007). Both the content and form of narratives have been found to impact character engagement. For example, characteristics of story characters (Cohen et al., 2018; Hoeken et al., 2016; Kaufman & Libby, 2012; Komeda et al., 2013; Tsay & Krakowiak, 2011) and topic severity (e.g., Habermas & Diel, 2010) are both content-related aspects of narratives that have been reported to affect character engagement.

Research on form-related aspects of narratives has mostly focused on the effect of perspectivization techniques. Perspective or viewpoint refers both to the point of view from which the objects and events in a narrative are depicted and the way this is linguistically expressed through perspectivization techniques (Eekhof et al., 2020; Niederhoff, 2013; Sanders, 1994; Vandelanotte, 2017). On a text-global level, perspective may be established through the use of grammatical perspective (i.e., the use of first-, second-, or third-person pronouns to refer to characters) or different types of narration (e.g., an omniscient narrator who has access to and describes the inner world of the characters vs. an external narrator who only reports on externally visible events). More local perspectivization techniques include the use of viewpoint markers that give readers access to the internal perspectives of characters, such as verbs of perception (e.g., *to see*, *to feel*), epistemic words (e.g., *should*, *possibly*), or emotion words (e.g., *happy*, *sad*) (Eekhof et al., 2020; van Krieken et al., 2017) and the use of thought reports (Vandelanotte, 2017).

Various aspects of narrative perspective seem to play a role in readers’ engagement with characters. For example, it has been argued that a first-person perspective would be more conducive for character engagement because the story is told from the perspective of the experiencing character (e.g., Oatley, 1999). However, results from empirical studies looking at the effects of global manipulations of grammatical perspective (consistent use of first-person pronouns vs. third-person pronouns) are mixed. Chen et al. (2017) found more identification when readers read first-person narratives, and Kaufman and Libby (2012) reported that identification was highest in first-person narratives with an in-group character. However, no effects of narrative perspective on narrative empathy and identification were found by van Lissa et al. (2018) and Wimmer et al. (2021).

Taking a slightly different approach, de Graaf et al. (2012) used stories that featured two characters and manipulated from whose perspective the stories were told. In one condition, one character’s thoughts and perceptions were in focus, and, in addition, this character was referred to with first-person pronouns, whereas the other character was referred to with third-person pronouns. In the other condition, the roles were reversed and the same narratives were told through the perspective of the other character. The results showed that participants identified more with the character from whose perspective the narrative was told. This finding was replicated by Hoeken et al. (2016).

Focusing specifically on the representation of characters’ experiences and perceptions, Sato et al. (2012) manipulated the degree to which readers were given access to the inner world of one central character in various short narratives. Versions of each narrative told by a so-called omniscient narrator who has access to and reports on the inner worlds of character were compared to versions in which an objective narrator only reported on the externally observable events of the narrative. After reading each narrative, participants performed a picture-verification task in which they had to confirm as quickly as possible whether the action presented in the picture was reported in the narrative. It was found that after reading a narrative told by an omniscient narrator (compared to an objective narrator), readers were faster to respond to pictures that represented the narrative action from the viewpoint of the performer of the action (i.e., an internal perspective) than to pictures that represented the narrative action from the viewpoint of an observer (i.e., external perspective). These findings suggest that representing the inner world of a character invites readers to take up the internal perspective of a character, rather than simulate the narrative events from an external perspective.

In addition, Habermas and Diel (2010) found that a story told from an omniscient perspective that contained explicit references to the protagonist's inner world elicited more sympathetic reactions from readers than the same story told from an impersonal, external perspective in which very few references to the protagonist's inner world were included. Similarly, van Peer and Pander Maat (2001) found that readers experienced more sympathy for the character whose thoughts were represented in the narrative. Nevertheless, Wimmer et al. (2021) found no effect of whether a text provided insight in a character's inner life (so-called internal focalization) or not (so-called external focalization) on identification.

All in all, previous research has established that character engagement is multifaceted and that it depends on reader's trait empathy. Research on the textual determinants of character engagement has provided mixed results but suggests that perspectivization techniques might still play a role. In more recent years, there has been a call to study the interaction between text and reader characteristics, because "neither the textual nor the reader dimension works in isolation" (Fernandez-Quintanilla, 2020, p. 141; see also, Eekhof et al., 2022).

In a previous study, we found evidence for this interaction showing that individual differences in social-cognitive abilities affect the linguistic processing of narrative perspective, specifically the processing of linguistic viewpoint markers (Eekhof et al., 2021). Viewpoint markers are content words that express the subjective perspectives of characters (Eekhof et al., 2020). For example, perceptual viewpoint markers such as perception verbs (*to smell*, *to see*) give readers access to the perceptions and sensations of characters. Cognitive viewpoint markers such as cognition verbs (*to think*, *to hope*) and modal adverbs (*possibly*, *maybe*) express the thoughts, beliefs, and intentions of characters, and, finally, emotional viewpoint markers such as emotion adjectives (*angry*, *joyful*) mark the emotions of characters. In an eye-tracking study we found that readers with better perspective-taking abilities and higher self-reported perspective-taking tendencies processed markers of character's perceptual and cognitive perspective faster than readers with poor perspective-taking abilities.

Based on these findings, we tentatively suggested that narrative perspective taking might draw both on the reader's social-cognitive abilities as well as perspectivization techniques in the narrative (i.e., the presence of linguistic viewpoint markers). Crucially, we hypothesized a trade-off between these two aspects, such that readers with better social-cognitive abilities might be less reliant on the presence of viewpoint markers to engage with the inner worlds of characters, and hence, in line with our findings, process these markers faster. On the other hand, readers who have relatively poor social-cognitive abilities need to rely fully on the presence of explicit cues about the mental states of characters and thus take longer to read these cues. In other words, we proposed that readers can draw on two possible resources to successfully engage with the minds of fictional others: social-cognitive abilities and textual cues. This implies that depending on their social-cognitive disposition, some readers might benefit more from textual cues than others when it comes to experiencing character engagement. This could explain why studies that have not taken into account individual differences between readers when studying the effects of textual manipulations on character engagement, have found mixed results. We set out to further explore these ideas in this study.

Current study

We designed a study to explore how both text-related aspects (i.e., the relative presence of linguistic viewpoint markers) and reader-related aspects (i.e., social-cognitive abilities) influence character engagement. The following research question was formulated:

How do the presence or absence of narrative viewpoint markers and readers' social-cognitive abilities interact to create experiences of character engagement?

We had three hypotheses regarding this research question. First, we hypothesized that the presence of viewpoint markers would positively affect character engagement in general, as these markers cue the reader to engage in perspective taking and give the reader access to the inner worlds of characters. This

prediction is in line with hypotheses by van Krieken et al. (2017) and findings by de Graaf et al. (2012), Habermas and Diel (2010), Hoeken et al. (2016), van Peer and Pander Maat (2001), and Sato et al. (2012), as described above.

Second, we hypothesized that social-cognitive abilities would have a positive effect on character engagement in general. As described above, previous research has established that trait empathy positively affects character engagement (Habermas & Diel, 2010; Koopman, 2015, 2016; van Lissa et al., 2018; Wimmer et al., 2021), and we hypothesized that other social-cognitive abilities such as perspective-taking abilities would similarly benefit character engagement.

Finally, and most crucial to our interest in the interplay between the presence of linguistic viewpoint markers and social-cognitive abilities, we hypothesized there would be an interaction between these two factors. In line with our earlier finding (Eekhof et al., 2021) that readers with better perspective-taking abilities process viewpoint markers faster and the line of reasoning explained above, we specifically hypothesized that the effect of social-cognitive abilities on character engagement would be stronger for narratives in which viewpoint markers are relatively scarce. When linguistic cues are lacking, social-cognitive abilities are all that readers can rely on, enhancing their importance, whereas in the presence of viewpoint markers, all readers should be able to engage with characters to some degree regardless of their social-cognitive abilities. Another way of looking at this interaction is that for readers with relatively poor social-cognitive abilities, we expected large differences in character engagement between the conditions with and without viewpoint markers, whereas we expected similar levels of character engagement for both conditions for readers with relatively high social-cognitive abilities.

Methods

An online study with a within-subject design was preregistered¹ and carried out to test the effect of viewpoint markers and social-cognitive abilities on character engagement. Another preregistered² study was designed to pretest the stimulus materials. Due to the COVID-19 pandemic, both the pretest and main study were conducted online. All our materials, data, and analysis scripts are publicly available on the Open Science Framework.³

Participants

Participants were recruited to take part in the main study in return for £5.25 via the online crowdsourcing platform Prolific. We aimed to recruit approximately 350 native speakers of Dutch with no history of reading disorders, aged between 18 and 70 years. This sample size was based on a power simulation in which we used data from a previous study (Eekhof et al., 2021) to estimate how many participants would be necessary to achieve a power of around 80% to detect both main effects, for which we estimated a coefficient estimate of -0.3 , and interaction effects, for which we estimated a coefficient estimate of 0.3 , partially using data from a previous study (Eekhof et al., 2021). Further details on the power simulation can be found in the preregistration on the Open Science Framework.

In total, 358 participants finished the study. After data collection, four participants were removed because they answered more than one comprehension check incorrectly for at least one of the stories. Another two participants were removed because they took longer than the established cutoff point of 109 minutes to complete the experiment. This cutoff point was established automatically by Prolific based on the estimated completion time of 42 minutes. Finally, three participants were removed because they had read one of the narratives before. No participants had to be removed based on the attention check questions.⁴

The final data set consisted of 349 participants (186 women, 155 men, 8 other) aged between 18 and 69 years ($M = 29.09$, $SD = 10.70$). The sample consisted mostly of working adults (51%) and students (41.26%). All participants were informed about their rights and gave written, online consent according

to the Declaration of Helsinki before the start of the study. The study was approved by the institutional ethics assessment committee (Approval Number 2018–3568).

Materials

Narratives

We selected two short Dutch fictional narratives previously published by professional authors and manipulated them to create two versions of each narrative: an impoverished viewpoint version and an enriched viewpoint version. The narratives were selected based on the following criteria. As first-person narratives are by definition more subjective, the relative absence of viewpoint markers is rather uncommon and unnatural in such narratives. We therefore decided to use narratives told from a third-person perspective. For the same reason, we aimed for narratives that struck a good balance between action descriptions and mental descriptions, so there would be enough narrative material to create both an impoverished viewpoint and enriched viewpoint version. Finally, we selected narratives with one central main character who could be the target for participants' character engagement.

The first narrative, *De Invaller* ("The Substitute"), was written by René Appel, a renowned and best-selling author, and previously published in a Dutch newspaper.⁵ This narrative tells the story of a girl who is being followed by a man, who eventually turns out to be one of her former high school teachers. However, by the end of the story it turns out that his intentions might not be as innocent as he claims and that the girl's initial intuitions about the man might have been correct. The second narrative, *Koorddanser* ("Tightrope Walker"), was written by Jasmijn Kam, a young and upcoming writer, and published on the website of a yearly literary award for Dutch short stories.⁶ This narrative centers around a main character who somewhat reluctantly takes an older lady to the circus in a nearby French town because his aunt asks him to.

We manipulated both narratives to create an impoverished viewpoint and an enriched viewpoint version, taking the original texts as a basis. To facilitate the manipulation, we first analyzed the original narratives as follows. We divided each original text into lexical units. Then, the first and second author independently coded each unit of the narratives for the presence of perceptual (i.e., verbs of perception, verbs of bodily sensation, and morphologically related content words), cognitive (i.e., verbs of cognition, modal epistemic verbs and adverbs, and morphologically related content words), and emotional viewpoint markers (i.e., verbs and adjectives of emotion, and morphologically related content words) using the Viewpoint Identification Procedure, which we developed in a previous study (Eekhof et al., 2020). Interrater agreement was almost perfect for both *De Invaller* (97.78%, $\kappa = .86$) and *Koorddanser* (98.43%, $\kappa = .87$). Disagreements were resolved by discussion between the first and second author, leading to the viewpoint ratings reported for the original narratives in the first column of Table 1. Next, we marked cases of thought report and speech report (direct, indirect, and free indirect style) and identified the referents for all viewpoint markers and thought reports (i.e., identify the character whose inner world is represented by these markers and reports). We then developed the two highly controlled and reproducible manipulation strategies described below to create two versions of each narrative, as exemplified in Table 2.

Impoverished viewpoint versions. The following procedure was used to create the impoverished viewpoint versions. We removed all viewpoint markers and thought reports except if they were embedded in speech reports. This was done because in these cases viewpoint markers or thought reports cannot be considered true markers of *internal* perspective. We proceeded with the removal of all other viewpoint markers and thought reports as follows:

- (1) If it was possible to remove a viewpoint marker while leaving the rest of the sentence it was embedded in largely intact, we did so. For example, "A young couple was talking **earnestly** (*emotional viewpoint marker*) in hushed tones" became "A young couple was talking in hushed tones."

Table 1. Descriptive statistics for the different versions of the narratives.

Story	Text Characteristic	Original Narrative	Enriched Viewpoint Version	Impoverished Viewpoint Version
<i>De Invalier</i>	Number of words	743	875	713
	Number of lexical units	719	845	686
	Number of perceptual viewpoint markers (%)			
	Total	21 (2.92%)	41 (4.85%)	1 (0.15%)
	Embedded in speech reports	1 (0.14%)	1 (0.12%)	1 (0.15%)
	Not embedded in speech reports	20 (2.78%)	40 (4.73%)	0 (0.00%)
	Number of cognitive viewpoint markers (%)			
	Total	36 (5.00%)	54 (6.39%)	18 (2.62%)
	Embedded in speech reports	18 (2.50%)	18 (2.13%)	18 (2.62%)
	Not embedded in speech reports	18 (2.50%)	36 (4.26%)	0 (0.00%)
	Number of emotional viewpoint markers (%)			
	Total	8 (1.11%)	15 (1.78%)	1 (0.15%)
	Embedded in speech reports	1 (0.14%)	1 (0.12%)	1 (0.15%)
	Not embedded in speech reports	7 (0.97%)	14 (1.66%)	0 (0.00%)
	Number of thought reports	8	16	0
	Number of lexical units within speech reports (%)	169 (23.51%)	169 (20.00%)	171 (24.93%)
	Mean word length (<i>SD</i>)	4.39 (2.40)	4.42 (2.43)	4.47 (2.43)
	Mean log-transformed lemma frequency (<i>SD</i>)	10.82 (2.94)	10.81 (2.97)	10.70 (3.09)
<i>Koorddanser</i>	Number of words	1104	1198	1048
	Number of lexical units	1084	1175	1030
	Number of perceptual viewpoint markers (%)			
	Total	24 (2.21%)	44 (3.75%)	4 (0.39%)
	Embedded in speech reports	4 (0.37%)	4 (0.34%)	4 (0.39%)
	Not embedded in speech reports	20 (1.85%)	40 (3.40%)	0 (0.00%)
	Number of cognitive viewpoint markers (%)			
	Total	43 (3.97%)	59 (5.02%)	27 (2.62%)
	Embedded in speech reports	27 (2.49%)	27 (2.30%)	27 (2.62%)
	Not embedded in speech reports	16 (1.48%)	32 (2.72%)	0 (0.00%)
	Number of emotional viewpoint markers (%)			
	Total	8 (0.74%)	14 (1.19%)	2 (0.19%)
	Embedded in speech reports	2 (0.19%)	2 (0.17%)	2 (0.19%)
	Not embedded in speech reports	6 (0.55%)	12 (1.02%)	0 (0.00%)
	Number of thought reports	0	3	0
	Mean word length (<i>SD</i>)	4.35 (2.23)	4.40 (2.26)	4.39 (2.22)
	Number of lexical units within speech reports (%)	243 (22.42%)	243 (20.68%)	243 (23.59%)
	Mean log-transformed lemma frequency (<i>SD</i>)	10.82 (3.16)	10.82 (3.14)	10.71 (3.23)

Only the enriched viewpoint and impoverished viewpoint versions of the narratives were used in the experiment.

- (2) If removing a viewpoint marker led to an ungrammatical or incomprehensible sentence, or if the whole sentence was a thought report, we rephrased or replaced these sentences, taking care to use as much of the original wording as possible (e.g., the use of pronouns or names to refer to characters):
- Sentences with perceptual viewpoint markers were rephrased as, or replaced by, an external description of the object or scene that was perceived by a character. For example, “He **hears** (*perceptual viewpoint marker*) the splashing of the shower and, very distantly, Helène’s voice” became “The shower splashes and very distantly, Helène is having a conversation.”
 - Thought reports or sentences with cognitive and/or emotional viewpoint markers were rephrased as, or replaced by, external descriptions of characters’ behavior or the story world, from which the eliminated internal viewpoint could in principle be inferred by the reader, at least to a rough degree. For example, “**Embarrassed** by her own **fear**, **distrust** and **panic** (*all emotional viewpoint markers*), she sat down on the couch” became “She sat down on the couch, leaned back, and held her hand to her forehead.” In this case, the eliminated emotional viewpoint markers could be inferred by the reader based on the added description of the character’s behavior.

Table 2. Excerpts from the two narratives in the two viewpoint Conditions.

Story	Original narrative	Impoverished viewpoint version	Enriched viewpoint version
De Invaller	Suddenly she stood up, took her wallet from her purse, put a twenty euro bill on the bar and, almost running, left the café. She barely heard Joost call out that she still needed to get change. Quickly, quickly. With trembling hands she took her bicycle key out of the pocket of her jeans and opened the lock. As she cycled away, she saw a red spot coming from the café out of the corner of her eye. “HEY!” the man called out, and then something else, but she couldn’t understand it.	Suddenly she stood up, took her wallet from her purse, put a twenty euro bill on the bar and, almost running, left the café. “You still need to get your change!” Joost called after her. Quickly and with trembling hands she took her bicycle key out of the pocket of her jeans and opened the lock. As she cycled away, something red came out of the café. “HEY!” the man called out, “Wait!”, but she quickly cycled on and turned the corner at the intersection at the end of the street.	Suddenly she stood up, panic-struck, took her wallet from her purse, put a twenty euro bill on the bar and, almost running, left the café without looking back. She barely heard Joost call out that she still needed to get change. Quickly, quickly, she wanted to leave. With trembling hands she looked for her bicycle key in the pocket of her jeans and tried to open the lock. As she cycled away, she was startled to see a red spot coming from the café out of the corner of her eye. “HEY” she heard the man call out, and then something else, but she couldn’t understand it.
Koorddanser	When the two women have left together, Daan remains seated at the side of the pool for a while. The sun reflects on the water, it’s bright to his eyes. He hears crickets in the bushes. A small lizard shoots past, then seems startled by itself and sits dead still a few inches from his left hand. The creature’s belly moves up and down at lightning speed. Daan very slowly moves his right hand towards the reptile to catch it and then very quickly brings his fingers down around the creature like a cage.	When the two women have left together, Daan remains seated at the side of the pool for a while. The sun reflects on the water, it’s bright to his eyes. Crickets chirp in the bushes. A small lizard shoots past and then suddenly sits dead still a few inches from his left hand. The creature’s belly moves up and down at lightning speed. Daan very slowly moves his right hand towards the reptile to catch it and then very quickly brings his fingers down around the creature like a cage.	When the two women have left together, Daan decides to remain seated at the side of the pool for a while. The sun reflects on the water, it hurts his eyes. He hears crickets in the bushes. A small lizard shoots past, then seems startled by itself and sits dead still a few inches from his left hand. Daan observes how lightning fast the belly of the creature moves up and down. He very slowly moves his right hand towards the reptile to catch it and then very quickly brings his fingers down around the creature like a cage.

Note. Thought reports are printed in italics. Viewpoint markers are printed in bold, with perceptual viewpoint markers in blue, cognitive viewpoint markers in green, and emotional viewpoint marked in yellow.

- (c) Finally, in some rare cases we added descriptions of the story world that were not relevant to the plot of the story to make up for longer sentences that were removed. For example, the thought report “There wasn’t a damn person to be seen. How could she have been so stupid as to take this road?” became “The park was poorly lit and completely deserted. She cursed out loud.” However, we decided not to add too many filler sentences to the impoverished versions, as adding extra details to the plot might introduce a confound in the design of the study.

Enriched viewpoint versions. The following procedure was used to create the enriched viewpoint versions of each narrative. We counted the number of viewpoint markers of each dimension (perceptual, cognitive, and emotional) that were not embedded in speech reports as well as the number of thought reports in the original narratives. Throughout the texts, we then added viewpoint markers and thought reports referring to the main character and in line with the plot of the narrative, so as to double the original number of viewpoint markers and thought reports not embedded in speech reports (Table 1).

Descriptive information for the original, impoverished, and enriched versions of the narratives can be found in Table 1. Note that only the enriched viewpoint versions and the impoverished viewpoint versions were used in the experiment. Although the enriched versions of both narratives were slightly longer, there were no significant differences in word length (*De Invalier*: $t(1529) = -0.36$, $p = .72$, $d = -0.02$, 95% CI $[-0.12, 0.08]$; *Koorddanser*: $t(2203) = 0.13$, $p = .90$, $d = 0.01$, 95% CI $[-0.08, 0.09]$) or log-transformed lemma frequency (taken from SUBTLEX-NL corpus, Keuleers et al., 2010) for either of the narratives (*De Invalier*: $t(1467) = 0.70$, $p = .49$, $d = 0.04$, 95% CI $[-0.07, 0.14]$; *Koorddanser*: $t(2151) = 0.85$, $p = .40$, $d = 0.04$, 95% CI $[-0.05, 0.12]$).

Pretest. To test our textual manipulation and ensure that there were no significant differences in perceived textual fluency between the different versions of the narratives, we conducted a pretest with the effect of condition (enriched viewpoint vs. impoverished viewpoint) on textual fluency tested within-subjects (see the preregistration on the Open Science Framework for more details). Fifty-three participants (43 women, 9 men, 1 other) from the Radboud University participant pool, aged between 18 and 54 years ($M = 21.43$, $SD = 6.07$), rated the stories for perceived textual fluency using five seven-point Likert scale items (e.g., *This story reads easily*; *This story is well written*; 1 = *disagree*, 7 = *agree*) in an online study administered via Qualtrics.

Responses on the five Textual Fluency items were averaged per participant, per story (see also Table 4). Reliability for this index variable was good ($\alpha = .90$). There was no significant difference in Textual Fluency ($t(52) = 2.01$, $p = .05$, $d = 0.42$, 95% CI $[0.03, 0.81]$) between the enriched condition ($M = 5.31$, $SD = 1.21$) and the impoverished condition ($M = 4.77$, $SD = 1.38$). However, as can be seen from the means, there was a near-significant trend toward the impoverished viewpoint versions being perceived as less fluent. In addition, we conducted another paired t -test and found that irrespective of condition, *Koorddanser* ($M = 4.57$, $SD = 1.36$) was found to be significantly less fluent than *De Invalier* ($M = 5.51$, $SD = 1.10$; $t(52) = -3.76$, $p < .05$, $d = -0.76$, 95% CI $[-1.16, -0.36]$). We expected, however, that this latter difference might have arisen because participants not only judged the textual fluency of the different texts, but also the content. As *Koorddanser* has a slightly more complex plot, this might have influenced readers’ judgments.

Based on the results of this pretest, we decided to make the following adjustments for the main study. First, because we did not find a significant difference in perceived textual fluency between the different conditions, we did not adapt the manipulations, except for fixing two minor spelling errors. Next, we decided to include the Textual Fluency items in the main experiment with slightly rephrased instructions, stressing that we were interested in judgments about language use, not about content or plot. Since there was a near-significant difference between the two versions in the pretest, we opted to use Textual Fluency scores as a control variable in the analyses of the main experiment.

Measures of character engagement

Although there are ongoing efforts to develop so-called online measures of narrative engagement (see, e.g., Kaakinen & Simola, 2020; Sukalla et al., 2016), we decided to measure character engagement after reading using self-report questionnaires. In addition to the fact that questionnaires are easier to implement in an online study, the advantage of this approach is that, unlike with psychophysiological measures, it is easier to tap into the various different dimensions of character engagement. In line with the pluralist accounts of character engagement described in the Introduction, we therefore combined items from three different questionnaires to measure various aspects of character engagement. First, we used the 14 items of the EDI scale reported in Igartua (2010) and originally developed in Spanish by Igartua and Páez (1998) to measure identification. Igartua (2010) found two underlying components in a principal component analysis: Half of the items were related to the experience of becoming the character and loss of self-awareness (e.g., *I thought I was like the characters or very similar to them*). The other items were related to cognitive and emotional empathic reactions to the character (e.g., *I tried to imagine the characters' feelings or emotions*). The scale has not been validated but has frequently been used to measure pre- and post-intervention differences in empathy levels in healthcare professionals (e.g., Ward et al., 2018).

Next, we used 11 items that Busselle and Bilandzic (2009) created during the development of their Narrative Engagement scale to measure readers' tendency to take the perspective of the main character and share their emotions. Five items belonged to the Empathy subscale (e.g., *At important moments in the story, I could feel the emotions the characters felt*) and six items belonged to the Cognitive Perspective Taking subscale (e.g., *I could understand why the characters felt the way they felt*). As only three of these items are included in the final Narrative Engagement Scale, these subscales have not been validated independently.

Finally, we used the Comprehensive State Empathy Scale, developed by Levett-Jones et al. (2017). This questionnaire consists of 30 items, distributed over six subscales. The Empathic Concern subscale consists of the following statement followed by six different adjectives (e.g., *moved, tender*): *On a scale of 1–7, please rate the extent to which you experienced each of these feelings in response to X's story*. Similarly, the Distress subscale consisted of six adjectives (e.g., *distressed, troubled*). The Shared Affect subscale consisted of four items (e.g., *I actually felt X's distress*). The Empathic Imagination subscale consisted of four items (e.g., *I found myself imagining myself in X's shoes*). The Helping Motivation subscale also consisted of four items (e.g., *I experienced a strong urge to help X*). Finally, the Cognitive Empathy subscale consisted of six items (e.g., *I feel confident that I could accurately describe how X felt*). All items were translated to Dutch and presented with seven-point Likert scales (1 = *disagree*, 7 = *agree*).

Measures of social-cognitive abilities

Interpersonal Reactivity Index. We included two self-report measures of trait empathy. First, we administered the Interpersonal Reactivity Index (IRI; Davis, 1983), a validated measure that consists of 28 items, divided over four subscales, assessing participants' tendency to feel concerned about others (Empathic Concern, e.g., *I am often quite touched by things that I see happen*), tendency to engage with fiction characters (Fantasy, e.g., *When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me*), tendency to feel emotionally disturbed when seeing someone else go through a negative emotional experience (Personal Distress, e.g., *Being in a tense emotional situation scares me*), and tendency to take the perspective of others (Perspective Taking, e.g., *I sometimes try to understand my friends better by imagining how things look from their perspective*). A Dutch translation was used (Eekhof et al., 2021, adapted from De Corte et al., 2007; Mak & Willems, 2018), and all items were presented with seven-point Likert scales (1 = *disagree*, 7 = *agree*).

The IRI has been validated (Davis, 1983; De Corte et al., 2007), and its subscales have been found to be related to personality traits such as agreeableness (Empathic Concern), neuroticism (Personal

Distress), and openness (Perspective Taking; De Corte et al., 2007) as well as to aspects of emotional intelligence (all subscales; De Corte et al., 2007). Moreover, scores on the Perspective Taking subscale of the IRI have been found to be significantly correlated with several behavioral measures of emotion recognition (Israelashvili et al., 2019). Nevertheless, the IRI has also been criticized, both from a conceptual and psychometric standpoint. Baldner and McGinley (2014) note that some of the subscales of the IRI do not necessarily reflect what is now understood to be empathy. For example, personal distress focuses on self-oriented emotional reactions, even though empathy is usually understood to be other-directed. In addition, Wang et al. (2020), among others, have criticized the ways in which IRI is usually scored (e.g., calculating one mean score). We nevertheless decided to include the IRI because the individual subscales could be considered to reflect social-cognitive abilities or processes that might impact character engagement, even if they do not necessarily reflect trait empathy. To address the issues raised by Wang et al. (2020), we calculated a mean score for each subscale separately.

Basic Empathy Scale. Based on Baldner and McGinley's (2014) recommendations, we also added a more recent self-report measure of trait empathy: the Basic Empathy Scale (BES; Jolliffe & Farrington, 2006). This validated questionnaire consists of ten items measuring Cognitive Empathy (e.g., *I can often understand how people are feeling even before they tell me*), defined as the ability to understand what someone else is feeling, and 10 items measuring Affective Empathy (e.g., *After being with a friend who is sad about something, I usually feel sad*), defined as the tendency to share someone else's feelings. All items were translated to Dutch by the authors and presented with seven-point Likert scales (1 = *disagree*, 7 = *agree*).

The Cognitive Empathy subscale has been found to be negatively related to alexithymia (the inability to express emotions in words; Jolliffe & Farrington, 2006). Moreover, both subscales of the BES have been found to be significantly correlated with personality traits such as extraversion, agreeableness, and openness (Jolliffe & Farrington, 2006) as well as behavioral measures of mind-reading (Čavojová et al., 2012).

Spontaneous Theory of Mind Protocol. We added the Spontaneous Theory of Mind Protocol (STOMP) as a more implicit measure of social-cognitive abilities (Rice & Redcay, 2015). During this task, participants watch two 2- to 3-minute soundless video clips taken from existing Hollywood movies. The first video clip shows two neighbors observing a woman in an apartment, who is caught by a man while she is on the look-out for something. The video clip was taken from the movie *Rear Window* (1954). The second video clip shows a girl distracting a boy she has just been on a date with, because her friend, who secretly followed them during the date, has to escape from his car. This video clip was taken from the movie *John Tucker Must Die* (2006). Participants saw both video clips in a random order and were asked to describe the scene they had just seen in approximately 7 to 10 sentences.

Participants' responses are argued to reflect their spontaneous mentalizing tendencies, and scores have been found to correlate with cortical thickness of brain areas typically associated with theory of mind (Rice & Redcay, 2015). Research has shown that this measure is sensitive enough to measure individual variability in a neurotypical adult population (Rice & Redcay, 2015; Warnell & Redcay, 2019).

Multifaceted Empathy Test. Finally, we included the emotional empathy trials of the Multifaceted Empathy Test (MET; Dziobek et al., 2008) as an implicit measure of trait emotional empathy. The original MET also contains emotion recognition trials similar to the often used Reading the Eyes in the Mind Task (Baron-Cohen et al., 2001), that is, participants are asked to match one of four emotion words to a picture of a person. We decided not to include the emotion recognition trials, however, because we found the scores on these trials to have very poor internal reliability in a previous study (Eekhof et al., 2021). In the emotional empathy trials of the MET, participants are asked to rate to what

degree seeing a picture of a person experiencing an emotion (e.g., a woman crying, a little girl looking at a wrapped present) makes them feel that same emotion using a nine-point Likert scale (1 = *not at all*, 9 = *very much*). There were 40 pictures in total, presented in a randomized order.

Although the MET was originally developed for use in patient populations (e.g., patients with an autism spectrum disorder diagnosis, Dziobek et al., 2008), a previous study with a neurotypical sample did not show evidence of ceiling effects (Eekhof et al., 2021). This suggests that the emotional empathy trials can be used to detect individual differences in trait emotional empathy in non-clinical adult populations.

Measures of reading habits

As previous research has shown that exposure to fiction affects character engagement (e.g., Koopman, 2015, 2016; van Lissa et al., 2018), we decided to measure and control for participants' reading habits. Participants completed three measures of reading habits. First, we used a Dutch version of the Author Recognition Test (ART), created by Brysbaert et al. (2020). This test consists of a list of 132 names, 90 of which are names of existing well-known Dutch and international authors. The other 42 names are foils. Participants are instructed to select the names of authors they have heard of and are told that one point will be subtracted for each foil they select.

In addition to the ART, participants were presented with two questions measuring self-reported exposure to fiction, either by reading or listening or by watching (e.g., *How often did you read or listen to fiction?*). We used the genre distinctions used in Kuijpers et al. (2020) as examples of what we meant by fiction (e.g., novels, story collections, fairy tales). Each item was presented with seven response options taken from Kuijpers et al. (2020): 1 = *Never in the past year*; 2 = *Once in the past year*; 3 = *About once every three months in the past year*; 4 = *About once every month in the past year*; 5 = *About once a week in the past year*; 6 = *More than once a week in the past year*; 7 = *Almost every day in the past year*.

Finally, we also created four items to measure participants' exposure to fiction during their childhood years (e.g., *My parents or caregivers regularly read to me from fiction books (e.g., picture books, novels, stories, fairy tales)*). We hypothesized that exposure to narratives during the years that reading and narrative competencies develop might still affect readers' current experiences when reading narratives. Three of these items were presented with seven-point Likert scales (1 = *disagree*, 7 = *agree*). One item (*As a child (under age 12), compared to peers, I read . . .*) was presented with a seven-point scale ranging from *Much less* to *Much more*.

Additional measures

We embedded three attention check items within some of the other measures (e.g., *Check the third option from the right for this item*) to make sure that participants paid sufficient attention during the study. We aimed to exclude participants who missed more than one of these attention checks, but, as described above, no participants had to be excluded based on this criterion.

The same comprehension questions that were created for the pretest were used (three multiple choice questions per narrative, four response options each) as an additional attention check. Participants who answered more than one of these questions incorrectly for one or both of the stories were removed from the data set (see Participants).

We also included the five Textual Fluency items from the pretest after each narrative. The instructions were slightly rephrased, however, based on the experiences from the pretest: *"Below are a couple of statements about the style of writing of the story you have just read. They concern the language and not the content of the story. Indicate to what degree you agree with these statements."*

Finally, we included a multiple choice question to check whether participants had read any of the narratives before (response options: *yes, no, maybe/not sure*). Participants who were sure they had read at least one of the narratives were removed from the data set (see Participants).

Procedure

The study was conducted online using the survey site Qualtrics (Provo, UT). After signing for informed consent, participants first completed some demographic questions. Then, half of the participants first completed the measures of social-cognitive abilities and reading habits in a randomized order. Next, these participants read the two narratives (with order counterbalanced) in two different conditions (with condition counterbalanced) and filled in the measures of character engagement as well as the comprehension check and Textual Fluency items after finishing each narrative. The other half of the participants completed the reading part of the study first, and then completed the batch of social-cognitive and reading habits measures in a randomized order. Finally, participants were thanked for their time and redirected to Prolific, where they were compensated for their participation. Participants who were included in the final data set took on average 45 minutes to complete the study.

Data analysis

All data were analyzed in RStudio (version 2022.02.0, R version 4.1.2; R Core Team, 2020). We calculated mean scores per participant for the four subscales of the IRI, the two subscales of the BES, the MET,⁷ the Reading Habits Fiction and Childhood items, and the Textual Fluency items.

STOMP scores were calculated by chunking participants' responses into clauses representing individual information units and coding these chunks according to an extended codebook developed in an earlier study (Eekhof et al., 2021), which can be found on the Open Science Framework. In short, each chunk was coded as either being an external (i.e., physical descriptions, descriptions of physical inferences) or internal description (i.e., descriptions of emotions, intentions, and mental states). A score was calculated for each participant by taking the percentage of internal descriptions out of all chunks. If a participant indicated they had seen one of two movies that the video clips were taken from, their STOMP score was only based on their response to the other video clip. If participants had seen both movies, no STOMP score was calculated. This was the case for 2 participants.

An independent researcher coded 10% of the data to ensure the reliability of the codebook. Interrater reliability was good (96.32%, $\kappa = .91$). Hence, the ratings of the first author were used in further analyses.

Finally, ART scores were calculated by taking the number of correctly identified authors and subtracting the number of selected foils. The descriptive statistics for the measures of social-cognitive abilities and reading habits are given in Table 3. The Textual Fluency scores are given in Table 4.

We entered the character engagement items from the three questionnaires in a Principle Component Analysis with oblique rotation (see Results) using the *GPArotation* package (Bernaards & Jennrich, 2005) and the *psych* package (Revelle, 2013). For the main analyses, we fit linear mixed models using the *lme4* package (Bates et al., 2015). Degrees of freedom and *p* values were estimated using the *lmerTest* package (Kuznetsova et al., 2017). Variance Inflation Factors (VIFs) were calculated

Table 3. Descriptive statistics for the measures of social-cognitive abilities and reading habits.

Measure	<i>M</i> (<i>SD</i>)	Min	Max	Cronbach's α
Interpersonal Reactivity Index – Empathic Concern	5.10 (1.00)	2.14	7.00	.79
Interpersonal Reactivity Index – Fantasy	5.17 (1.05)	1.71	7.00	.81
Interpersonal Reactivity Index – Personal Distress	3.68 (1.07)	1.00	6.71	.82
Interpersonal Reactivity Index – Perspective Taking	4.97 (0.89)	2.14	7.00	.75
Basic Empathy Scale – Affective Empathy	4.98 (0.97)	2.00	7.00	.85
Basic Empathy Scale – Cognitive Empathy	5.56 (0.79)	2.89	7.00	.85
Spontaneous Theory of Mind Protocol (%)	33.01 (10.76)	5.26	88.89	
Multifaceted Empathy Test – Emotional Empathy	4.76 (1.26)	1.00	7.92	.95
Author Recognition Test	26.66 (15.85)	1.00	88.00	
Reading Habits – Fiction	4.66 (1.18)	1.00	7.00	
Reading Habits – Childhood	5.50 (1.39)	1.00	7.00	.80

No Cronbach's alpha was calculated for Reading Habits – Fiction as this measure was comprised of only two items.

Table 4. Descriptive statistics for the perceived textual fluency scores of the pretest and main experiment.

Study	Narrative	Mean Textual Fluency Score	Mean Textual Fluency Score (SD) –
		(SD) – Enriched viewpoint Condition	Impoverished viewpoint Condition
Pretest	De Invaller	5.80 (1.04)	5.16 (1.09)
	Koorddanser	4.73 (1.14)	4.45 (1.52)
Main experiment	De Invaller	5.66 (1.07)	5.35 (1.08)
	Koorddanser	4.39 (1.32)	4.30 (1.29)

with a function reported online (*R-hack/mer-utils.R*, 2014). All continuous predictors were scaled and centered. We fit separate models for each of the components extracted with the principal component analysis (PCA) on the character engagement questionnaires. However, for two of the six extracted components we ran into singularity issues (i.e., the variance for the by-participant intercepts was estimated as 0). This meant we were unable to fit any linear mixed models for these components. Moreover, as the design of our study did not allow us to run an ordinary linear regression instead either, we decided not to further analyze these components.

For the other four components, we started out with a model structure that included fixed effects of condition, all measures of social-cognitive abilities, as well the interaction between these measures and condition, fixed effects of the three measures of reading habits (ART, Fiction Habits, Childhood Habits), and Textual Fluency score, as well as by-subject random intercepts. However, the Empathic Concern subscale of the IRI and the Affective Empathy subscale of the BES were highly correlated ($r(347) = .70$, $p < .001$), and VIFs were relatively high for these predictors (around 2.60 for all models). Hence, we decided to pull out the Empathic Concern subscale of the IRI for all analyses. We favored the Affective Empathy subscale, because the BES is a more recently validated scale. This decision is in line with the preregistration of our analyses. As a result, the model structure for the reported linear mixed models is as follows:

Character Engagement Component ~ Condition * Social-Cognitive Abilities Scores (3 IRI Subscales [Fantasy, Personal Distress, Perspective Taking], 2 BES subscales [Affective Empathy, Cognitive Empathy], STOMP, MET) + Reading Habits (ART, Fiction, Childhood) + Textual Fluency + (1|Subject)

We used effects coding with (–0.5, 0.5) weights for the binary factor Condition. Consequently, the intercept estimate of the model output reflects the grand average of the mean of the dependent variable for the enriched viewpoint condition and the mean of the dependent variable for the impoverished viewpoint condition. The estimate of the effect of condition reflects the difference between the enriched viewpoint condition and the impoverished condition. The estimates of the effects of the other continuous predictors reflect the average effect of that predictor across the two viewpoint conditions. Finally, the estimate of the interaction effects between condition and the other continuous predictors reflects the difference between the effect of that continuous predictor for the enriched viewpoint condition and the effect of that continuous predictor for the impoverished viewpoint condition.

In other words, this type of contrast coding allows us to see the overall effect of social-cognitive abilities and reading habits on character engagement (main effects), the overall effect of the relative presence of viewpoint markers (main effect of condition), as well as how the effect of social-cognitive abilities differs depending on the presence of viewpoint markers (interaction effects).

Because we ran four separate models for our main analyses, we followed a reviewer’s advice to use a Bonferroni correction to control for multiple comparisons. As a result, we used a stricter inference criterion ($\alpha = .05/4 = .0125$) than we originally preregistered.

Results

Textual Fluency

Responses on the five textual Fluency items were averaged per participant, per story (Table 4). Reliability for this index variable was good ($\alpha = .88$). There was no significant difference in Textual

Fluency ($t(348) = 1.67, p = .10, d = 0.13, 95\% \text{ CI } [-0.02, 0.28]$) between the enriched condition ($M = 5.01, SD = 1.36$) and the impoverished condition ($M = 4.84, SD = 1.30$). Again, we also conducted a paired t -test for the difference between the two narratives and found that irrespective of condition, *Koorddanser* ($M = 4.35, SD = 1.30$) was found to be significantly less fluent than *De Invaller* ($M = 5.50, SD = 1.09; t(348) = -13.61, p < .05, d = -0.96, 95\% \text{ CI } [-1.12, -0.81]$).

PCA on character engagement items

All 55 items of the various character engagement questionnaires were entered in a PCA with oblique rotation (oblimin). Sampling adequacy was more than adequate ($KMO = .98$; all KMO s for individual items $> .90$). Bartlett's test of sphericity confirmed that the correlations between the various items were big enough to perform a PCA ($\chi^2(1,485) = 37,468.05, p < .001$). However, the determinant was smaller than the value of .0001 recommended by Field et al. (2012), which could be a sign of multicollinearity. As the nature of our PCA was exploratory, we did not consider this a problem. Moreover, a PCA on a subset of the items ($n = 20$) for which the determinant was larger than .0001 produced an outcome very similar to the PCA on the full set of items ($n = 55$).

We obtained eigenvalues for all 55 components from an initial PCA. Based on Kaiser's criterion and inspection of the scree plot, we retained six components that had eigenvalues larger than 1 and together explained 71% of the variance. The factor loadings of the final PCA based on the pattern matrix and structure matrix can be found on the Open Science Framework.

The first component seems to reflect a tendency to cognitively engage with the characters' mental states (strongest loading item: *My understanding of X is unclear (-)*), hence, we named this component "Cognitive Perspective Taking With Character." The second component seems to reflect an imaginative process by which readers simulate the experiences of characters (strongest loading item: *I found myself trying to imagine what X was experiencing*), hence, we named this component "Empathic Imagination Toward Character." The third component seems to reflect self-centered feelings of distress elicited by reading the stories (strongest loading item: *In response to X's story I felt upset*), hence, we named this component "Story-Induced Personal Distress." The fourth component seems to reflect forms of engagement that fit under the broader descriptor of identification (strongest loading item: *I thought that I would like to be like or act like X*), hence, we named this component "Character Identification." The fifth component seems to reflect positive, other-directed feelings toward the character (strongest loading item: *In response to X's story I felt tender*), hence, we named this component "Sympathy Toward Character." Finally, the sixth component seems to reflect feelings of care as well as an urge to help characters (strongest loading item: *I experienced a strong urge to help X*), hence, we named this component "Motivation to Help Character." The correlations between the different components are reported in Table 5. All components significantly and positively correlated to each other.

Table 5. Correlations between the six extracted components with 95% confidence intervals between square brackets.

Variable	1	2	3	4	5
1. Cognitive Perspective Taking Toward Character					
2. Empathic Imagination Toward Character	.60** [.55, .64]				
3. Story-Induced Personal Distress	.44** [.37, .49]	.47** [.41, .52]			
4. Character Identification	.56** [.50, .61]	.51** [.45, .56]	.50** [.44, .55]		
5. Sympathy Toward Character	.27** [.20, .34]	.26** [.19, .32]	.22** [.15, .29]	.28** [.21, .35]	
6. Motivation to Help Character	.46** [.40, .52]	.53** [.47, .58]	.45** [.39, .51]	.36** [.30, .43]	.12* [.05, .19]

A Bonferroni correction was applied to control for multiple comparisons. Hence, the critical alpha was set to .0033 (= .05/15). * $p < .0033$, ** $p < .001$.

As reported above, we were unable to fit any linear mixed model for the Cognitive Perspective Taking component and the Motivation to Help Character component due to singularity issues for the by-participant random intercept. In the next step of the analysis we therefore only analyzed how social-cognitive abilities and the presence of viewpoint markers affected the four other components: Empathic Imagination Toward Character, Story-Induced Personal Distress, Character Identification, and Sympathy Toward Character.

Main analysis on extracted character engagement components

Empathic Imagination Toward Character

The estimates for the linear mixed model predicting Empathic Imagination Toward Character are given in Table 6. VIFs were below 2 for all predictors. There was no significant effect of condition. There were, however, positive effects of three measures of social-cognitive abilities: the Fantasy and Perspective Taking subscales of the IRI, and the Emotional Empathy score of the MET (Figure 1).⁸ Finally, Textual Fluency score had a positive effect on Empathic Imagination Toward Character. There were no significant interaction effects between condition and any of the measures of social-cognitive abilities.

Story-Induced Personal Distress

The estimates for the linear mixed model predicting Story-Induced Personal Distress are given in Table 7. VIFs were below 2 for all predictors. There was no significant effect of condition. There was, however, a positive effect of the Emotional Empathy score of the MET (Figure 2). In addition, Textual Fluency score had a positive effect on Story-Induced Personal Distress.

Table 6. Estimates for the linear mixed model predicting empathic imagination toward character.

Predictors	Estimates	SE	CI	t	p
(Intercept)	0.00	0.03	−0.06–0.06	−0.03	.978
Condition (Enriched viewpoint)	0.11	0.05	0.01–0.21	2.06	.040
BES – Affective Empathy Score	−0.04	0.04	−0.12–0.05	−0.84	.402
BES – Cognitive Empathy Score	0.00	0.04	−0.08–0.08	−0.03	.972
IRI – Fantasy Score	0.20	0.04	0.13–0.28	5.27	<.001**
IRI – Perspective Taking Score	0.14	0.04	0.06–0.21	3.71	<.001**
IRI – Personal Distress Score	0.02	0.04	−0.05–0.09	0.61	.543
MET – Emotional Empathy Score	0.14	0.03	0.08–0.21	4.19	<.001**
STOMP Score	0.04	0.03	−0.02–0.10	1.24	.217
ART Score	−0.02	0.03	−0.09–0.04	−0.72	.474
Reading Habits – Fiction Score	0.06	0.04	−0.01–0.13	1.66	.098
Reading Habits – Childhood Score	0.05	0.03	−0.02–0.11	1.33	.183
Textual Fluency Score	0.51	0.03	0.46–0.57	17.86	<.001**
Condition (Enriched viewpoint) *	0.07	0.07	−0.07–0.22	1.00	.318
BES – Affective Empathy Score					
Condition (Enriched viewpoint) *	0.09	0.07	−0.04–0.22	1.32	.187
BES – Cognitive Empathy Score					
Condition (Enriched viewpoint) *	−0.06	0.06	−0.18–0.06	−0.96	.337
IRI – Fantasy Score					
Condition (Enriched viewpoint) *	−0.01	0.06	−0.13–0.11	−0.23	.819
IRI – Perspective Taking Score					
Condition (Enriched viewpoint) *	0.09	0.06	−0.03–0.21	1.49	.138
IRI – Personal Distress Score					
Condition (Enriched viewpoint) *	0.00	0.06	−0.12–0.11	−0.09	.932
MET – Emotional Empathy Score					
Condition (Enriched viewpoint) *	−0.02	0.05	−0.13–0.08	−0.44	.657
STOMP Score					

All continuous predictors were scaled and centered for analysis. Effects coding with (−0.5, 0.5) weights were used for the binary predictor Condition. * $p < .0125$, ** $p < .001$.

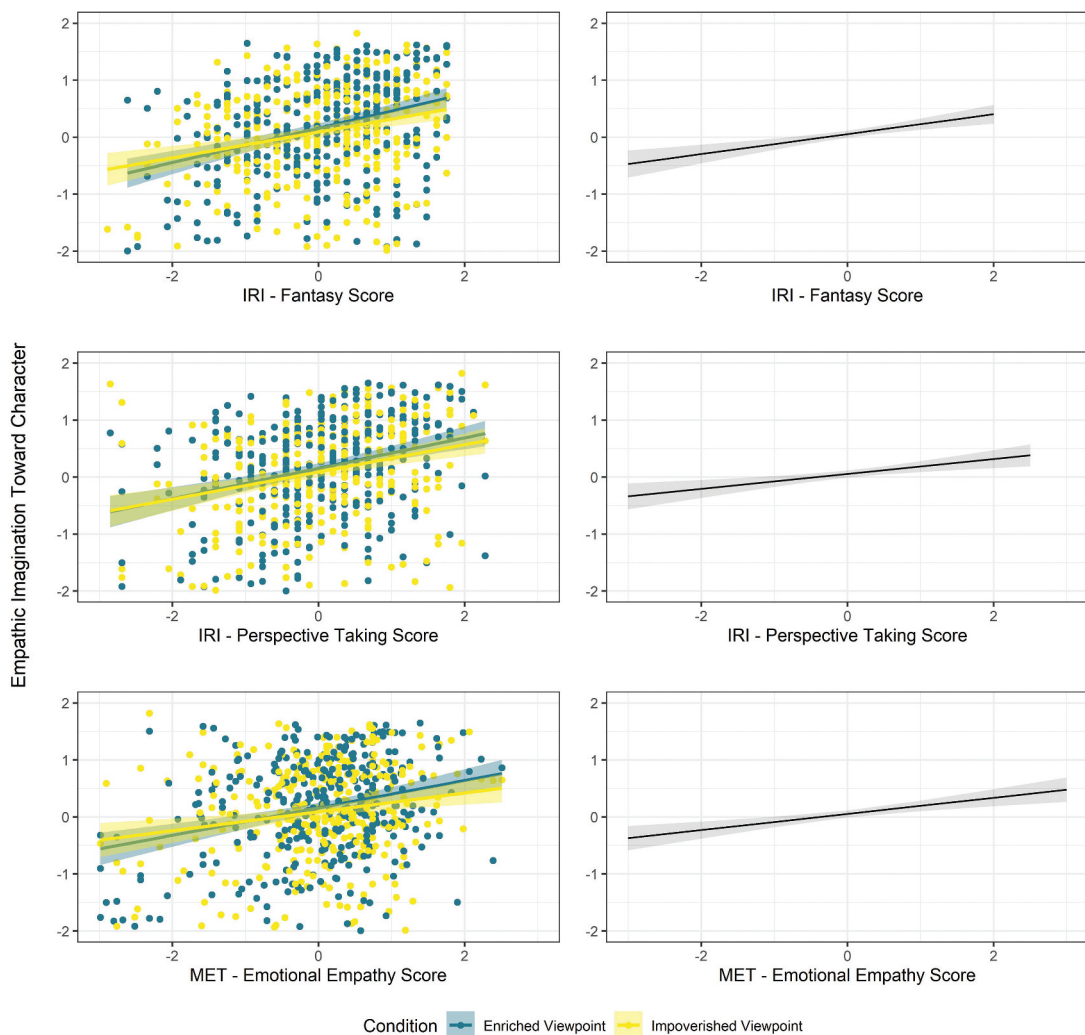


Figure 1. Scatterplots (left column) and effects plots with predicted values based on the linear mixed model (right column) for the relationships between empathic imagination toward character and the fantasy subscale (IRI), the perspective taking subscale (IRI), and emotional empathy score (MET). Note that predictors have been scaled and centered.

There were no significant interaction effects between condition and any of the measures of social-cognitive abilities.

Character Identification

The estimates for the linear mixed model predicting Character Identification are given in Table 8. VIFs were below 2 for all predictors. There was no significant effect of condition. There were, however, positive effects of two of the measures of social-cognitive abilities: the Fantasy subscale of the IRI and the Emotional Empathy score of the MET (Figure 3). In addition, the Cognitive Empathy subscale had a negative effect on Character Identification (Figure 3). Finally, Textual Fluency score had a positive effect. There were no significant interaction effects between condition and any of the measures of social-cognitive abilities.

Table 7. Estimates for the linear mixed model predicting story-induced personal distress.

Predictors	Estimates	SE	CI	<i>t</i>	<i>p</i>
(Intercept)	0.00	0.04	−0.07–0.08	0.13	.899
Condition (Enriched viewpoint)	−0.02	0.06	−0.14–0.11	−0.24	.810
BES – Affective Empathy Score	0.12	0.05	0.02–0.22	2.30	.022
BES – Cognitive Empathy Score	−0.05	0.05	−0.14–0.04	−1.15	.251
IRI – Fantasy Score	0.07	0.04	−0.02–0.15	1.47	.143
IRI – Perspective Taking Score	0.03	0.04	−0.06–0.11	0.63	.528
IRI – Personal Distress Score	0.03	0.04	−0.05–0.11	0.75	.455
MET – Emotional Empathy Score	0.14	0.04	0.06–0.22	3.59	<.001**
STOMP Score	0.01	0.04	−0.06–0.08	0.31	.757
ART Score	−0.03	0.04	−0.11–0.04	−0.86	.387
Reading Habits – Fiction Score	−0.04	0.04	−0.12–0.04	−0.93	.351
Reading Habits – Childhood Score	0.06	0.04	−0.02–0.14	1.56	.120
Textual Fluency Score	0.36	0.03	0.30–0.43	10.72	<.001**
Condition (Enriched viewpoint) *	−0.05	0.09	−0.23–0.12	−0.60	.547
BES – Affective Empathy Score					
Condition (Enriched viewpoint) *	0.07	0.08	−0.08–0.23	0.92	.357
BES – Cognitive Empathy Score					
Condition (Enriched viewpoint) *	0.05	0.07	−0.10–0.20	0.65	.513
IRI – Fantasy Score					
Condition (Enriched viewpoint) *	−0.03	0.07	−0.17–0.12	−0.34	.731
IRI – Perspective Taking Score					
Condition (Enriched viewpoint) *	−0.05	0.07	−0.20–0.09	−0.74	.461
IRI – Personal Distress Score					
Condition (Enriched viewpoint) *	0.01	0.07	−0.12–0.15	0.20	.844
MET – Emotional Empathy Score					
Condition (Enriched viewpoint) *	0.01	0.06	−0.11–0.14	0.19	.850
STOMP Score					

All continuous predictors were scaled and centered for analysis. Effects coding with (−0.5, 0.5) weights were used for the binary predictor Condition. * $p < .0125$, ** $p < .001$.

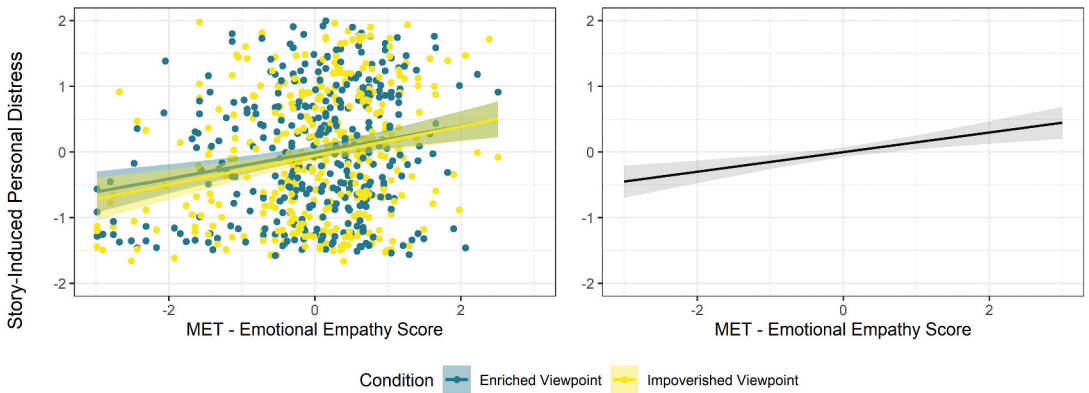


Figure 2. Scatterplot (left column) and effects plot with predicted values based on the linear mixed model (right column) for the relationship between story-induced personal distress and emotional empathy score (MET). Note that predictors have been scaled and centered.

Sympathy Toward Character

The estimates for the linear mixed model predicting Sympathy Toward Character are given in Table 9. VIFs were below 2 for all predictors. There was no significant effect of condition. There was, however, a negative effect of the Personal Distress subscale of the IRI (Figure 4). On the other hand, the Emotional Empathy score of the MET had a positive effect (Figure 4). In addition, the Fiction score of the Reading Habits questionnaire had a negative effect on Sympathy Toward Character, whereas Textual Fluency score had a positive effect. Finally,

Table 8. Estimates for the linear mixed model predicting character identification.

Predictors	Estimates	SE	CI	<i>t</i>	<i>p</i>
(Intercept)	0.00	0.03	−0.06–0.07	0.08	.939
Condition (Enriched viewpoint)	0.05	0.06	−0.08–0.17	0.76	.448
BES – Affective Empathy Score	0.11	0.05	0.02–0.21	2.34	.019
BES – Cognitive Empathy Score	−0.21	0.04	−0.30 – −0.12	−4.78	<.001**
IRI – Fantasy Score	0.16	0.04	0.07–0.24	3.67	<.001**
IRI – Perspective Taking Score	0.02	0.04	−0.06–0.10	0.51	.613
IRI – Personal Distress Score	0.03	0.04	−0.05–0.11	0.70	.487
MET – Emotional Empathy Score	0.11	0.04	0.04–0.18	2.89	.004*
STOMP Score	0.04	0.03	−0.03–0.10	1.03	.304
ART Score	0.04	0.04	−0.03–0.11	1.04	.299
Reading Habits – Fiction Score	−0.02	0.04	−0.10–0.05	−0.60	.551
Reading Habits – Childhood Score	−0.04	0.04	−0.12–0.03	−1.07	.285
Textual Fluency Score	0.42	0.03	0.35–0.48	12.61	<.001**
Condition (Enriched viewpoint) *	−0.05	0.09	−0.22–0.12	−0.56	.575
BES – Affective Empathy Score					
Condition (Enriched viewpoint) *	0.01	0.08	−0.14–0.17	0.18	.858
BES – Cognitive Empathy Score					
Condition (Enriched viewpoint) *	0.11	0.07	−0.04–0.25	1.47	.143
IRI – Fantasy Score					
Condition (Enriched viewpoint) *	−0.02	0.07	−0.17–0.12	−0.32	.747
IRI – Perspective Taking Score					
Condition (Enriched viewpoint) *	0.04	0.07	−0.10–0.18	0.57	.568
IRI – Personal Distress Score					
Condition (Enriched viewpoint) *	−0.08	0.07	−0.21–0.06	−1.11	.269
MET – Emotional Empathy Score					
Condition (Enriched viewpoint) *	−0.03	0.06	−0.15–0.10	−0.40	.688
STOMP Score					

All continuous predictors were scaled and centered for analysis. Effects coding with (−0.5, 0.5) weights were used for the binary predictor Condition. * $p < .0125$, ** $p < .001$.

there was a significant interaction between viewpoint condition and the Perspective Taking subscale of the IRI. The interaction was such that the effect of the Perspective Taking subscale was significantly more positive in the enriched viewpoint condition, compared to the impoverished viewpoint condition (Figure 5).

A summary of the results is visualized in Figure 6.

Discussion

In this study we set out to explore the role of reader- and text-related aspects in character engagement experiences during narrative reading. Specifically, we investigated how social-cognitive abilities, the presence of perceptual, cognitive, and emotional viewpoint markers in narratives, and their interplay impact the various ways in which readers relate to characters' inner worlds during reading of narratives.

Character engagement and social-cognitive abilities

The first step of our analyses provides evidence for the multidimensional nature of character engagement: We extracted six components from a variety of questionnaires measuring different aspects of character engagement using a PCA. These components reflect the tendency to engage in cognitive perspective taking toward characters, empathically imagine the inner worlds of characters, experience personal distress as a reaction to the story, identify with characters, experience sympathy toward characters, and, finally, feel motivated to help characters. Moreover, the finding that all of these dimensions were positively related to each other suggests that participants can relate to characters' inner worlds in various ways, ranging from highly empathic and character-oriented to aversive and self-oriented, either simultaneously or dynamically within a single narrative reading. These findings provide

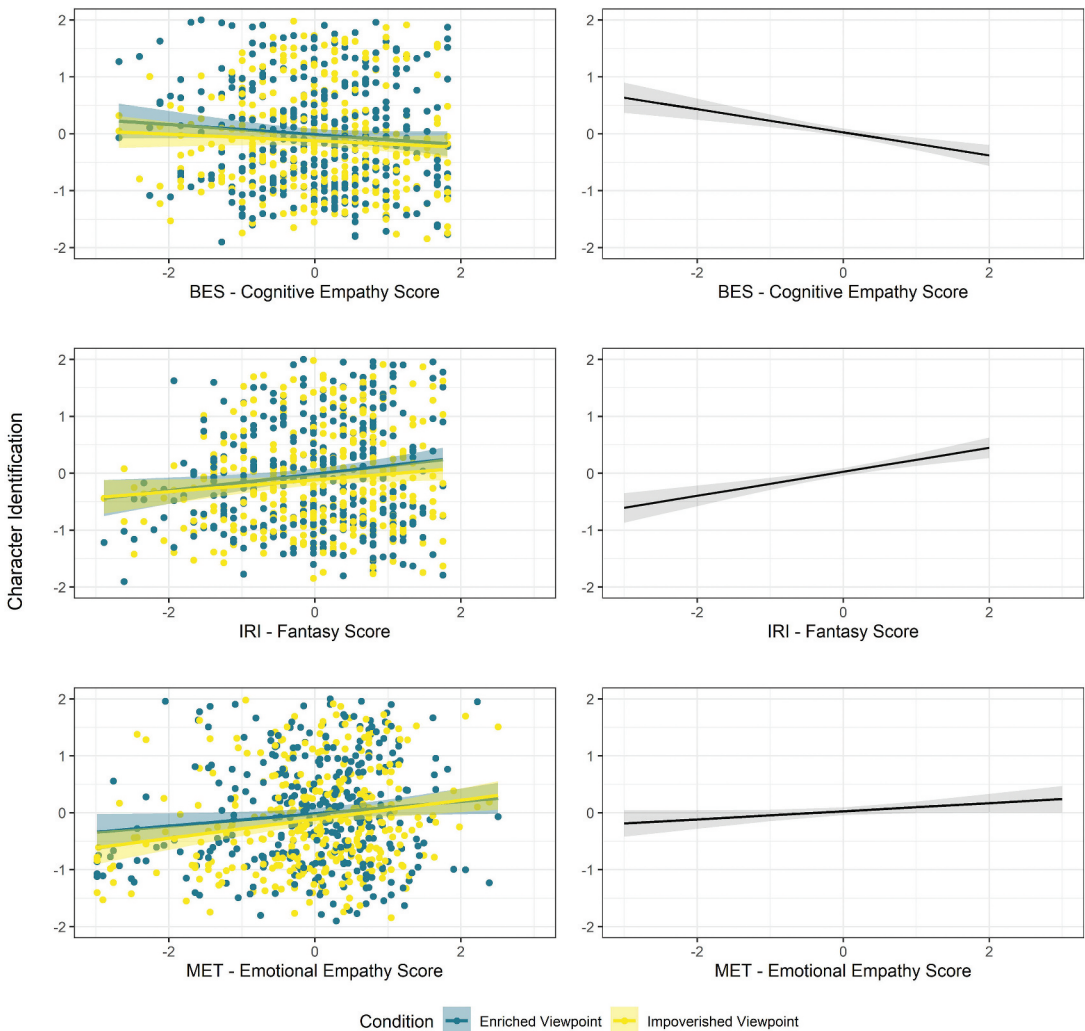


Figure 3. Scatterplots (left column) and effects plots with predicted values based on the linear mixed model (right column) for the relationships between character identification and the cognitive empathy subscale (BES), the fantasy subscale (IRI), and emotional empathy score (MET). Note that predictors have been scaled and centered.

further support for the pluralist account of character engagement (e.g., Bortolussi et al., 2018; Cohen, 2008; Coplan, 2004). As we relied on readers' reconstructions of their experiences after reading, future research will need to further elucidate how the dimensions of character engagement we found map onto moment-by-moment narrative processing as evidenced by psychophysiological measures.

Next, analyzing four of these components in more detail, we found that readers' social-cognitive abilities affect all dimensions of character engagement. Emotional or affective empathy, measured as the tendency to share the emotions of people in pictures (MET; Dziobek et al., 2008), positively affected all four components (i.e., Empathic Imagination Toward Character, Story-Induced Personal Distress, Character Identification, and Sympathy Toward Character). This is in line with earlier studies that reported a positive effect of trait empathy on sympathy and empathy for characters (Habermas & Diel, 2010; Koopman, 2015, 2016), empathic concern for and perspective taking with characters (Van Lissa et al., 2018), and identification with characters (Koopman, 2016; Wimmer et al., 2021). These results show that the ability or tendency to share others' emotions is of importance for all forms of engaging with the inner worlds of fictional others. Somewhat surprisingly, an additional self-report measure of affective empathy (Affective Empathy subscale of the BES; Jolliffe & Farrington, 2006) did

Table 9. Estimates for the linear mixed model predicting sympathy toward character.

Predictors	Estimates	SE	CI	<i>t</i>	<i>p</i>
(Intercept)	0.00	0.04	−0.08–0.08	0.04	.966
Condition (Enriched viewpoint)	0.02	0.06	−0.09–0.13	0.31	.759
BES – Affective Empathy Score	0.06	0.06	−0.05–0.17	1.01	.313
BES – Cognitive Empathy Score	−0.12	0.05	−0.22 – −0.01	−2.24	.025
IRI – Fantasy Score	0.05	0.05	−0.05–0.15	0.94	.350
IRI – Perspective Taking Score	−0.02	0.05	−0.11–0.08	−0.41	.683
IRI – Personal Distress Score	−0.13	0.05	−0.22 – −0.04	−2.77	.006*
MET – Emotional Empathy Score	0.27	0.04	0.18–0.36	6.08	<.001**
STOMP Score	0.03	0.04	−0.12–0.05	−0.84	.400
ART Score	−0.02	0.04	−0.11–0.07	−0.47	.641
Reading Habits – Fiction Score	−0.15	0.05	−0.24 – −0.05	−3.15	.002*
Reading Habits – Childhood Score	0.05	0.05	−0.04–0.14	1.11	.268
Textual Fluency Score	0.19	0.03	0.13–0.25	5.97	<.001**
Condition (Enriched viewpoint) *	0.01	0.08	−0.14–0.16	0.15	.884
BES – Affective Empathy Score					
Condition (Enriched viewpoint) *	−0.12	0.07	−0.26–0.02	−1.74	.082
BES – Cognitive Empathy Score					
Condition (Enriched viewpoint) *	0.08	0.07	−0.05–0.21	1.20	.232
IRI – Fantasy Score					
Condition (Enriched viewpoint) *	0.16	0.06	0.04–0.29	2.56	.011*
IRI – Perspective Taking Score					
Condition (Enriched viewpoint) *	0.02	0.06	−0.10–0.15	0.39	.696
IRI – Personal Distress Score					
Condition (Enriched viewpoint) *	−0.11	0.06	−0.23–0.01	−1.79	.073
MET – Emotional Empathy Score					
Condition (Enriched viewpoint) *	−0.02	0.06	−0.13–0.09	−0.39	.698
STOMP Score					

All continuous predictors were scaled and centered for analysis. Effects coding with (−0.5, 0.5) weights were used for the binary predictor Condition. * $p < .0125$, ** $p < .001$.

not significantly affect any of the components, although the effects on Story-Induced Personal Distress and Character Identification were numerically similar and approached significance.

Other aspects of social cognition had more local effects on specific dimensions of character engagement. For example, cognitive empathy, as measured with the Cognitive Empathy subscale of the BES (Jolliffe & Farrington, 2006), was only found to have an effect on Character Identification. Crucially, however, unlike emotional or affective empathy, this was a negative effect. This suggests that having a rapid, cognitive understanding of others' mental states hinders a merging of the reader's and character's perspectives. A possible explanation for this finding could be that taking a more cognitive or "cold" route toward understanding others creates a more distanced form of perspective taking toward fictional characters.

Furthermore, readers' tendency to adopt and switch between different perspectives in their daily lives, as measured with the Perspective Taking subscale of the IRI (Davis, 1983), only positively impacted Empathic Imagination Toward Character. This is an indication that the tendency to engage with characters' inner worlds through an imaginative perspective-taking process is related to readers' real-life perspective-taking tendencies. The fact that Perspective Taking did not impact other dimensions of character engagement, most notably identification, is somewhat surprising since identification is often defined as a specific form of perspective taking (e.g., Tal-Or & Cohen, 2010).

In addition, the Personal Distress subscale of the IRI (Davis, 1983) had a negative effect on Sympathy Toward Character, suggesting that a predisposition to experience self-oriented reactions to emotional events hinders other-oriented emotional reactions toward fictional characters undergoing such events.

Finally, the Fantasy subscale of the IRI (Davis, 1983) was found to have a positive impact on Empathic Imagination Toward Character and Character Identification. This subscale reflects the

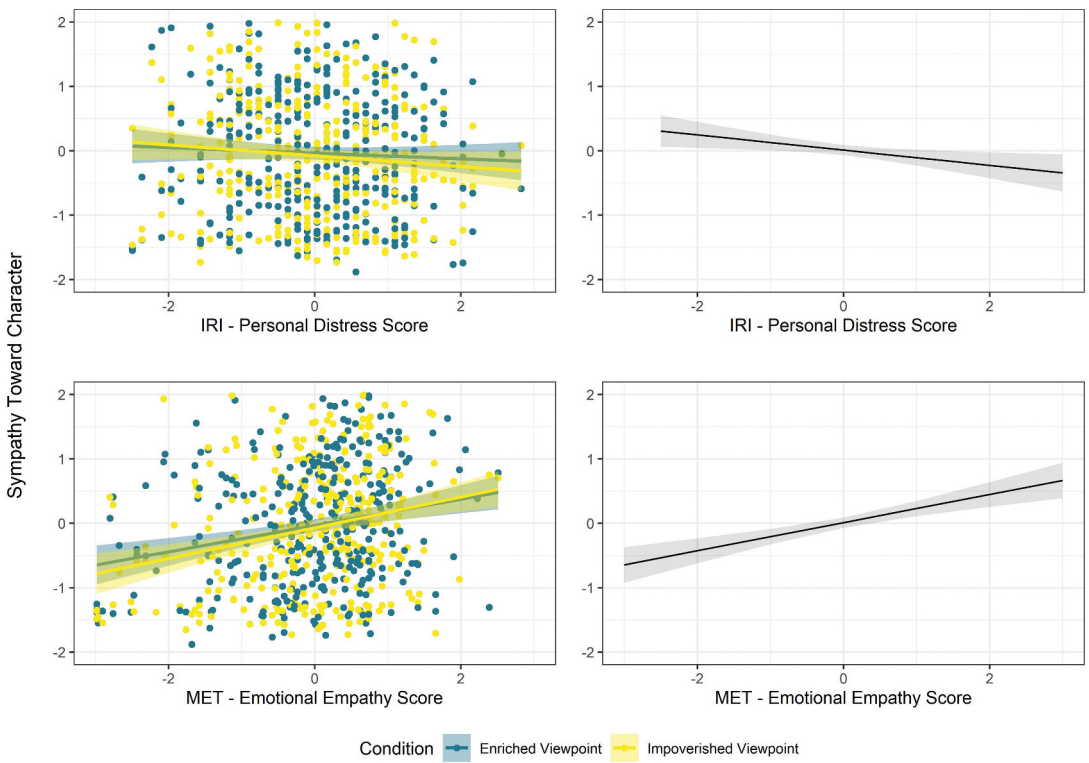


Figure 4. Scatterplots (left column) and effects plots with predicted values based on the linear mixed model (right column) for the relationships between sympathy toward character and the personal distress subscale (IRI) and emotional empathy score (MET). Note that predictors have been scaled and centered.

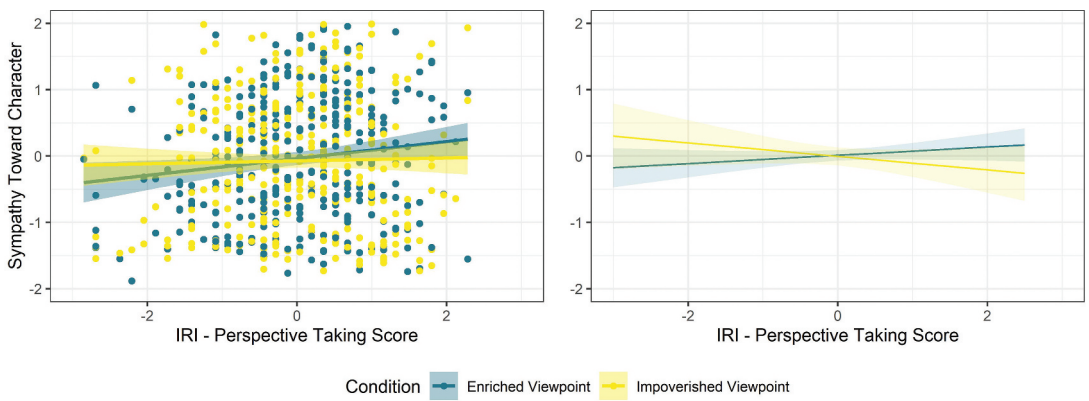


Figure 5. Scatterplot (left column) and effects plot with predicted values based on the linear mixed model (right column) for the interaction between sympathy toward character, viewpoint condition, and perspective taking subscale (IRI). Note that predictors have been scaled and centered.

tendency to be immersed in fictionalized works such as written narratives, a trait that is sometimes called transportability. Although it is part of the IRI, which was designed to measure trait empathy, it is debatable to what degree transportability should be seen as part of social cognition. Nevertheless, the Fantasy subscale had a positive effect on two dimensions of character engagement. This indicates that a disposition to become immersed in fictional worlds involves a tendency to engage with the characters in those worlds. The finding that transportability was not related to Story-Induced

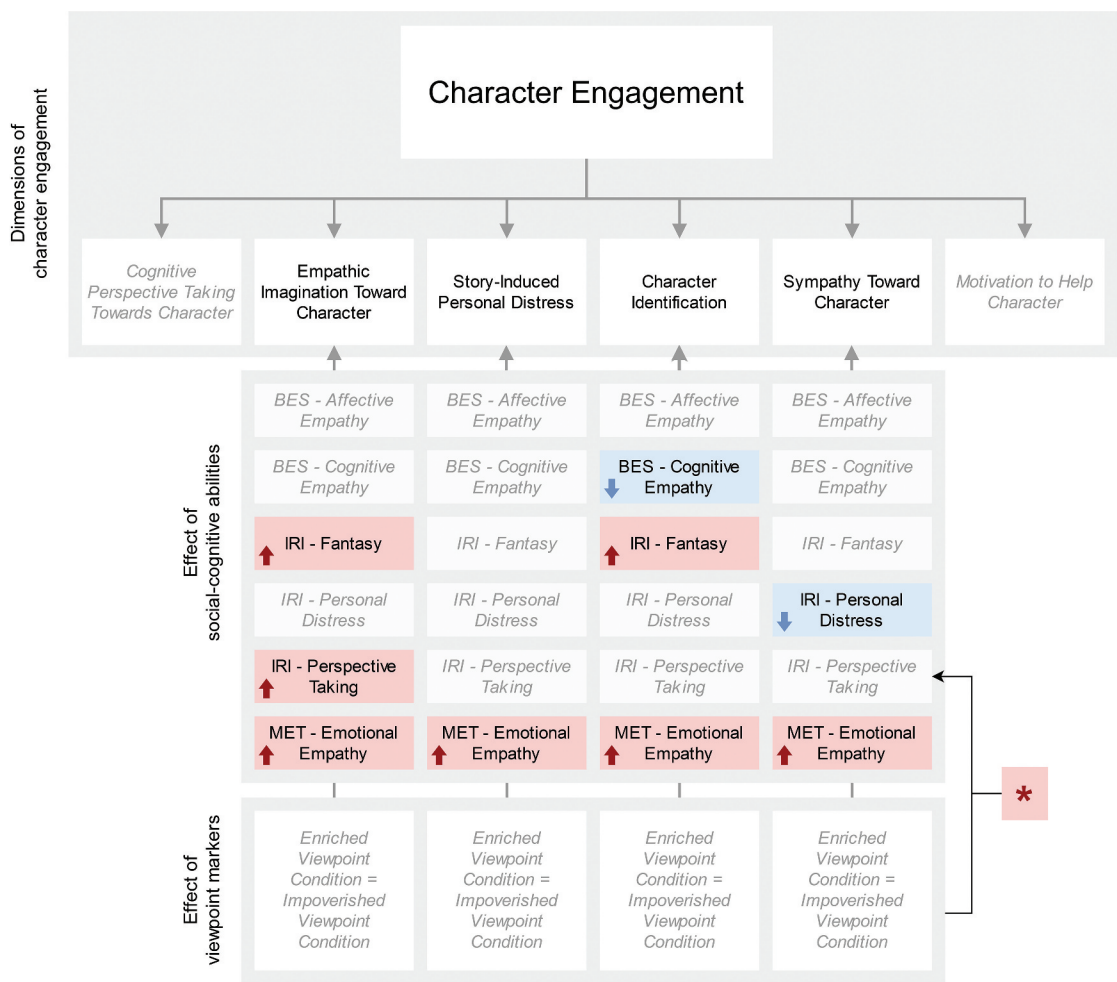


Figure 6. Summary of the results.

Personal Distress is consistent with the fact that personal distress is an aversive reaction rather than an experience that makes the reader want to approach the narrative.

Taken together, the analysis of the impact of social-cognitive abilities on character engagement suggests that the ability to engage with fictional characters depends on a wide range of social-cognitive abilities that people use in daily life to engage with “real” others. Interestingly, readers’ print exposure and reading habits, both current and during early childhood, had little to no impact on character engagement. This again suggests that the tendency to engage with characters’ minds is guided by readers’ real-life social-cognitive abilities and is not necessarily developed as a separate ability through repeated exposure to narratives.

Finally, by increasing the range of social-cognitive abilities under investigation beyond trait empathy, we found that social cognition does not always facilitate character engagement: whereas most social-cognitive abilities had a positive effect on character engagement, cognitive empathy, for example, had a detrimental effect on character identification. Together these findings show that the relationship between narrative reading and social cognition is far more complex than previously thought and that more nuanced studies and theorizing are necessary to study the role that different aspects of social cognition play during reading (see also Eekhof et al., 2022).

As the data for this study were collected during the COVID-19 pandemic, we were unable to include behavioral measures of social-cognitive abilities that require in-person testing, such as reaction time measures, tasks that require extensive instructions for participants, or tests that rely on interaction between participant-participant or participant-researcher dyads. As such, we acknowledge that our results rely on self-report and lab-based measures of social cognition. Although these measures have been validated in previous research, they may be susceptible to social desirability bias or poor self-assessment. Therefore, it is important that attempts to replicate or extend our findings make use of other measures that reflect real-time behavioral expressions of social cognition.

Character engagement and linguistic viewpoint

Next, we looked at the effect of the relative presence of perceptual, cognitive, and emotional viewpoint markers on character engagement. Having created an impoverished and enriched viewpoint version of two Dutch literary narratives using a newly developed and tightly controlled manipulation strategy, we were able to analyze whether the degree to which narratives contain linguistic cues about the inner worlds of characters influences how much readers engage with these characters. Contrary to our hypotheses, the presence or absence of viewpoint markers did not significantly affect any of the dimensions of character engagement that we investigated. This finding contradicts some of the earlier work that did find an effect of linguistic viewpoint on sympathy (Habermas & Diel, 2010; van Peer & Pander Maat, 2001) but is in line with the study by Wimmer et al. (2021), who found no effect of internal focalization on identification. These mixed results might partially be explained by the varying operationalizations of linguistic viewpoint or character engagement. However, we believe these findings also show that the effects of linguistic viewpoint, if they exist at all, are subtle and may or may not arise, depending on slight differences in linguistic operationalization or measurement. As such, markers of characters' perceptual, cognitive, and emotional viewpoint do not seem to play a major role in character engagement, as measured in this study, especially compared to the large effects of social-cognitive abilities. It thus seems that in the neurotypical sample we studied, the implied presence of an experiencing character in the narrative is enough of a cue to engage with the mind of that character.

Although we did not find evidence that the presence of viewpoint markers plays a role in the self-reported experiences of character engagement, this does not mean that viewpoint markers do not play any role. As we only measured the intensity of character engagement experiences and not the content of these experiences, future research could investigate how the presence of viewpoint markers affects other, more qualitative constructs that fall under the umbrella of character engagement, such as empathic accuracy. For example, it might be the case that readers arrive at more consistent and accurate interpretations of the mental states of characters when viewpoint markers are present, whereas narratives that provide fewer descriptions of the inner worlds of characters might lead to more diverse interpretations. In such a case, the intensity or "quantity" of readers' character engagement experiences might be similar across viewpoint conditions, but the content or "quality" of these experiences might still differ as a function of the presence of viewpoint markers. Future studies could combine our design with a more qualitative approach to study how readers' interpretations of characters' inner worlds are affected by viewpoint markers and other perspectivization techniques. A limitation of our study that should be addressed in these future studies is that we did not control for any confounding factors of our manipulation related to comprehensibility beyond our self-report measure of textual fluency.

Interestingly, the idea that textual cues play a relatively minor role compared to individual differences between readers resonates with other recent findings from empirical literary studies. For example, Hartung et al. (2017) found that most readers preferred to simulate narratives either from a first-person, internal perspective or from a third-person, external perspective, regardless of whether first- or third-person pronouns were used to refer to the protagonist. Similarly, our studies suggest that readers who have the tendency to emotionally engage with others in daily life will also do so when

reading a narrative, regardless of whether that narrative provides rich descriptions of the inner world of its characters or not.

Interaction between text and reader

Finally, we were interested in the interplay between social-cognitive abilities and the presence of viewpoint markers. Based on earlier findings (Eekhof et al., 2021), we hypothesized that there might be a trade-off between social-cognitive abilities and linguistic cues during narrative perspective taking, such that social-cognitive abilities are more relevant when linguistic cues of characters' viewpoints are relatively scarce. However, we only found evidence for such an interaction for the Sympathy Toward Character dimension. Contrary to our expectations, however, the effect of self-reported perspective-taking tendencies on Sympathy Toward Character was stronger when viewpoint markers were present. A possible explanation could be that the presence of viewpoint markers serves as a cue to readers to engage their perspective-taking abilities. In other words, viewpoint markers might remind readers that there is a fictional mind that can be the target of their perspective taking efforts. As a result, readers with better perspective-taking skills will sympathize more with a character once they have been cued to do so by the viewpoint markers. However, since the effect only showed up in one character engagement dimension and for only one measure of social-cognitive abilities, we refrain from drawing any further conclusions based on this finding.

Besides the interaction between the presence of viewpoint markers and individual differences in self-reported perspective-taking abilities for readers' sympathy for characters, we did not find any evidence for an interplay between social-cognitive abilities and the presence of viewpoint markers. On the whole, social-cognitive abilities seem to play an equally important role in the enriched and impoverished viewpoint versions of the narratives. As such, our findings suggest that readers first and foremost depend on their social-cognitive abilities to engage with the inner worlds of characters, and that viewpoint markers do not function as an alternative strategy that especially readers with poor social-cognitive abilities can rely on to engage with fictional characters.

These findings challenge our earlier theorizing about individual differences in narrative perspective taking (Eekhof et al., 2021). We speculated that readers with better social-cognitive abilities rely less on linguistic cues of characters' viewpoint and that this is why these readers were found to process viewpoint markers faster in our eye-tracking study (Eekhof et al., 2021). However, the lack of a consistent interaction between the presence of viewpoint markers and social-cognitive abilities in the current study means we did not find convincing evidence for that hypothesis. Rather, our previous and current results suggest that perspective-taking abilities simply facilitate both the processing of linguistic markers of perspective and character engagement. As such, social cognition seems to play a role in narrative comprehension both on the micro and macro level. Crucially, as we controlled for print exposure in both experiments, it is unlikely that readers with better social-cognitive abilities are simply faster and more engaged readers, for example, because of their frequent exposure to narratives. Instead, social-cognitive abilities seem to have a unique facilitative effect on the processing of characters' viewpoints.

Importantly, our findings do not only shed light on the role of social-cognitive abilities during narrative processing but are also of relevance for research on the beneficial effect of narratives on social cognition. One of the tenets of the idea that exposure to narratives can strengthen social-cognitive abilities is the assumption that these abilities are activated and hence trained during reading (Mar, 2018). Our finding that individual differences in social-cognitive abilities affect character engagement suggests that these abilities do indeed play a role during reading (see also Mar, 2011). Whether repeated activation of these abilities during reading ultimately leads to a training effect remains a topic of ongoing research and debate (see, e.g., Eekhof et al., 2022; Mar, 2018). A central question in this debate is whether certain types of narratives provide a better training context for social-cognitive abilities than others. Interestingly, our finding that social-cognitive abilities play an equally important role in stories with and without linguistic cues of characters' inner worlds, suggests that the

absence of viewpoint markers does not provide an extra challenge and thus training opportunity for readers' social-cognitive abilities.

All in all, our findings suggest that character engagement is a complex and multifaceted process that mostly depends on individual differences in social-cognitive abilities. Interestingly, we found diverging effects of these social-cognitive abilities: Whereas emotional or affective empathy seems to facilitate character engagement across the board, perspective taking only had an effect on empathic imagination. Moreover, a more cognitive, rather than affective, approach to understanding others seems to hinder at least identification. We believe our study is a promising step toward a more nuanced empirical approach to mapping out character engagement processes and their determinants.

Notes

1. <https://osf.io/2vdmg>.
2. <https://osf.io/m2rtx>.
3. <https://osf.io/xygew/>.
4. Four participants initially failed the attention check criterion. However, these participants later reported to have misunderstood the instructions of the attention check items. After verifying this, their data were included in the final data set.
5. Source: Appel, R. (16 June 2003). *De Invaller*. NRC Handelsblad. Available online at: <https://www.nrc.nl/nieuws/2003/06/16/de-invaller-7642950-a1353672>.
6. Source: Kam, J. (12 February 2019). *Koorddanser*. J.M.A. Biesheuvelprijs. Available online at: <https://www.jmbiesheuvelprijs.nl/?p=733>.
7. Due to experimenter error, one MET item was presented with a seven-point scale instead of a nine-point scale. This item was disregarded in the analyses. Hence, the MET score is based on the mean of the remaining 39 items.
8. A reviewer noted that the significant relationships between the various dimensions of character engagement and self-reported measures of social-cognitive abilities might be caused by surface similarities between the items of the various questionnaires. We have therefore included a comparison of the items that make up the relevant character engagement dimensions and the items that make up the measures of social-cognitive abilities for the significant relationships on the Open Science Framework (see Data Availability Statement). This comparison does not suggest that any of the found effects can be explained by these surface similarities, as evidenced by the small overlap in phrasing between the items.

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Disclosure statement

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Data availability statement

All materials, data, and analysis scripts associated with this publication can be found on the Open Science Framework: <https://osf.io/xygew/>.

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