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Getting lost in a story: how narrative engagement emerges from narrative perspective and individual differences in alexithymia

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ABSTRACT

The present research examines how narrative engagement, or the extent to which people immerse themselves into the world of a story, varies as a function of narrative perspective and individual differences in alexithymia. The authors hypothesised that narrative engagement would be higher when people assume a first-person (rather than third-person) perspective and for people lower (rather than higher) on alexithymia. In an online study ($N = 541$) and a lab study ($N = 55$), participants with varying levels of alexithymia read first- and/or third-person narrated texts and then rated their narrative engagement. As expected, first-person stories evoked more narrative engagement than third-person stories, and global alexithymia was negatively correlated with narrative engagement. Narrative perspective did not interact with cognitive facets of alexithymia (i.e. difficulties identifying, verbalising, and understanding feelings). However, narrative perspective did interact with affective facets of alexithymia (i.e. emotionalising and fantasising): First-person (rather than third-person) stories elicited more narrative engagement at lower levels of affective alexithymia, but not at higher levels of affective alexithymia. The interaction effect was significant in Study 1; the interaction was significant in Study 2 after controlling for trait absorption. Together, these findings suggest that alexithymia is linked to difficulties in mentally simulating narrative worlds.

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When people are reading a story, they vary in the degree to which they become mentally engrossed by the world that is described in the narrative. Such differences in narrative engagement relate to people's unique ability to transcend the here and now and project themselves into distant times and places (Macrae, Christian, & Miles, 2014). By leading people to construct mental models of a fictional social world, narrative engagement contributes to the development of social-emotional skills, such as empathy and social inference (Mar & Oatley, 2008), which are vital in social life. Furthermore, narrative engagement increases reading enjoyment (Busselle & Bilandzic, 2009), thereby contributing to the development of literacy skills and their associated cognitive competencies (Mol & Bus, 2011). It is therefore important to learn more about the psychological processes that underlie narrative engagement.

In the present article, we examine how narrative engagement emerges from the interplay between the linguistic properties of a narrative and individual dispositions of the person who is processing the narrative. Narratives display varying linguistic properties, and some of these properties are likely to evoke more engagement than others. One important linguistic property is whether a story is told from a first-person or a third-person perspective (Borghi, Glenberg, & Kaschak, 2004). In addition, some people

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may be more prone to get mentally immersed into narratives than others. Here, we address the potential role of individual differences in alexithymia, which relate to difficulties in social-emotional processing (Grynberg et al., 2012). In the following paragraphs, we begin by discussing how narrative perspective may influence narrative engagement. Next, we turn to alexithymia, and consider whether and how it may shape narrative engagement along with narrative perspective. Finally, we present two studies that were designed to test our theoretical analysis.

Narrative engagement and perspective taking

Narrative engagement may be defined as a phenomenon in which readers are mentally simulating the world of a story and become psychologically absorbed in that world (Green & Brock, 2000). The theoretical notion of engagement into a narrative was originally conceived by Gerrig (1993) to understand how people are psychologically impacted by stories (Green & Brock, 2002; van Laer, De Ruyter, Visconti, & Wetzels, 2014). Using travel as a metaphor for reading, Gerrig conceptualised narrative transportation as a state of detachment from the world of origin that the reader (symbolically, the "traveller") experiences by being carried away by the story. Other researchers have further developed this theory and extended it to other contexts, for instance, to understand how people may become persuaded by a story (Green & Brock, 2002), why children become interested in reading outside of school (Jensen, Bernat, Wilson, & Goonewardene, 2011), and how reading fiction may evoke empathy (Bal & Veltkamp, 2013).

To achieve a state of narrative engagement, the reader has to become mentally attuned to the intentions and subjective experiences of the narrator and/or character (Busselle & Bilandzic, 2009). This attunement is likely to be facilitated when the narrative takes the viewpoint of the main character in the narrative. One important linguistic tool for such character and narrator conflation is using the pronoun "I" for the spectator in a first-person perspective, rather than using the pronouns "he or she" as in a third-person perspective. First-person stories symbolically put the reader in the narrators' shoes, which increases the likelihood that readers become psychologically invested in the story (Oatley, 1999; Stanzel, 1984). Hence, adopting a first-person perspective can be expected to generally evoke more narrative engagement than adopting a third-person perspective.

Consistent with the aforementioned notion, research has shown that leading people to take a first-person (rather than third-person) perspective enhances cognitive and emotional identification with narrative events (Gerrig, 1993; Green & Brock, 2000; Macrae et al., 2014). For example, Papeo and colleagues (2011) measured their participants' brain activation in motor areas, while they were reading action verbs and non-action verbs in first-person and third-person perspectives. The results showed that reading action verbs in a first-person perspective, rather than a third-person perspective, led to increased activation in motor areas of the brain. Another study examined the effects of narrative perspective in an emotionally relevant context (Christian, Parkinson, Macrae, Miles, & Wheatley, 2015). Specifically, participants read painful scenarios that were written in either a first-person or third-person perspective. Scenarios in the first-person perspective, compared to scenarios in the third-person perspective, elicited greater activity in the brain areas related to emotional awareness, visual imagery, and body ownership.

The aforementioned studies suggest that a first-person perspective, at least on an implicit level, leads readers to engage in more mental simulation of a story than a third-person narrative perspective. Given that narrative engagement is presumably based on such mental simulations, it follows that readers may experience higher levels of engagement for stories that are told from a first-person perspective rather than a third-person perspective. As far as we know, this notion has been empirically tested in only one study to date. In this study, participants were asked to read literary stories that were written from either a first or a third person perspective (Hartung, Burke, Hagoort, & Willems, 2016). The findings showed that participants reported higher narrative engagement during stories that were written in a first-person perspective than for stories written in a third-person perspective. Thus, there are both theoretical and empirical reasons to believe that first-person stories evoke more narrative engagement than third-person stories.

Alexithymia and narrative processing

Besides the linguistic properties of a narrative, narrative engagement may also be influenced by individual

differences in narrative processing. One relevant individual difference here is alexithymia. Alexithymia, literally "no words for feelings", is a personality dimension that was introduced by Sifneos (1973) to characterise a sub-group of psychiatric patients who displayed marked difficulties in expressing their feelings, a formal manner of speaking, and restricted imagination. People vary in their levels of alexithymia, and these variations can be assessed with well-validated self-report questionnaires such as the Toronto Alexithymia Scale (Bagby, Taylor, & Parker, 1994) and the Bermond-Vorst Alexithymia Questionnaire (Vorst & Bermond, 2001). The latter scale distinguishes between cognitive and affective facets of alexithymia. The cognitive facet of alexithymia relates to difficulties in identifying, analysing, and verbalising of emotions. The affective facet of alexithymia relates to differences in emotional arousability ("emotionalising"), and differences in imagination ("fantasising"). The combined scores on the cognitive and affective scales index a person's overall level of alexithymia.

The relation between alexithymia and language processing has been understudied (Hobson, Brewer, Catmur, & Bird, 2019; Welding & Samur, 2018), which seems surprising given that linguistic difficulties belong to the core of the alexithymia construct. Nevertheless, empirical studies have shown that people with higher (rather than lower) levels of alexithymia use fewer and less complex emotion language (Roedema & Simons, 1999; Wotschack & Klann-Delius, 2013) and that the former people display reduced sensitivity to the emotional qualities of speech at a neurophysiological level (Goerlich et al., 2012). Moreover, people with higher (rather than lower) levels of alexithymia have difficulties with more complex forms of linguistic processes (Welding & Samur, 2018).

Additional research has linked alexithymia to difficulties in narrative processing. One consistent finding in the literature is that people with higher (rather than lower) levels of alexithymia display poorer empathic abilities (Grynberg, Luminet, Corneille, Grèzes, & Berthoz, 2010) and reduced perspective-taking ability (Moriguchi et al., 2007). Based on these and related findings Samur, Luminet, and Koole (2017) hypothesised that people with higher (rather than lower) levels of alexithymia are likely to find it harder to process narratives. Consistent with this, Samur et al. observed in three independent samples (combined $N = 1{,}283$) that alexithymia is associated with lower reading frequency. Reduced reading frequency among people with higher levels of alexithymia was partly mediated by mentalising skills, that is, understanding what is on other people's minds (2017). Another study found that alexithymia is negatively associated with reading comprehension, even after controlling for demographic variables and conceptually related personality traits like trait absorption and openness to experience (Samur & Koole, 2020). These two paths, namely mentalising and reading comprehension, have been examined separately so far, which makes it difficult to conclude on the underlying mechanisms.

In view of the aforementioned considerations, it seems likely that people with higher (rather than lower) alexithymia will be less prone to narrative transportation. Thus, the effects of alexithymia are the theoretical opposite of the effects of adopting a first-person (rather than third-person) perspective. To our knowledge, no studies to date have examined whether alexithymia might interact with narrative perspective in shaping narrative processing.

The present research and hypotheses

In the present research, we conducted two studies to investigate how narrative engagement emerges from narrative perspective and individual differences in alexithymia. In Study 1, we examined a large online sample of American participants ($N = 541$) from varying age groups and social backgrounds (Samur, Tops, & Koole, 2018). In Study 2, we investigated a smaller group of Dutch university students ($N = 55$) in a behavioural laboratory, an environment that enabled more control over participants' reading experience.

In both studies, participants rated their levels of narrative engagement during texts using a validated scale (Green & Brock, 2000; Kuijpers, Hakemulder, Tan, & Doicaru, 2014). Moreover, participants rated the Bermond-Vorst Alexithymia Questionnaire (BVAQ; Vorst & Bermond, 2001). We chose the BVAQ because, unlike the more widely used Toronto Alexithymia Scale, it covers both cognitive and affective facets of alexithymia. The affective facet of alexithymia (i.e. the emotionalising and fantasising scales) is conceptually more closely related to narrative transportation than the cognitive facet of alexithymia. Consequently, we expected stronger effects for the affective facet than for the cognitive facet of alexithymia. In both studies, we further statistically controlled for a trait absorption, to ensure that our observed

effects were specific to alexithymia, and not a general deficiency in absorption skills.

In line with the previous literature (Hartung et al., 2016), we predicted that participants would display more narrative engagement for stories that were written in a first-person perspective than for stories that were written in a third-person perspective. Furthermore, we predicted that participants with higher levels of alexithymia would display less narrative engagement than participants with lower levels of alexithymia. Finally, we explored the interplay between narrative perspective taking and alexithymia on narrative engagement. In this regard, we had three competing predictions. First, according to the *independence hypothesis*, narrative perspective and alexithymia would have independent effects on narrative engagement. Second, alexithymia and narrative perspective may interact in a non-linear manner. Such a nonlinear interaction may take one of two forms. First, people with higher levels of alexithymia may be insufficiently motivated to engage themselves with a narrative. If this is correct, a first-person (rather than a third-person) story may be especially helpful for people with higher levels of alexithymia, given that a first-person perspective increases engagement with the text. We refer to this as the *motivational support hypothesis*. Alternatively, however, it is possible that people with higher (rather than lower) levels of alexithymia are deficient in the required skills to increase their narrative identification. This would mean that people with higher levels of alexithymia may be unable to increase their narrative engagement, and hence will be less sensitive to variations in narrative perspective. We refer to the latter as the *functional impairment hypothesis*.

Study 1

Study 1 examined a large online sample of American participants ($N = 541$) of varying levels of alexithymia (Samur et al., 2018). Some of the participants ($N = 215$) read a fictional story that was written from a first-person perspective, whereas other participants ($N = 326$) read a fictional story that was written from a third-person perspective. We predicted that stories written from a first-person perspective would evoke more narrative engagement than stories written from a third-person perspective. In addition, we predicted that participants that have higher levels of alexithymia would experience less narrative engagement than participants low in alexithymia. Finally, we explored whether (and, if so, how) narrative perspective and alexithymia might interact in predicting narrative engagement.

Method

Participants and design

In Study 1, we drew from a previously published online study (Samur et al., 2018). Participants were recruited using Amazon's Mechanical Turk service, which is a widely used internet platform among social scientists for online data collection (Paolacci, Chandler, & Ipeirotis, 2010). The data acquired via this service has been shown to be equally valid and reliable as those obtained using traditional methods (Buhrmester, Kwang, & Gosling, 2011; Hauser & Schwarz, 2016). In this service, researchers can determine which level of prior performance approval of participants is sufficient to qualify for participating in the study. High approval rate of a participant tends to produce better quality data. Therefore, we followed the common protocol to include participants with more than 95% approval rate (Peer, Vosgerau, & Acquisti, 2014).

The complete dataset from the online study by Samur et al. (2018) included 1,087 participants. From this dataset, only the conditions where participants read a fiction story were selected ($N = 558$). Of the latter group, only the participants who completed a narrative engagement scale were included in the final sample of the present study ($N = 541$; 296 Females; $M_{age} = 36.21$, $SD_{age} = 11.83$). There were fourteen stories in total with a mixture of either first-person or third-person perspective. Participants were grouped into one of the conditions according to the perspective of the story that they have read: first-person story ($N = 215$) or third-person story ($N = 326$).

Procedure and materials

After providing informed consent, participants read one fictional story that was drawn from the set of 14 stories. Next, participants completed the scales to assess alexithymia, transportation, and trait absorption, which were embedded among other questionnaires. A full report of the studies can be found in Samur et al. (2018).

The fictional narratives were drawn from short stories and excerpts from novels that were used in previous research (Kidd & Castano, 2013; Samur et al., 2018). The first author (DS) recoded these fourteen texts into two groups based on their narrative perspective: First-person and third-person stories. Narrative perspective was decided by examining the use of pronouns by the narrator: using the pronoun "I" for first-person perspective and the pronouns "he or she" for third-person perspective. In all the texts, the pronoun used by the narrator has remained same from the beginning until the end of the story. In the final set, there were six texts that were written in a first-person perspective, and eight texts that were in a third-person perspective. The mean of included texts was 3,310 words. All texts in each group were checked by the author to ensure that there were no clear differences between two groups in terms of theme and valence. The full list including the title and author information of all texts can be found in the Supplementary Materials S1.

To measure narrative engagement, we asked participants to complete the Transportation Scale (Green & Brock, 2000), which measures narrative engagement as a construct of imagery, emotion and attention. The scale included 11 text-invariant items that we used following previous research (Jensen et al., 2011; Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013). In this scale, participants rated their reading experience (e.g. "I could picture myself in the scene of the events described in the narrative") using a 7-point Likert scale, ranging from "strongly disagree" to "strongly agree". After recoding the reversed items, we averaged all responses. This scale had satisfactory reliability (α = .79).

We used the Bermond – Vorst Alexithymia Questionnaire (BVAQ) to measure individual differences in alexithymia (Vorst & Bermond, 2001). The BVAQ consists of 40 items that are divided into five subscales: emotionalising (8 items) (e.g. "When something unexpected happens, I remain calm and unmoved."), fantasising (8 items) (e.g. "I have few daydreams and fantasies."), identifying (8 items) (e.g. "When I am tense, it remains unclear from which of my feelings this comes."), analysing (8 items) (e.g. "I hardly ever consider my feelings.") and verbalising (8 items) (e.g. "I find it difficult to express my feelings."). Participants responded to the statements with a 5-point Likert scale, ranging from "this in no way applies" to "this definitely applies". We reported our results on total BVAQ scores, which had satisfactory reliability (α = .89), as well as in two facets: affective alexithymia (α = .84) and cognitive alexithymia (α = .88).

We included the Fantasy subscale from Interpersonal Reactivity Index (Davis, 1980), as a well-validated measure of trait absorption (Davis, Luce, & Kraus, 1994). This scale was used since it relates to individual differences in absorption into the feelings and actions of characters in fictional context. Participants responded to the statements with a 5-point Likert scale, ranging from "strongly disagree" to "strongly agree". The scale has 7 items (e.g. *I really get involved with the feelings of the characters in a novel)* and showed satisfactory reliability in Study 1 (α = .85).

Results and discussion

The means and standard deviations of all measures are displayed in Table 1. The correlations between measures are displayed in Table 2. We performed our analyses using global alexithymia scores, as well as the separate scores of the affective and cognitive facets of alexithymia and their respective subscales. Affective and cognitive facets of alexithymia were moderately positively correlated, $r = .37$, $p < .001$. Thus, the affective and cognitive facets of alexithymia had some overlap, but not so much to be redundant with another. Notably, the cognitive facet of alexithymia has three subscales and the affective facet has two subscales. Analysis at the subscale level yielded a similar pattern as the analysis at the facet level. These correlations can be found in Table 3.

We found no significant relation between reading time and alexithymia scores, $r = -.10$, $p = .48$. Further descriptive results of the alexithymia subscales and

Table 1. Means and standard deviations of measures in Studies 1 and 2.

	Mean	Standard deviation
Experiment 1		
Alexithymia Total Score	99.74	21.02
Alexithymia Affective facet	40.47	10.65
Alexithymia Cognitive facet	59.27	14.66
IRI Fantasy	3.58	.86
Transportation	4.36	.91
Experiment 2		
Alexithymia Total Score	100.24	18.82
Alexithymia Affective facet	40.47	9.51
Alexithymia Cognitive facet	59.76	15.62
IRI Fantasy	3.49	.78
SWAS Attention	3.82	1.11
SWAS Transportation	3.23	1.14
SWAS Emotional Engagement	3.68	1.10
SWAS Mental Imagery	4.62	1.04

Note: SWAS: Story World Absorption Scale.

Table 2. Correlations between alexithymia, absorption, and transportation in Studies 1 and 2.

	Study 1	Study 2			
	Transportation Scale	SWAS Mental Imagery	SWAS Emotional Engagement	SWAS Attention	SWAS Transportation
Alexithymia Total Score	−.37**	−.27*	−.19	−.14	−.05
Alexithymia Affective facet	−.32**	−.36**	−.16	−.11	−.15
Alexithymia Cognitive facet	−.30**	−.10	−.13	−.10	.03
IRI Fantasy	.40**	.45**	.51**	.44**	.38**

Note: SWAS: Story World Absorption Scale.

Table 3. Correlations between BVAQ facets, and narrative engagement.

	Study 1	Study 2			
	Transportation Scale	SWAS Mental Imagery	SWAS Emotional Engagement	SWAS Attention	SWAS Transportation
Fantasising	−.29**	−.21	−.15	−.20	−.29*
Emotionalising	−.23**	−.36**	−.10	.03	.05
Verbalising	−.21**	−.13	−.22	−.18	−.04
Identifying	−.19**	−.09	.01	−.08	.00
Analysing	−.31**	−.02	−.07	.03	.12

Note: SWAS: Story World Absorption Scale.

IRI fantasy scale can be found in Supplementary Materials S2.

After examining the correlations between variables, we conducted an Analysis of Variance (ANOVA) to examine the effects of narrative perspective and alexithymia on narrative engagement. In line with our predictions, participants who had read a first-person story (M = 4.50, SD = .87) reported more narrative engagement than participants who had read a third-person story (M = 4.26, SD = .92), F (1, 538) = 10.11, p = . 002, η^2 = .02. The latter effect is graphically displayed in Figure 1. The engagement levels for each story can be found in the Supplementary Materials S1. Also as predicted, the alexithymia total scores were negatively correlated with narrative engagement, F(1, 538) = 84.73, p <. 001, η^2 = .14. The latter effect is graphically displayed in Figure 2.

There was no interaction effect between global alexithymia scores and narrative perspective on engagement levels, F(2, 537) = 1.12, p = .29. However, follow-up analyses yielded different results for the cognitive and affective facets of alexithymia. First,

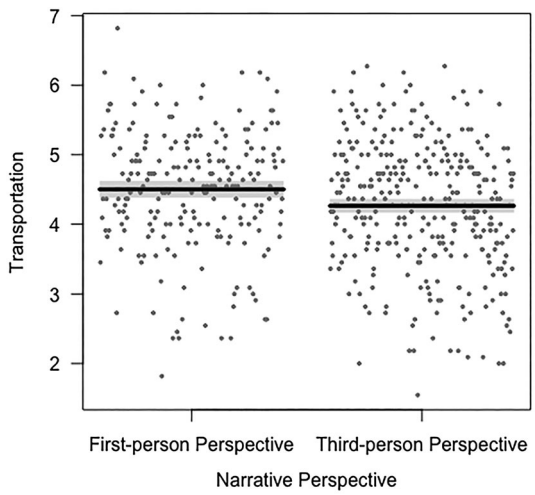

Figure 1. Transportation Scale, the measure of narrative engagement, as a function of narrative perspective.

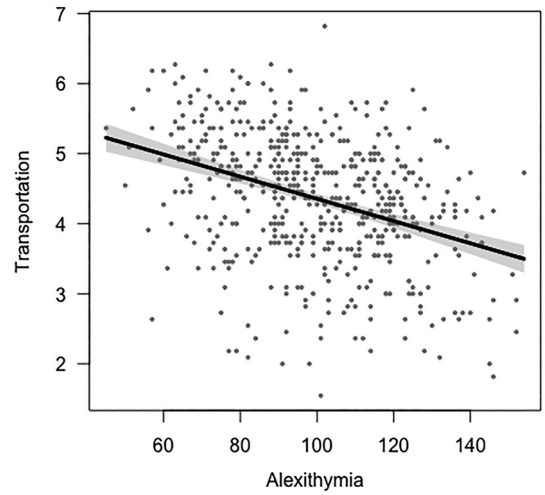

Figure 2. Transportation, the measure of narrative engagement, as a function of total Alexithymia scores.

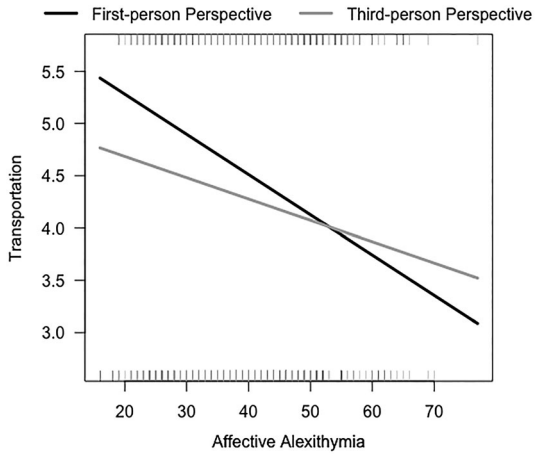

Figure 3. Transportation, the measure of narrative engagement, as a function of narrative perspective and affective Alexithymia.

we examined the effect of the cognitive facet of alexithymia. There were significant main effects of cognitive alexithymia, $F(1, 538) = 52.69$, $p < .001$, $\eta^2 = .09$, and narrative perspective, $F(1, 538) = 10.07$, $p = .002$, $\eta^2 = .02$, but there was no interaction effect ($F(1, 537) = .53$, $p = .47$). When we included absorption as a covariate, the interaction effect remained non-significant, $F < 1$, $p > .05$.

Next, we turned to the affective facet of alexithymia. The main effect of affective alexithymia, $F(1, 538) = 60.11$, $p < .001$, $\eta^2 = .10$, and the main effect of narrative perspective, $F(1, 538) = 9.15$, $p = .003$, $\eta^2 = .02$, were significant. Moreover, the interaction between affective alexithymia and perspective was also significant ($F(1, 537) = 6.30$, $p = .01$, $\eta^2 = .01$). The latter effect is visually displayed in Figure 3. Participants with low alexithymia reported more narrative engagement when they had read a first-person story than when they had read a third-person story. By contrast, participants with low alexithymia were unaffected by narrative perspective. The interaction effect held even after we statistically controlled for IRI fantasy, $F(1, 536) = 6.25$, $p = .01$, $\eta^2 = .01$.

Study 2

The results of Study 1 confirmed our predicted main effects of narrative perspective and alexithymia on narrative engagement and provided initial exploratory evidence for an interaction between narrative perspective and the affective facet of alexithymia. However, the data for Study 1 were originally collected for a different purpose (Samur et al., 2018), which meant that participants were not randomly assigned to different narrative perspectives. It therefore remained important to conduct a study that was explicitly a priori designed to examine the effects of narrative perspective and alexithymia on narrative engagement. We designed Study 2 to this end. In Study 2, we took additional steps to improve our methodology.

First, Study 2 used a new set of four pre-tested fiction stories, two that were written in a first-person perspective and two that were written in a third-person perspective. Second, Study 2 used a within-subjects design, which increases statistical power and thus the sensitivity of our experiment. The latter was useful because we were not able to run as many participants for Study 2 as we did for Study 1. Third, we conducted Study 2 in a lab environment, which reduced the influence of potentially interfering influences (e.g. interruptions, noise) and afforded more control over participants' reading experience.

Fourth, we used a more versatile engagement scale in Study 2. This scale was specifically built to measure the deictic shift from real world to the narrative world using four distinct facets: Mental imagery, emotional engagement, transportation and attention. Notably, the engagement scale from Study 1 included items corresponding predominantly on mental imagery and mix of items from attention and emotional engagement subscales of the engagement measure from Study 2.

Method

Participants and design

Fifty-five participants (30 Females; $M_{age} = 21.85$, $SD_{age} = 7.38$) were recruited from the Vrije Universiteit Amsterdam, who were rewarded with either study credits or money for their voluntary participation. Since the design has been changed in multiple ways, the sample size for Study 2 is calculated for a medium effect size on the basis of within-group comparison.

Procedure and materials

Upon arrival in the laboratory, participants were greeted by a female experimenter, who led them to individual cubicles and seated participants behind a desk-top computer. The remainder of the experiment was computer-administered. First, participants filled

out the BVAQ. Next, participants were introduced to the reading assignments (four in total). Every participant read two stories that were written in a first-person perspective and two stories that were written in a third-person perspective. The order of the stories was randomised. For each text, participants filled out the Story World Absorption Scale (Kuijpers et al., 2014). After the reading assignments, participants filled out the IRI fantasy scale, and Toronto Alexithymia Scale in a randomised order. Finally, participants provided their demographic data, and were debriefed, thanked and rewarded for their participation.

Eight stories were selected for a pilot study (N = 20) according to their length and perspective of narrative. In the pilot, participants were asked to evaluate complexity, and emotional arousal of each story. Based on the pilot study, we chose four stories, two written in a first-person perspective and two written in a third-person perspective. The two categories were matched for word count, complexity, and emotional arousal levels. The mean of included texts was 1,101 words. In the present study, every participant read four stories that were written in either a first-person or a third-person perspective.

To measure their narrative transportation, participants filled out the Story World Absorption Scale (SWAS; Kuijpers et al., 2014). It combines four subscales: attention (e.g. "The story gripped me in such a way that I could close myself off for things that were happening around me"), transportation (e.g. "When I was finished with reading the story it felt like I had taken a trip to the world of the story"), emotional engagement (e.g. "I felt how the main character was feeling"), mental imagery (e.g. "When I was reading the story I could see the situations happening in the story being played out before my eyes"). The SWAS items had satisfactory reliability for each story (Story 1, α = .96; Story 2, α = .94; Story 3, α = .96; Story 4, α = .95).

For the measure of alexithymia and trait absorption, we used the same scales as in Study 1, namely, the BVAQ and IRI fantasy. Both scales had satisfactory reliability (respectively, α = .88 and α = .83).

We also used Toronto Alexithymia Scale with 20 items (Kooiman, Spinhoven, & Trijsburg, 2002) to make a comparison with the other alexithymia scale results, namely BVAQ. The latter has three subscales: difficulty identifying feelings (e.g. "I am often confused about what emotion I am feeling."), difficulty describing feelings (e.g. "It is difficult for me to find the right words for my feelings."), and externally oriented thinking (e.g. "I prefer to analyze problems rather than just describe them."). Participants responded using 5-point Likert scales, ranging from "strongly disagree" to "strongly agree". It had satisfactory reliability (α = .83).

Results and discussion

The means and standard deviations of all measures are displayed in Table 1. The correlations between measures are displayed in Table 2. As in Study 1, we performed all analyses using global alexithymia scores, as well as cognitive and affective facets of alexithymia. The correlations between alexithymia subscales, as measured by BVAQ, and narrative engagement, including all SWAS subscales can be found in Table 3. Consistent with Study 1, only fantasising subscale is significantly correlated with SWAS Transportation and emotionalising subscale with SWAS Mental Imagery. We found no significant relation between reading time and alexithymia scores, $r = .02$, $p = .54$. Further descriptive results of IRI fantasy scale can be found in Supplementary Materials S2.

The correlation between the cognitive and affective facets of alexithymia was directionally positive but non-significant, $r = .07$, $p > .05$. The previous literature indicates that the correlation between the cognitive and affective facets of alexithymia tends to be small (Bermond et al., 2007) or non-existent (Bermond, Oosterveld, & Vorst, 2015). The cognitive facet of the BVAQ was strongly correlated with the Toronto Alexithymia Scale, $r = .88$, $p < .001$. By contrast, the affective facet of the BVAQ was uncorrelated with the Toronto Alexithymia Scale, $r = .07$, $p > .05$. This pattern of correlations between the BVAQ facets and the Toronto Alexithymia Scale is consistent with previous findings in the literature (Vorst & Bermond, 2001). The complete correlations table for the subscales of BVAQ and Toronto Alexithymia Scale can be found in Supplementary Materials S3. The correlations between Toronto Alexithymia Scale, and SWAS subscales can be found in Supplementary Materials S3.

Next, we conducted a series of ANOVAs to examine the effects of narrative perspective and alexithymia, as measured by BVAQ, on narrative engagement. Consistent with Study 1, participants who had read first-person stories (M = 4.18, SD = 1.12) reported more narrative engagement, as indicated by a higher SWAS

total score, than participants who had read third-person stories (M = 3.33, SD = 1.07), $F(1, 54) = 47.95$, $p < .001$, $\eta^2 = .47$. The effect of narrative perspective was significant for all four subscales of the SWAS, $Fs > 19$, $ps < .001$.

Global alexithymia scores, as measured by BVAQ, were unrelated to the SWAS overall scores, $F(1, 53) = 1.76$, $p = .19$. However, separate analyses for the SWAS subscales revealed that, global alexithymia scores were correlated with the mental imagery subscale of the SWAS (see Table 2). Next, we checked whether the effects of total alexithymia scores on mental imagery interacted with narrative perspective. In the latter analysis, the main effect of narrative perspective fell to non-significance, $F(1, 53) = 1.48$, $p = .23$, $\eta^2 = .02$ and the main effect of alexithymia remained significant, $F(1, 53) = 4.02$, $p = .05$, $\eta^2 = .07$. Importantly, as in Study 1, total alexithymia scores did not show an interaction effect with narrative perspective on mental imagery, $F(1, 53) = .18$, $p = .68$ (Figures 4 and 5).

Next, as in Study 1, we also conducted separate analyses for the affective and cognitive facets of alexithymia. First, we examined whether the effect of the cognitive facet of alexithymia on mental imagery depends on the narrative perspective. The main effect of cognitive alexithymia was not significant, $F(1, 53) = .55$, $p = .46$, while the main effect of perspective was significant, $F(1, 53) = 6.96$, $p = .01$, $\eta^2 = .12$. There was also no significant interaction between cognitive alexithymia and narrative perspective, ($F(1, 53) = 2.45$, $p = .12$, $\eta^2 = .04$). The latter result remained non-significant after we controlled for IRI fantasy ($F(1, 52) = 2.31$, $p = .14$, $\eta^2 = .04$).

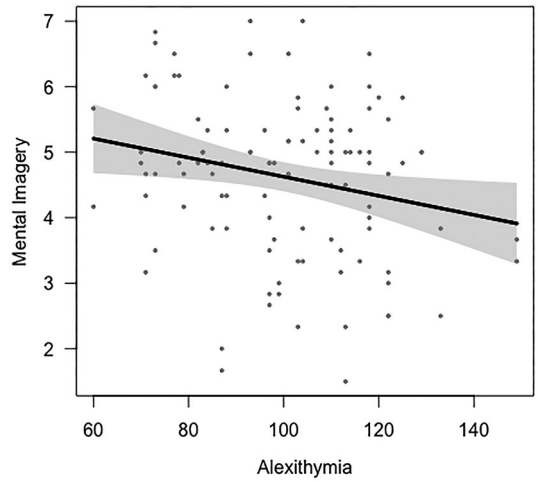

Figure 5. Mental imagery scores of the SWAS as a function of Alexithymia.

Finally, we examined whether affective alexithymia interacted with narrative perspective in predicting narrative transportation. While the main effect of affective alexithymia was significant ($F(1, 53) = 7.84$, $p = .007$, $\eta^2 = .12$), the main effect of narrative perspective fell to non-significance, $F(1, 53) = .43$, $p = .51$. The affective alexithymia facet had a marginal interaction with narrative perspective in the expected direction ($F(1, 53) = 2.98$, $p = .09$) (see Figure 4). The latter effect became statistically significant after we

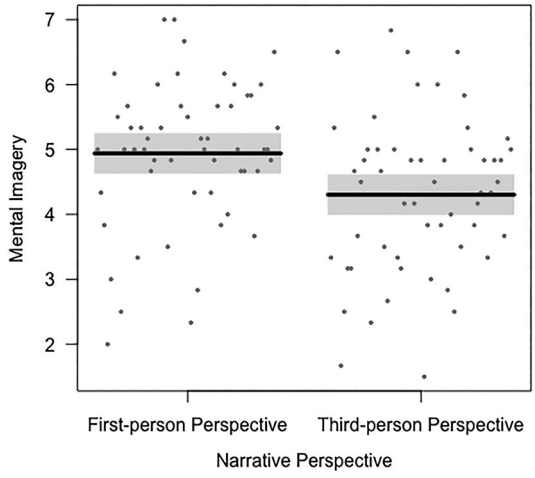

Figure 4. Mental imagery scores of the SWAS as a function of narrative perspective.

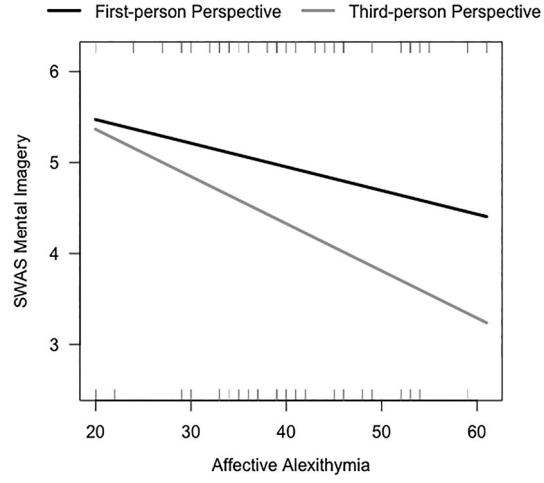

Figure 6. SWAS mental imagery as a function of narrative perspective and affective Alexithymia.

controlled for IRI Fantasy scale as a covariate, $F(1, 52) = 7.42$, $p = .009$, $\eta^2 = .12$. To make sure these findings were not due to inflation of regression parameters, which is also referred to as collinearity (Dormann et al., 2013), we performed additional checks by calculating variance inflation factor (VIF) for regression models including affective alexithymia, IRI fantasy and mental imagery scores. All trials yielded VIF factors less than 2, which is below the accepted threshold (< 10) (Figure 6).

General discussion

In the present article, we examined how narrative engagement emerges from narrative perspective and individual differences in alexithymia. In Study 1, which used a large online sample (N = 541) with a between-subjects design, and Study 2, which was a small-scale experimental study (N = 55) with a within-subjects design, we found strongly converging findings that were largely consistent with our theoretical predictions. First, as expected, first-person stories evoked more engagement than third-person stories. Second, alexithymia was negatively associated with the extent to which participants were mentally immersed into a story. Third, narrative perspective interacted with the affective subscales, but not the cognitive subscales of alexithymia. The latter effect signified that first-person stories evoked more engagement than third-person narratives among participants with lower levels of affective alexithymia, whereas narrative perspective had no effect among participants with higher levels of affective alexithymia.

The present studies are among the first to provide direct evidence for a link between alexithymia and narrative engagement, where people with higher (rather than lower) levels of alexithymia are less likely to become mentally immersed into a narrative world. The lower levels of mental engagement in alexithymia cast new theoretical light on recent findings that people with higher (rather than lower) alexithymia are prone to read less in their daily lives (Samur et al., 2017; Samur & Koole, 2020). Moreover, the fantasising subscale of alexithymia is found to be consistently associated with narrative transportation in both studies. Narrative transportation is a process that increases readers' engagement with a narrative (Gerrig, 1993; Green & Brock, 2002; van Laer et al., 2014). Hence, the limited propensity in imaginative ability is likely to make reading less rewarding (Busselle & Bilandzic, 2009). The present findings thereby help to explain why people with higher (rather than lower) alexithymia are likely to read less in everyday life.

By studying the effects of alexithymia alongside the effects of narrative perspective, the present studies further illuminate one of the potential mechanisms whereby alexithymia may influence narrative engagement. In Study 1, we found that the cognitive facet of alexithymia and narrative perspective had a main effect on narrative engagement. The main effect of cognitive alexithymia was non-significant in Study 2, but this was likely because of the small sample size of that study. The implication seems to be that cognitive alexithymia and narrative perspective influence narrative engagement through independent mechanisms. The prior literature has consistently linked cognitive alexithymia to deficits in mentalising skills (Grynberg et al., 2012; Moriguchi et al., 2006). We therefore tentatively suggest that mentalising deficits in cognitive alexithymia may lower narrative engagement irrespective of whether people adopt a first-person or a third-person perspective. However, measuring mental attunement using different methodologies, such as open-ended questions on character's inner world, may reveal the link between cognitive alexithymia and narrative engagement further.

Unlike cognitive alexithymia, affective alexithymia did interact with narrative perspective. Specifically, both studies showed that first-person stories elicited more narrative engagement than third-person stories among people low in alexithymia, but this effect was absent among people with higher levels of alexithymia. This interaction suggests that affective alexithymia is specifically linked to functional impairments in mentally simulating someone else's perspective. These findings are in line with previous evidence that affective alexithymia is predictive of lower activations at the neural substrates of mental imagery (van der Velde et al., 2013). Given that the findings in Study 2 showed that the interaction was most pronounced for the facets of narrative engagement that are involved with mental imagery, the inability to generate mental imagery lies at the heart of the reading problems of people with higher (rather than lower) levels of affective alexithymia. Therefore, future research should focus on the story content, such as the level of abstractness or the amount of emotional dynamics of the characters, that may explain these differences. More concrete stories can perhaps lead to higher levels of narrative

engagement among people with higher levels of alexithymia.

The dissociable effects of the affective and cognitive facets of alexithymia on narrative engagement are of interest for the broader alexithymia literature. Notably, there is an ongoing debate surrounding the definition of the alexithymia construct and the comprising facets (Watters, Taylor, Quilty, & Bagby, 2016). While some scholars find affective dimension of alexithymia problematic at a conceptual level, others would argue that fantasising and emotionalising concepts are part of the original construct (Bermond et al., 2007; Vorst & Bermond, 2001). According to the latter, whereas the cognitive facets seem to be linked with brain areas related to automatic emotion processing, including perception and recognition of emotion, the affective facets of alexithymia are associated with areas guiding conscious experience of emotion and emotion control (Goerlich-Dobre, Votinov, Habel, Pripfl, & Lamm, 2015). The present findings suggest that the differences between the affective and cognitive facets of alexithymia may have a particular significance for mental simulation processes in reading. Cognitive facets of alexithymia might be related to mental simulations on implicit levels which, for example, are activated when one is watching someone performing an action (Grèzes, Frith, & Passingham, 2004). By contrast, the affective facets of alexithymia may be associated with more explicit forms of mental simulation which, for example, become activated when one deliberately imagines another person's emotions (Ruby & Decety, 2004).

The present research inevitably has limitations. First, the present set of two studies were heterogeneous in terms of their design, sample size, and study environment. Although the findings of the present studies converged in their most important respects, it remains desirable to conduct more better controlled replications of the present work including exhaustive checks on story content (e.g. theme, valence), the linguistics checks, such as the consistency of the use of first- or third-person perspective pronouns, and reading comprehension. Second, the present studies assessed narrative engagement using self-report measures that were administered after the reading experience. To control for possible memory distortions, it would be important to measure engagement while people are reading. Although self-report measures tend to disrupt reading flow when administered during reading, recent work indicates that it is possible to derive an index of narrative engagement from the activation of visual imagery areas of the brain (Christian et al., 2015). The latter methodology would provide an important complement to the present research. Third, the present studies were limited to a single session of reading, and thus remain silent about any effects lasting after reading. For example, the effect of persuasive messages after an immersive reading (Green & Brock, 2002) might be less on people with higher (rather than lower) levels of alexithymia. There is also some suggestive evidence that repeatedly experiencing narrative engagement may lead to enhancements of social-cognitive processing (Bal & Veltkamp, 2013). It thus would be of interest to extend the present studies to include longitudinal designs in future work.

Despite these caveats, the findings that links alexithymia to perspective-taking and mental imagery from the present research provide arguably the most direct evidence to date that links alexithymia to deficiencies in mental simulation. This link is highly theoretically meaningful in view of modern theories of embodied cognition (Barsalou, 2008) and embodied emotion (Niedenthal, 2007), which accord a central role to mental simulation (Barsalou, Santos, Simmons, & Wilson, 2008; Niedenthal, 2007). Embodiment theories have already been successfully applied to understand the language comprehension and the acquisition of reading skills (Glenberg, Witt, & Metcalfe, 2013). From this perspective, inability to generate mental simulations may be a common factor that explains the problems of people with higher (rather than lower) levels of alexithymia in dealing with their emotions, in relating with other people, and with narrative processing. Although much more work remains to be done, the present research suggests that further studying embodied mental simulations may provide important answers to the myriad problems that are connected with alexithymia.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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