

**DE STRALENDE LEZER**



# DE STRALENDE LEZER

WETENSCHAPPELIJK ONDERZOEK NAAR DE INVLOED VAN HET LEZEN

REDACTIE

Frank Hakemulder

STICHTING LEZEN REEKS

PART 17

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## EXPOSURE TO NARRATIVE FICTION VERSUS EXPOSITORY NONFICTION: DIVERGING SOCIAL AND COGNITIVE OUTCOMES

**KATRINA FONG AND RAYMOND MAR**

**Katrina Fong** is currently a second year MA student in Psychology at York University in Toronto, Ontario, Canada.  
Email: kafong@yorku.ca

**Raymond A. Mar** is an Assistant Professor of Psychology at York University in Toronto, Ontario, Canada. He is also an associate editor for the forthcoming journal, *The Scientific Study of Literature*.  
Email: mar@yorku.ca



## ABSTRACT

Narrative fiction and expository non-fiction can differ with regard to their structure and content. In particular, fiction texts tend to focus on examining human psychology and relationships. The conflicting desires and goals of the fictional characters can be presented in a way that provides readers with an opportunity to use the story as a simulation of the social dynamics that may occur in the real world. Non-fiction texts do not often afford these same opportunities. Overall, readers might engage with these fiction and non-fiction texts in different ways, resulting in diverging social and cognitive outcomes. We explored two lines of investigation with respect to this idea. First, lifetime exposure to fiction and non-fiction was examined in relationship to accuracy in identifying facial emotional cues. Increased exposure to fiction was a predictor of accuracy in identifying facial emotional cues, but exposure to nonfiction was not. Second, a series of studies investigated the relationship between exposure to different types of text and performance on a variety of verbal ability tasks. Increased lifetime exposure to fiction was a unique predictor of improved scores on the verbal ability tasks; exposure to non-fiction was not. The results of these studies indicate that there are indeed divergent social and cognitive outcomes from exposure to different types of text. Thus, when discussing the impact of reading, it can be beneficial to consider the type of text being engaged with. Future studies should further investigate the impact of exposure to fiction and non-fiction texts using experimental designs.

## SAMENVATTING

### Vraagstelling

De activiteit van het lezen kent een grote verscheidenheid aan positieve gevolgen. Hoewel er talrijke overeenkomsten bestaan tussen fictie en non-fictie, zijn beide genres uniek in structuur en inhoud. Met als gevolg verschillende sociale en cognitieve effecten op de lezer. Zo suggereert eerder onderzoek (Mar et. al., 2006; Mar and Oatley, 2008) dat een levenslange ervaring met narratieve fictie positieve gevolgen heeft voor de sociale vaardigheden van de lezer. Dit verband is niet gevonden bij het lezen van verklarende non-fictie.

### Methode

Het onderzoek van Mar et. al. (2006) wordt uitgebreid met een nieuw experiment, waarin de herkenning van emotionele gezichtsuitdrukkingen wordt getest. Om de levenslange blootstelling aan fictie van de proefpersonen vast te stellen, wordt een gewijzigde versie van de Author Recognition Test (ART) uitgevoerd. Op een lijst

met auteursnamen vinken deelnemers de auteurs aan die ze kennen. Om gissen te voorkomen, wordt hen verteld dat er ook verzonnen auteurs tussen staan. Vervolgens ondergaan de proefpersonen een Facial Emotional Recognition (FER) test. Ze krijgen foto's van verschillende gezichten te zien en geven bij iedere foto aan welke emotie daarop van toepassing is.

Daarnaast wordt door middel van drie kleinere experimenten onderzocht wat de invloed is van fictie en non-fictie op onze verbale vaardigheden. Experiment 1 onderzoekt de relatie tussen leesgewoonten en vocabulaire. De leesgewoonten van de deelnemers worden vastgesteld door middel van een persoonlijke vragenlijst. Hun vocabulairebeheersing wordt gemeten met een meerkeuzetest.

In experiment 2 staat het verband tussen levenslange blootstelling aan verschillende genres en verbale redenering centraal. Door middel van de ART wordt de blootstelling aan fictie en non-fictie van de deelnemers vastgesteld. De proefpersonen lezen een passage en beantwoorden vragen waarvoor ze logisch moeten redeneren.

Experiment 3 onderzoekt de relatie tussen levenslange blootstelling aan verschillende genres en overige verbale vaardigheden. Weer wordt de ART gebruikt om blootstelling aan fictie en non-fictie van de deelnemers vast te stellen. Ze beantwoorden vragen over onder meer synoniemen en tekstbegrip.

## Resultaten

Uit de resultaten van het FER-experiment komt naar voren dat proefpersonen die gedurende hun leven meer aan narratieve fictie zijn blootgesteld, beter zijn in het identificeren van emotionele gezichtsuitdrukkingen.

De uitkomst van experiment 1 wijst erop dat een voorkeur voor narratieve fictie een betere vocabulairebeheersing impliceert. Uit experiment 2 blijkt dat proefpersonen die vaker in contact zijn geweest met fictie, beter zijn in verbaal redeneren. Tenslotte suggereren de resultaten van experiment 3 dat meer contact met narratieve fictie leidt tot grotere verbale vaardigheden.

## Conclusie

Het onderzoek naar de invloed van narratieve fictie op sociale en cognitieve vaardigheden staat nog in de kinderschoenen. Toch kan op basis van de experimenten geconcludeerd worden dat lezers die gedurende hun hele leven in aanraking zijn geweest met narratieve fictie, beter presteren als ze getest worden op sociale sensitiviteit en verbale vaardigheden. Dit verband is niet aangetroffen bij verklarende non-fictie.





# EXPOSURE TO NARRATIVE FICTION VERSUS EXPOSITORY NONFICTION: DIVERGING SOCIAL AND COGNITIVE OUTCOMES

## INTRODUCTION

Reading is a ubiquitous daily occurrence during both our professional and leisure time. This activity can result in a variety of benefits for readers, such as increased general knowledge (Stanovich and West, 1989). However, does what we read have an impact on the benefits we might receive? Although fiction and non-fiction texts share several characteristics, they are unique in their structure and content (Gardner, 2004; cf. Graesser, Hautt-Smith, Cohen and Pyles, 1980). These differences may result in divergent influences on social and cognitive outcomes, as a function of preferential exposure to one form of text over the other. We begin by exploring the differences between narrative fiction and expository non-fiction, followed by a discussion of research that examines the social and cognitive correlates of exposure to these two types of texts.

## NARRATIVE FICTION VERSUS EXPOSITORY NONFICTION

Narrative fiction and expository non-fiction texts tend to differ with regard to their structure and content (Gardner, 2004). Although the content of both types of text may vary, the majority of narrative texts centre on the nature of human psychology, human relationships, and interpersonal interactions (Mar and Oatley, 2008). We have noted that the focus on such issues is unsurprising, considering that much of our day-to-day lives involve coping with these same concerns. The goal-focused structure of stories, following the aims and desires of story characters, parallels our own goal-focused actions in the real world. In contrast, the structure of non-fiction expository texts is quite different, focused as it is on communicating an idea or

argument. Furthermore, while expository texts convey their information by telling, fictional narratives allow the reader to experience the scenario as described in the story (Mar and Oatley, 2008), giving readers the opportunity to navigate the relationships between characters and negotiate the conflicting desires that may arise over the course of the narrative. Thus, even when expository and narrative texts address the same content, such as human relationships, readers are unlikely to engage them in the same way.

### FICTION AND SOCIAL PROCESSING

Because fictional narratives explore such relevant aspects of the human experience, they can be used as simulations for social interactions. It has been suggested that when readers engage with a story, they have the opportunity to become immersed in a simulation that mirrors the social experiences of the real world (Mar and Oatley, 2008). Consistent exposure to these simulations through frequent reading of fictional narratives may lead to the maintenance or improvement of social skills (Mar et al., 2006; Mar, Oatley, and Peterson, 2009; Mar, Tackett and Moore, 2010), even though reading is a solitary activity that removes the reader from external social interaction (Mar et al., 2006). The social simulation within a narrative may also act as a buffer against social isolation for readers of fiction, by providing them with a simulated social world to engage with (c.f. Gardner and Knowles, 2008; Derrick, Gabriel, and Hugenberg, 2009; Epley, Waytz, and Cacioppo, 2007; Jonason, Webster and Lindsey, 2008). Conversely, because the structure and content of expository nonfiction does not provide opportunities for simulating real-world social experiences, readers of expository non-fiction may not experience such social benefits.

How exactly might engagement in fictional texts influence the development and maintenance of social skills? Gerrig (1993) proposed that the same cognitive mechanisms that allow for real-world processing are also engaged during narrative processing. One possible cognitive mechanism that might constitute a shared process for real-world and fictional-world social processing is the ability to infer the mental states of others (Mar et al., 2006). This mechanism has been labelled as ‘theory-of-mind’ (Carruthers and Smith, 1996). Theory-of-mind allows individuals to make inferences regarding the mental states of others. Although we cannot have access to the thoughts and beliefs of others, we understand that their behaviour is motivated by such internal states (Frith and Frith, 2001). Consequently, we can make inferences about an individual’s internal states based on an observation of their behaviour, with theory-of-mind abilities directly related to accuracy of

mental-inferences (Baron-Cohen, Wheelwright, Hill, Raste and Plumb, 2001). As Mar and colleagues (2006) noted, both narratives and real-world social interactions require an understanding of people, and how their goals, thoughts, beliefs, and emotions might affect their behaviours. Reading about complex social interactions might engage the same cognitive processes used to process similar situations in the real-world. Thus, readers of fiction might have the opportunity to practice the same skills they would use in a real-world social dilemma as they work through the difficulties of a fictional character within a story.

Although empirical research investigating the social outcomes of reading is in its infancy, initial studies seem to indicate that exposure to fiction is related to bolstered social skills. Mar and colleagues (2006) examined the link between social ability and reading using performance on the Mind-in-the-Eyes task (Baron-Cohen et al., 2001) and the Interpersonal Perception Task (IPT-15, Costanzo and Archer, 1989); both these tasks require the inference of mental states based on nonverbal cues. In the Mind-in-the-Eyes task (Baron-Cohen et al., 2001), participants are shown cropped images of actors' eyes and are asked to identify the correct mental-state currently being experienced from among four options. The Interpersonal Perception Task requires participants to watch short unscripted film clips of socially ambiguous situations. Participants are then required to respond to a multiple-choice question that has an objectively correct answer. Overall exposure to fiction was related to improved performance on both these measures. A second study replicated the effect and indicated that the prediction of performance on these measures of interpersonal sensitivity could not be explained by individual differences such as personality traits or gender (Mar, Oatley, and Peterson, 2009). These studies indicate that exposure to fiction is related to sensitivity to interpersonal cues. However, since these preliminary studies were correlational, the causal direction of the relationship between fiction reading and performance on these interpersonal tests cannot be determined.

Here we describe a new study that extends the extant research on this topic. In the previously described studies, interpersonal sensitivity was measured by considering accuracy in decoding nonverbal cues using images of eyes only, or dynamic videos of whole-body movement. The following study extended this work to emotional facial cues, presented very briefly.

There were 247 participants in this study (176 female), between the ages of 17 and 52 ( $M=20.5$ ,  $SD=5.1$ ). In order to characterize lifetime exposure to fiction and nonfiction, participants were asked to complete a modified version of the Author Recognition Task (ART; Mar et al., 2006). The ART was originally developed by Stanovich and West (1989) and requires participants to check names that they

recognize as published authors from a list that includes foils or false names. In this measure, guessing is discouraged by informing participants that false author names, which act as foils, have been included so that cheating and guessing can be easily detected. The modified version of the ART ensured that the authors listed fell into two mutually exclusive categories of narrative fiction and expository nonfiction. Participants were also asked to complete a facial emotion recognition task, in which pictures of faces expressing different emotions were briefly presented (1.2 seconds). The emotional expressions employed were happy, sad, surprised, and angry, and both black and white faces from both genders were presented. There were 24 images in total (i.e., 6 images per emotion), presented in random order. Participants were asked to indicate via a keypress what emotion they saw after the picture was presented.

The results of this study indicated that individuals with greater lifetime exposure to narrative fiction, as indicated by the ART, were more accurate in identifying briefly presented emotional expressions. In contrast, the amount of exposure to expository nonfiction did not predict performance.

These findings reinforce the idea that there are characteristics unique to the structure and content of fictional narratives that are related to social processing. However, this study relied on a correlational design, which means that we are unable to make inferences regarding the causal direction of the relationship observed. Further experimental studies are required to clarify the relationship between the exposure to fiction and improved recognition of facial emotion.

## NARRATIVE AND COGNITIVE PROCESSING

As we have shown, the diverging structure and content of fictional narratives and expository non-fiction can result in differential prediction of social processing performance in readers. However, do the differences between these two forms of text result in different outcomes for cognitive processing? Consider that engagement in a fictional narrative might result in the reader being ‘transported’ into the world of the story (Gerrig, 1993); thus, readers are required to imagine environments and scenarios that are non-present. In other words, readers must engage in a form of abstract thinking that allows readers to imagine the hypothetical premises of the story. Researchers have begun to investigate whether the abstract thinking employed during the consumption of fictional narratives might have an influence on cognitive processes (Harris, 2000). In particular, O’Neill, Pearce and Pick (2004) found that the narrative ability of 3 to 4 year olds predicted their future math abilities. Although narrative and mathematical ability seem unrelated

on the surface, both tasks require abstract thinking. Therefore, engaging in narratives might encourage the development of cognitive skills required to succeed in subsequent tasks that also centre on abstract thinking. Ongoing studies are also investigating whether exposure to fiction might improve performance on abstract thinking tasks in adults.

Can exposure to different types of text result in different outcomes for performance on other cognitive tasks? Logically, the close relationship between reading and language suggests that another cognitive outcome of overall engagement in reading is the acquisition of vocabulary. Indeed, previous empirical studies have demonstrated a link between reading and vocabulary (Stanovich, West, and Harrison, 1995). Vocabulary as a verbal skill is an extremely relevant cognitive ability to foster, as many standardized tests for admission to university and graduate programs include a vocabulary component. However, it is unclear what the role the exposure to different genres of text (i.e., fiction versus nonfiction) plays in overall verbal ability. Do the differences in structure and content between fiction and nonfiction have an impact on verbal ability? Given the lack of previous work on this topic, we had no clear hypotheses regarding this question. A series of three studies addressed the question of whether what we read has an impact on various aspects of verbal ability.

Study 1 investigated the relationship between reading habits and vocabulary. There were 188 participants (141 female) with a mean age of 18.9 ( $SD=1.8$ ). Reading habits were assessed by asking participants to complete a self-report questionnaire inquiring about their preferences, liking, and frequency of engagement with fiction and nonfiction literature. In this first study, vocabulary was measured using a 60 item multiple choice test. Participants were asked to respond to questions such as: ‘Select the word below whose meaning is closest to ‘accomplice’: A) Sideshow; B) Confederate; C) Author; D) Skill’.

The results of Study 1 indicated that a self-reported preference for fictional narratives predicted vocabulary. However, preferences for expository fiction had no relationship with vocabulary. Further analysis revealed that these relationships continued to hold true even after controlling for age and gender, which are demographic variables that could possibly explain the results.

Study 2 focused on the relationship between lifetime exposure to different genres of text and verbal reasoning. There were 138 participants (94 female) with a mean age of 19.8 ( $SD=3.3$ ). Overall exposure to fiction and nonfiction texts was assessed using the modified ART. Verbal reasoning was measured using a subset of 15 items from Verbal Reasoning section of the Medical College Admission Test. Participants were asked to read a passage and then answer questions that tapped an



understanding of logical reasoning, such as: ‘Which of the following would most weaken Smith’s argument?’

- A Mothers have the influence over the earliest stages of their daughters’ smoking careers.
- B Close female friends influence the duration, but not the frequency, of young women’s smoking.
- C The maintenance of one’s smoking habits is heavily influenced by one’s economic status.
- D The smoking habits of both parents significant influence a daughter’s decision to smoke’.

The findings from Study 2 indicated that both exposure to fiction and nonfiction predicted scores on the verbal reasoning task. However, exposure to fiction was found to be a stronger predictor of the verbal reasoning scores. Subsequent analyses revealed that exposure to fiction was a unique predictor of verbal reasoning scores after controlling for age, gender, and exposure to nonfiction.

Finally, Study 3 examined the relationship between lifetime exposure to different genres of text and other forms of verbal ability. There were 242 participants (146 female) with a mean age of 19.7 (SD=3.9). Lifetime exposure to fiction and nonfiction was once again measured using the modified ART. Verbal ability was assessed using a 20 item subset from the Vocabulary section of the Graduate Record Exam. These items followed a diverse set of formats, including fill-in-the-blank, analogies, synonyms, and passage comprehension. For example, participants were asked to complete the following sentence, which tested their vocabulary:

‘The fundamental . . . . . between dogs and cats is for the most part a myth; members of these species often coexist . . . . .

- A Antipathy...amiably
- B Disharmony...uneasily
- C Compatibility...together
- D Relationship...peacefully
- E Difference...placidly’

They were also asked to select the most appropriate analogy when presented with a root comparison, as in the following example:

‘Hungry: Ravenous:

- A Thirsty: Desirous
- B Large: Titanic
- C Famous: Eminent

- D Dizzy: Disoriented
- E Obese: Gluttonous'

In analyzing the data for Study 3, we included two individual difference variables as controls: openness and need for cognition. Openness is a trait related to intelligence and creativity, and need for cognition describes a tendency to pursue complex thinking whenever possible. In this study, openness was considered as a factor of personality, and was assessed using scores from the Big Five Inventory (BFI; John, Donahue and Kentle, 1991). Need for cognition was measured using the scale developed by Cacioppo, Petty, Feinstein and Jarvis (1996). The results indicated that exposure to fiction predicted verbal ability, controlling for exposure to nonfiction, openness, need for cognition, gender, and age.

Overall, the findings from these three studies indicate that narrative fiction, and not expository nonfiction, is a unique predictor of verbal ability. However, it is unclear why this might be the case. It is possible, for example, that narrative fiction simply contains more unique words than expository nonfiction, thereby giving readers more opportunities to be exposed to new words. Future studies should compare the number of unique words in narrative fiction and expository nonfiction. Further investigation might also examine the possibility that improved performance on verbal tasks is related to exposure to authors on the ART who employ more unique words.

Another possible reason that reading narrative fiction might promote vocabulary retention to a greater degree than expository nonfiction is emotion. Narrative fiction is often more emotional than expository nonfiction, and emotion makes information more memorable (Hamann, 2001). Readers may therefore be more likely to recall unique words they come across while reading fiction compared to nonfiction.

Complicating matters, a study done by Siddiqui, West and Stanovich (1998) found that overall print exposure predicted word usage, but did not predict the use of words in de-contextualized tasks such as reasoning in syllogisms. However, in the current studies, it was demonstrated that exposure to fiction predicted performance on related tasks, such as analogical reasoning and decoding the logical structure of narrative arguments. Since Siddiqui and colleagues (1998) collapsed across genres in their study, they may have obscured the differential prediction we observed between fiction and nonfiction. Further studies should be conducted to identify the generality and specific nature of the relationship between fiction and verbal ability.

## CONCLUSION

Reading, both of fiction and nonfiction texts, is an ever-present activity in our lives. Although overall engagement in reading can have benefits for individuals, the previous and current research discussed in this paper have indicated that the outcomes of increased exposure to narrative fiction diverge from the outcomes of increased exposure to expository nonfiction. In particular, engaging with narrative fiction was linked to improved performance on tasks of interpersonal sensitivity, including the identification of facial emotions. Exposure to fiction was also found to be a unique predictor of verbal ability. Exposure to nonfiction, in contrast, did not demonstrate this same predictive ability. However, it is important to recognize that the empirical study of the social and cognitive outcomes of exposure to narrative fiction is in its infancy. The relationship between reading and its myriad of outcomes is complex and needs to be subject to further investigation. Future studies might employ the use of experimental techniques in order to further elucidate the relationships described in this paper. Regardless, it is becoming apparent that reading, particularly the consumption of fiction, has an impact on our daily lives that may provide a variety of positive social and cognitive outcomes. Thus, it is important to continue engaging in empirical research on these topics in order to better understand these potential influences.

## BIBLIOGRAPHY

- Baron-Cohen, S., S. Wheelwright, J. Hill, Y. Raste and I. Plumb (2001). The 'Reading the Mind in the Eyes' test revised version: A study with normal adults, and adults with Asperger's syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry*, 42, pp. 241-251.
- Cacioppo, J.T., R.E. Petty, J.A. Feinstein and W.B.G. Jarvis (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119, pp. 197-253.
- Carruthers, P. and P.K. Smith (eds.) (1996). *Theories of theories of mind*. Cambridge, England: Cambridge University Press.
- Conzanzo, M. and D. Archer (1989). Interpreting the expressive behaviour of others: The Interpersonal Perception Task. *Journal of Nonverbal Behaviour*, 13, pp. 225-245.
- Derrick, J.L., S. Gabriel and K. Hugenberg (2009). Social surrogacy: How favored television programs provide the experience of belonging. *Journal of Experimental Social Psychology*, 45, pp. 352-362.

- Epley, N., A. Waytz and J.T. Cacioppo (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review*, 114, pp. 864-886.
- Frith, U. and C.D. Frith (2001). The biological basis of social interaction. *Current Directions in Psychological Science*, 10, pp. 151-155.
- Gardner, D. (2004). Vocabulary input through extensive reading: A comparison of words found in children's narrative and expository reading materials. *Applied Linguistics*, 25, pp. 1-37.
- Gardner, W.L. and M.L. Knowles (2008). Love makes you real: Favorite television characters are perceived as 'real' in a social facilitation paradigm. *Social Cognition*, 26, pp. 156-168.
- Gerrig, R.J. (1993). *Experiencing narrative worlds*. New Haven: Yale University Press.
- Graesser, A.C., K. Haut-Smith, A.D. Cohen and L.D. Pyles (1980). Advanced outlines, familiarity, and text genre on retention of prose. *Journal of Experimental Education*, 48, pp. 281-290.
- Hamann, S. (2001). Cognitive and neural mechanisms of emotional memory. *Trends in Cognitive Sciences*, 5, pp. 394-400.
- Harris, P.L. (2000). *The work of imagination*. Oxford, UK: Blackwells Publishing.
- John, O. P., E.M. Donahue and R.L. Kentle (1991). *The Big Five Inventory – Versions 4a and 54*. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.
- Jonason, P.K., G.D. Webster and A.E. Lindsey (2008). Solutions to the problem of diminished social interaction. *Evolutionary Psychology*, 6, pp. 637-651.
- Mar, R.A. and K. Oatley (2008). The function of fiction is the abstraction and simulation of social experience. *Perspectives on Psychological Science*, 3, pp. 173-192.
- Mar, R.A., K. Oatley, J. Hirsh, J. dela Paz and J.B. Peterson (2006). Bookworms versus nerds: Exposure to fiction versus non-fiction, divergent associations with social ability, and the simulation of fictional social worlds. *Journal of Research in Personality*, 40, pp. 694-712.
- Mar, R.A., K. Oatley and J.B. Peterson (2009). Exploring the link between reading fiction and empathy: Ruling out individual differences and examining outcomes. *Communications*, 34, pp. 407-428.
- Mar, R. A., J.L. Tackett and C. Moore (2010). Exposure to media and theory-of-mind development in preschoolers. *Cognitive Development*, 25, pp. 69-78.
- O'Neill, D.K., M.J. Pearce and J.L. Pick (2004). Preschool children's narratives and performance on the Peabody Individualized Achievement Test – Revised: Evidence of a relation between early narrative and later mathematical ability. *First Language*, 24, pp. 149-183.

- Siddiqui, S., R.F. West and K.E. Stanovich (1998). The influence of print exposure on syllogistic reasoning and knowledge of mental-state verbs. *Scientific Studies of Reading*, 2, pp. 81-96.
- Stanovich, K.E. and R.F. West (1989). Exposure to print and orthographic processing. *Reading Research Quarterly*, 24, pp. 403-433.
- Stanovich, K.E., R.F. West and M.R. Harrison (1995). Knowledge growth and maintenance across the life span: The role of print exposure. *Developmental Psychology*, 31, pp. 811-826.