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Effects of reading on knowledge, social abilities, and selfhood: Theory and empirical studies

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Abstract

Reading exhibits a principle of expertise: the more one does it the more skilled one is likely to become both in the activity and in content knowledge. Reading in general has been shown to be responsible for the acquisition of vocabulary and general knowledge. Our research examines how reading can have other outcomes. Treating the reading of fiction as entry into simulations of social interactions, we review empirical studies of how the reading of fiction can improve empathy and other social abilities, and prompt changes in personality.

Introduction

If science exemplifies the exploring mind of the academy, literature remains its heart. Few have done as much as Willie van Peer to maintain the heart, and at the same time to apply the mind to the study of literature. In his research on point of view and sympathy (van Peer and Maat, 1996) and on foregrounding (van Peer, 2007), he has shown how we can deepen our understanding of central aspects of literariness—the heart of literature—and offer evidence in the place of opinion.

Here we follow van Peer's example of empirical exploration and ask whether and how reading can change the reader. We use the theory of expertise as a basis of thinking about how reading can have psychological effects that continue when one puts the book down.

The main method employed to understand how skills are attained has been the study of expertise. This research in cognitive psychology (e.g., Ericsson, 1990; Ross, 2006) has shown that to become an expert—a person of accomplishment—in any skill, one must devote at least 10,000 hours to the domain of interest. This works out to three hours a day for ten years (taking account of holidays and weekends this is about the amount of time children spend in school classrooms during their lives) or ten hours a day for three years (about the time undergraduates spend completing a university degree). For maximum accomplishment, the time is best spent in problem solving, and in acquiring knowledge and procedures in a particular domain. Coaching is often an important component. The acquisition of the many skills of reading falls readily under this rubric (Wagner & Stanovich, 1996).

For perhaps two thousand years after the invention of writing, the activity of reading and writing was the province mainly of scribes who worked with administrators. Then, about 2500 years ago in Europe, the learning of reading and writing by wider sections of the population began with the invention of writing in an alphabetic language, Greek (Powell, 2002). Since then, coaching in the skills of reading and writing has gradually become more widespread until today it is the principal task of the world's education systems. The general term to designate completion of a school education is the achievement of literacy: being able to read.

Literacy has huge effects on society. It is a prerequisite for the many technologies—in industry, housing, power generation, transport, commerce, health, and information—on which advanced societies have become utterly dependent. But what about the effects of reading on the individual? These are by no means so well recognized. The most important research program on such effects has been conducted by Stanovich, West, and their colleagues (e.g., West, Stanovich, & Mitchell, 1993; Stanovich, 1993; Stanovich, West, & Harrison, 1995; Echols *et al.*, 1996). The program involved two steps.

First Stanovich, West, and their colleagues developed a method for assessing how much people read in their daily lives. To start with it seemed clear that, to see how much people read, daily diaries of activities, would need to be kept. But this was laborious. Stanovich and West (1989) therefore invented a checklist of the names of authors of books: the Author Recognition Test (ART). As well as names of authors the list included, as foils, names of people who were not authors. Participants were asked to check all those names they knew to be authors, and scores were derived by subtracting the number of foils from the number of real authors. People who read a lot know the names of authors from their own reading and from reviews, visits to bookshops, and so on. The ART is easy to administer and score, and there are versions for adults and children. Scores on these tests were found to be very good proxies for diary measures of reading, and indeed to correlate well with behavioral observations of the amount of reading people did (Stanovich, 1993). It has thus become the method of choice for determining the extent of people's reading. The general term for the measure is "print exposure."

Second, these researchers took as outcome measures people's vocabulary, verbal skills, and the amount they knew in various domains of knowledge. Then, with these outcomes, they used the method of hierarchical regression and entered into the equation first such measures as age, social class, and general intelligence (IQ), and then measures of print exposure such as the ART. Even when age, social class, and IQ were controlled for, print exposure was a strong predictor of vocabulary, language use, and general knowledge. The more you read, the more you know and the better you know it. Interestingly, print exposure does not predict everything in the cognitive domain. For instance, Siddiqui, West, & Stanovich (1998) showed that although print exposure has been found to be a good predictor of word usage, it is not a good predictor of how to use words in a de-contextualized way to reason in syllogisms.

Our research has, as it were, taken off from the psychology of expertise and from the methods and results of Stanovich, West, and their colleagues. We have

sought to understand the effects not of reading in general, but of reading fiction. The acquisition of knowledge is a logical outcome of reading non-fiction, but what results from the reading of fictional literature? Is fiction just a pastime, an entertainment, or does it have psychological effects that can be distinguished from those of reading non-fiction? Does reading the works of great artists have effects that can be distinguished from reading the same information but without artistic form?

The theory of fiction from which we start is that a novel, short story, play, or film is a kind of simulation that runs not on computers but on minds (Oatley, 1999). The simulation is both of other minds, and of people's interactions in the social world. We argue that people are good at understanding processes one step at a time, but are much less good at understanding interactions of these processes with others. Thus in thinking about the weather, we can understand that winds blow from areas of high atmospheric pressure to areas of low pressure. But what happens when other factors operate? Does the simple understanding hold when a warm mass of air is blown towards a cold mass? Does it operate in the same way when winds pass over land and over water? To help understand such interactions of multiple factors we need simulations. Hence to give a weather forecast we need to enter into a computer simulation both the wind-producing effects of different atmospheric pressures and also many other processes that interact with them. So, when you look at a map or summary of tomorrow's weather on the television or in the newspaper, you are looking at the output of a computer simulation. Similarly we argue, it is easy to understand single factors in the social world. We know that if someone, say Alice, is thwarted in a strong desire by Beatrice, Alice is likely to be angry with Beatrice. But what happens when Beatrice is Alice's boss? What happens when Beatrice is Alice's daughter? What happens when Beatrice is Alice's lover? Novels, short stories and plays enter basic tendencies such as instigations to anger into simulations with other social processes that can affect them.

In the way that the psychology of expertise has shown that practice is important for any skill, we argue that to read or watch such simulations in books and theaters is to set ourselves social problems, and practice on them. We might say that just as a cockpit simulator sets problems and gives practice in piloting an aircraft, a novel provides sets of problems and gives us practice in navigating in the social domain. Such practice should then—we argue—promote transfer of these skills to the real world. We call this the Social-Improvement Hypothesis. This theory has been explicated in detail elsewhere (Mar & Oatley, in press; cf. Keen, 2007; Zunshine, 2006). Here we focus on empirical investigation of this idea.

Since one of the less understood actors in the social domain is our own self, we also argue that reading fiction, which often focuses on issues of identity, can help self-understanding. Arguably, self-understanding is an important element in changing ourselves. We call this the Self-Improvement Hypothesis: changes in selfhood can occur as a function of reading certain kinds of fiction.

The Social-Improvement Hypothesis: Does reading fiction improve social skills?

George Eliot (1856/1883) proposed that the principal benefit of art is the extension of our sympathies. Among empirical studies related to the idea that literature promotes sympathy is that of van Peer and Maat (1996) who found effects on readers' sympathies for different characters in a short story about a marital argument as a function of the point of view from which the story was written. Moreover, Hakemulder (2000) has taken up Eliot's idea of "sympathies," by proposing that literary fiction is a "moral laboratory." He searched the psychological literature and found 54 experimental studies that satisfied criteria of reliability and validity, in which fictional narratives promoted moral development, improved empathy, and changed norms, values, and self-concepts. The potential for reading to influence our empathic abilities appears to exist even at a young age. Flerx, Fidler, and Rogers (1976), tested five-year-olds who either had fictional stories read to them, or they watched fiction films, that depicted either egalitarian sex roles or more traditional non-egalitarian sex roles. As compared to those exposed to the more traditional material, children exposed to the egalitarian material showed more egalitarian responses on tests of stereotypes for women's occupations immediately after the material was presented. A week later, despite some reduction, the effect persisted. These results indicate an improved capacity to empathize with a marginalized group, and we regard this kind of study as an instance of persuasion by means of narrative (see e.g. Green & Brock, 2005). In a related experiment using adults (Green, 2004), it was shown that individuals who had more experience with the content of a story (i.e., homosexuality, fraternities) reported more engagement and consequently greater shifts in attitude toward those ideas presented in the story. Such studies demonstrate the likely interaction between the creation of empathy for a group through narrative fiction and the capacity for empathy with a group in a narrative fiction based on past experience.

The question arises of whether effects of this kind are unique to narrative fiction, or whether reading such material in any form would have similar effects. Hakemulder (2000; 2001) answered this question in his experiments on Dutch university students. His hypothesis was that fiction encourages readers to take on the roles of characters in stories, and this makes them more empathetic. Expository non-fiction, of course, lacks such characters. Students read either a chapter of a novel about the difficult life of an Algerian woman or an essay on the general problem of women's rights in Algeria. As compared with those who read the essay, those who read the fictional piece said they would be less likely to accept current Algerian norms for relationships between men and women. In another study Hakemulder (2000) found this same decreased tolerance for current norms in students who read the fiction piece under instructions to mentally project themselves into the situation, as compared with those asked to mark the structure of the text with a pencil instead. This follow-up study rules out the possibility that simple text differences are the pivotal variable, and supports the idea that it is our imaginative projection of the self into the described situations that is key.

Projecting ourselves into the minds of actual others—inferring their desires, beliefs, and emotions—is known as possessing a theory-of-mind (Astington, Harris & Olson, 1988; specifically, the simulation-theory account, for a strong view see Heal, 1998). We explored the idea that this social cognitive process is employed during the comprehension of stories by examining the

neuropsychological evidence for this overlap. If the process of story comprehension calls on a process of social cognition then it would be expected that both would draw upon the same areas of the brain. Both the neuroimaging and the neuropsychological (i.e., patient) literatures confirm this. Of the five brain regions consistently associated with narrative processing, four are also part of what is known as the social cognitive network (Mar, 2004; cf. Frith & Frith, 2003; Saxe & Wexler, 2005). Recently, Buckner and Carroll (2007) observed that a network of brain regions appears to be common to a number of different tasks, including theory-of-mind, spatial navigation, autobiographical memory and future planning. While they hypothesized that this core network was responsible for self-projection, which they believe underlies all these processes, they presented no systematic empirical evidence for the existence of this network. To remedy this situation, Spreng, Mar and Kim (submitted) performed quantitative meta-analyses for a number of these processes and examined how the results of each overlapped. We found ample evidence that a core network contributing to these processes does exist, and moreover, some of these brain regions also overlap with those used for narrative comprehension (Mar, 2004), supporting the idea that self-projection could explain the link between empathy and the reading of narrative fiction.

Whereas the behavioral studies by Hakemulder (2000, 2001) on the role of self-projection have employed the presentation of short texts, our own approach to this question has been to make use of the ART to examine how life-time exposure to different genres of text impact empathic abilities. We created a revised version of the ART that allowed us to distinguish exposure to narrative fiction from exposure to expository non-fiction. In an initial investigation, scores on this new measure were correlated with performance on two separate social ability tasks (Mar, Oatley, Hirsh, dela Paz, & Peterson, 2006). Exposure to narrative fiction was positively associated with empathic ability, whereas exposure to expository non-fiction was negatively associated with empathy. Importantly, through the use of partial correlations, we determined that these associations could not be attributed to differences in age, experience with English, and general intelligence. In a follow-up study, we were able to replicate this finding and also explore possible mediating variables. Using a bootstrapped multiple mediation analysis, we demonstrated that the tendency to imagine oneself as part of a narrative partially mediated the relation between exposure to narrative fiction and empathic performance, even after considering the role of Openness to Experience, the most relevant Big Five personality trait (Mar, Oatley & Peterson, submitted). Because the direct effect between fiction and empathy remained, even after taking into account these two mediators, it is possible that some other factor acting in conjunction with self-projection is also playing a role. We hypothesize that this factor is practice in understanding social interactions, that transfers from the reading context to the real social world. In another study, we have found that people randomly assigned to read a short story perform better on a measure of social reasoning than those assigned to read an essay (Mar, 2007). This difference, importantly, does not arise with respect to a non-social measure of analytical reasoning.

Taken together, these studies from our own group and others' have shown that the reading of narrative fiction probably plays a role in developing social expertise. Practice at understanding the fictional social worlds represented by

narrative appears to improve our empathic abilities. This research has also illuminated a likely mechanism—projection of the self into the narrative—that is partly responsible for this relation. Important areas of future research include developing a more complete understanding of what this self-projection entails, how it is achieved on a neural basis, and also what other variables aside from self-projection can help us understand this relation between fiction and empathy.

The Self-Improvement Hypothesis: Can reading fiction help change the self?

Self-Improvement by reading can be thought of as a branch of bibliotherapy, although with the reading material being literary fiction rather than the usual direct self-help texts. Narratives are persuasive, and the morals embedded in them are able to change ideas individuals have about the world (Green & Brock, 2005). Hakemulder (2000), for example, found that reading a short story about an adulterous love affair, by either Chekhov or Beattie, made men change their attitudes toward adultery in what may be described as a more ethically defensible direction, but only when these stories described a negative outcome for the women involved. Readers, therefore, can adopt the morals implicitly represented in a literary text, and in this way be seen as improving themselves. The process need not be conscious, given that modeling of the ideas presented in narratives (Green & Brock, 2005), while requiring an active and imaginative mind, does not require explicit deliberation. Experiences with the morals of stories may not always represent what we would consider self-improvement, however, as the possibility exists that readers may chose to model morally murkier aspects of narratives as well. A wealth of literature employs themes of moral ambiguity. These stories are often the most interesting, dealing as they do with complex issues that slip the bonds of easy answers.

In addition to persuasion, whereby readers report changes in attitudes and beliefs that relate directly to the content of a text, other readers have found that there are consequences of reading that are more dramatic and wide-ranging: changes in their sense of self. Sabine and Sabine (1983) interviewed 1,843 library users as a part of the “Books That Made the Difference Project.” They found that their interviewees considered books they read to be powerful instigators of self-change. Ross (1999) found that 60% of readers who read for pleasure ($N = 194$), found reading to be a personally transforming experience. While lovers of literature may report a profound change in their sense of self as a result of their reading experiences, it is hard not to be skeptical. After all, personality is often defined by its stability, and while it can change across the life-span (Roberts, Walton, & Viechtbauer, 2006), this change is likely to be gradual with a diverse number of causes. Perhaps avid readers incorrectly believe their transformation resulted from reading, whereas the true cause lies in other life experiences not tied to experiences with fiction. Perhaps readers inhabit story characters so thoroughly that think of themselves (incorrectly and temporarily) to be more like these fictional persons. Perhaps their definition of transformation is so broad and vague that it includes any change in opinion or outlook. Perhaps other narratives, not only literature, would have as transforming an effect. And even if their self-assessment was correct, who is to say that that literary works that affected them would also affect others?

In order to examine the contribution of literary texts to personality change, Djikic, Oatley, Zoeterman, and Peterson (in press) brought 166 undergraduates into a laboratory, and gave them a battery of questionnaires that included a measure of personality traits and a measure of emotions. Participants were then assigned to one of two conditions. Those in the Art

condition were given a short story by Chekhov entitled “The Lady With a Toy Dog” (1899). In the Control condition participants were given a control text, a rewritten version of the story in a documentary format of a courtroom report of supposed divorced proceedings. A great deal of effort was made to ensure that the story and the transcript were nearly identical save for the form. The control text had all the content of Chekhov’s short story, was exactly the same length, and was of equivalent reading difficulty. Moreover, after reading both texts, participants reported that the court report was just as interesting as the Chekhov story, but not as artistic. After they had read either the Chekhov story or the control text, participants were again given a battery of questionnaires, including the same personality and emotion measures administered initially. A sensitive index of personality change was created such that each post-score was regressed on the pre-score, and the absolute distances were summed to create a composite of personality trait change across all five traits for each individual. The results showed that personality trait change for the participants in the Art condition was significantly greater than the change for the participants in the Control condition. Further analyses revealed that this change in personality was mediated by the emotions that participants experienced while reading.

While it might seem surprising, this study demonstrates that turn-of-the-century prose by Chekhov can make university undergraduates experience and report themselves as more different than those who read a documentary-style text with the same content, complexity and potential to garner reader interest. It shows that reading literary art can have an effect even on non-avid-readers, that you don’t have to be a booklover for reading to transform you. We hypothesize that the effect involves a softening of what are usually the rather rigid boundaries of our self-schemas. By projecting ourselves into fictional stories and the minds of fictional characters, we open ourselves up to greater possibilities for who we may become. It is important for us to stress that participants did not show a collective change in the same direction: not all of them became more extraverted, or open, or conscientious, for example. In other words they were not persuaded by a moral embedded in a story. Rather, each reader experienced a fluctuation in a unique direction in their entire personality profile. Reading Chekhov induced changes in their sense of self—perhaps temporary—such that they experienced themselves not as different in some way prescribed by the story, but as different in a direction toward discovering their own selves.

Is it possible that, over months and years of reading, we could sum and consolidate such small, and perhaps temporary, changes of the kind we have found here to create movements in the development of selfhood? Our finding with Chekhov’s story prompts us toward believing the claims by avid readers that their favorite literary works have transformed their lives and changed their personalities. We might even start to think of literature in particular, and art in general, as functionally related to human personality development. Might we perhaps take this functionality as a clue to the longevity and persistence of art across millennia of human civilization?

Conclusion

Although approaching literature by way of empirical study is sometimes seen as reductive, we argue this is not the case. As Willie van Peer has shown in his own career, it is possible to make systematic inquiry into the qualities of literary art and its influence without diminishing the value of fictional literature. Just as an attraction to stories seems to be intrinsically human, so is a curiosity

and wonder about the world and the objects in it. Our love of literature and our curiosity about it do not lie in opposition, but are part of the same whole in much the same way our hearts and our minds happily co-exist. But more than that, in our own bodies, our heart could not exist without our mind and vice versa. Although we would not go so far as to say the same holds true for our love and curiosity about literature, we do feel that the two exist in a mutually beneficial relationship. Our love for literature drives our curiosity, and our curiosity constantly reveals new wonders of literature that serve to magnify our devotion and admiration.

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