Empathy at the confluence of neuroscience and empirical literary studies

Michael Burke, Anežka Kuzmičová, Anne Mangen and Theresa Schilhab
Department of Rhetoric, University College Roosevelt, Utrecht University / Department of Culture and Aesthetics, Stockholm University / Reading Centre, Humanities Faculty, University of Stavanger / School of Education, Aarhus University

The objective of this article is to review extant empirical studies of empathy in narrative reading in light of (a) contemporary literary theory, and (b) neuroscientific studies of empathy, and to discuss how a closer interplay between neuroscience and literary studies may enhance our understanding of empathy in narrative reading. An introduction to some of the philosophical roots of empathy is followed by tracing its application in contemporary literary theory, in which scholars have pursued empathy with varying degrees of conceptual precision, often within the context of embodied/enactive cognition. The presentation of empirical literary studies of empathy is subsequently contextualized by an overview of psychological and neuroscientific aspects of empathy. Highlighting points of convergence and divergence, the discussion illustrates how findings of empirical literary studies align with recent neuroscientific research. The article concludes with some prospects for future empirical research, suggesting that digitization may contribute to advancing the scientific knowledge of empathy in narrative reading.

Keywords: embodiment, empathy, literature, neuroscience, Theory of Mind

"When I think about how I understand my role as a citizen – setting aside being president; and the most important set of understandings that I bring to that position of citizen – the most important stuff I've learned, I think I've learned from novels".[1]
US President, Barack Obama

1. From an interview that President Barack Obama conducted with the novelist Marilynne Robinson for the *New York Review of Books,* recorded in two parts and broadcast as audio podcasts on October 12, 2015 and October 26, 2015 under the title 'President Obama and Marilynne Robinson: A Conversation I & II'. The quote is from Conversation II and can be accessed at https://itunes.apple.com/us/podcast/soundings-from-new-york-review/id284527588?mt=2

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Introduction

Contemporary defendants of literary education tend to argue that literary narratives should be read and studied because they foster empathy. Nested within this argument, in which convergent findings from neuroscience are given an increasingly prominent role, are various suppositions about the relationships between emotions, theory of mind, embodiment, and other phenomena; between the short- and long-term effects of stimulus exposure; between conscious vs. non-conscious, and top-down vs. bottom-up processing. These suppositions are seldom made explicit in the literature. However, agreement across scholarly communities, or even across individual authors, seems rare. This entails a largely unstable conceptualization of empathy as a phenomenon in reader response and beyond. In this article, we review, contrast, and compare findings and selected theoretical suppositions from empirical studies of narrative literature with those of neuroscience (Sections 4–6). Empirical literary studies are defined here to encompass reader response experiments targeting verbally reportable experiences and thus relying on some form of readers' self-report. As such studies more often derive their rationale from the humanities rather than neuroscience, we open with a review on empathy in the more general history of ideas (Section 2) and theory of literature (Section 3).

Empathy: historical and conceptual background

The notion of empathy has received much attention in recent times. In addition to being a concept of scholarly interest for literary theorists, film and media scholars, philosophers, psychologists and neuroscientists, empathy has enjoyed a great deal of coverage in more everyday domains, such as the media and popular press. Recent research indicating correlations and even causality between literary reading or aesthetic engagement and prosocial behavior (e.g., sharing, donating, volunteering), including empathy, has triggered an enormos interest in the psychological mechanisms involved in empathy and related, assumed prosocial, processes. On the one hand, this may bode for greater interdisciplinarity in the empirical pursuit of more precise knowledge about the experiential nature, function, mechanisms and effects of empathy in literary reading. On the other hand, the diversity of conceptualizations, paradigms, methodologies and measures presents a considerable challenge for any attempt to establish common research frameworks, getting an overview of extant research, comparing the quality of studies and validity of measures and findings, and staking out the most promising ways in which to contribute to scientific progress in the field.

Arguably, empathy seems to be one of the most frequent, and at the same time most ill-defined, concepts in current philosophical and psychological research. Calling them a "cantankerous lot," Batson (2009) points out that while scholars of empathy agree that "empathy is important, they often disagree about why it is important, about what effects it has, and where it comes from, and even about what it is" (p. 3). Such diversity has prompted researchers (e.g., Coplan, 2011) to call for more precise and specific conceptualizations, reflecting in particular recent developments in cognitive neuroscience and philosophy of mind so as to enable more detailed descriptions and explanations of the distinct psychological processes involved.

It is not possible to do justice to the conceptual richness and ambiguities as well as the philosophical controversies surrounding empathy within the confines of an article. Hence, what follows is a brief glance at some key contributions to the development and refinement of empathy as a construct of interest in philosophy and, subsequently, literary theory. The objective is to indicate the composite nature of empathy as a philosophical construct, to be further revealed in later psychological and neuroscience research on empathy and related processes (see 5.0). Specifically, the philosophical understanding of empathy as either interpretational or experiential was to resurface in much of the experimental research that followed.

Much of the conceptual diversity and subsequent theoretical and methodological diffusion can be gleaned from the historical roots of the concept. Historical accounts of empathy typically trace its origins to philosophical traditions, more precisely, those of hermeneutics and phenomenology. Whereas the psychologist Edward Titchener was the person who coined the term 'empathy' (in 1909, as the English adaptation of the German *Einfühlung*), the philosopher Theodor Lipps is the one credited for ascribing empathy a key role in philosophy in the broader sense, spanning the social sciences and humanities. Lipps' central claim that empathy should be understood as "the primary epistemic means for our perception of other persons as minded creatures" was highly influential and became the focus of a considerable debate among philosophers at the beginning of the 20th century (Stueber, 2014, section 2, para 1). Already at this time, however, the understanding of empathy among philosophers was vague and inconsistent, which is the main reason why Lipps is now, according to Currie (2011), "merely a name in historical footnotes" (p. 83).

The philosophical relevance of empathy can be perhaps more clearly discerned in another prominent philosophical school of thought, namely hermeneutics. Taken to be closely linked to the concept of *Verstehen* (understanding), empathy was associated specifically with the early work of Wilhelm Dilthey. Although rarely applied and never explained by Dilthey himself (Coplan & Goldie, 2011), the concept of empathy was readily acknowledged to be a useful epistemological tool for philosophers pursuing questions of understanding and interpretation. As

implied in *Verstehen*, empathy was conceived as distinctive of the research methods used in the humanities as compared to the natural sciences, where explanatory paradigms are preferred over interpretive ones. However, philosophers of the hermeneutic tradition later dismissed the notion of empathy, in large part because it was considered to have little to contribute to human understanding across cultural and social differences. For this reason, empathy was also conceptually decoupled from the notion of understanding, hence allowing questions of cultural diversity to be more properly addressed. Perhaps as a consequence of a general surge of interest in the topic, the cross-cultural dimension of empathy has received renewed attention from scholars in anthropology (e.g., Hollan, 2012).

Apart from the brief appearance in hermeneutics, the philosophical traditions in which empathy has been dealt with in the most extensive and consistent manner from its very inception are phenomenology and philosophy of mind. Here, empathy continues to influence theoretical developments and epistemological discussion, and recent and emerging paradigms such as embodied – and affiliated perspectives, such as enactive, embedded, extended, situated, and distributed – cognition (see for instance Rowlands, 2010; Kiverstein & Clark, 2009; Hardy-Vallée & Payette, 2009) converge to indicate a great potential for interdisciplinary empirical research on empathy in intersubjective understanding, as well as in literary reading and aesthetic appreciation overall.

Historically, the phenomenological legacy of empathy is linked to a handful of early 20th century philosophers, most prominently, Edmund Husserl, Edith Stein, and Max Scheler (Stueber, 2014). Common to all three was their focus on empathy as "a non-theoretical, non-inferential, *sui generis* experiential act allowing us to directly grasp another person's experiences as belonging to him, without requiring that we ourselves have similar experiences as those of the other person" (Stueber, 2012, p. 56). Scheler in particular is acknowledged to have paved the road for empathy as a key concept for later phenomenologists. At the same time, perhaps somewhat ironically, he is held partly responsible for the subsequent diffusion and lack of conceptual clarity surrounding the term when applied in philosophical thought and psychological studies. According to Ickes (2003), Scheler's writing contains six core concepts that can all be said to at least partially embody aspects of later (mis)understandings: (a) compathy (referring to shared feelings due to shared circumstances); (b) mimpathy (the imitation of another person's emotions, without experiencing these oneself); (c) sympathy (intentionally reacting emotionally towards another); (d) transpathy (emotional contagion, where one is 'infected' emotionally by another's emotions); (e) unipathy (an intense form of transpathy); and (f) empathy, (understanding another's emotions through perspective taking). As pointed out in a recent review article by Cuff et al. (2016), entailed in these concepts is a conflation of three distinctive dimensions commonly

held to define empathy (viz., the degree of cognitive representations of the other's emotional state; the degree of emotion sharing; and the degree of self-other differentiation) and to distinguish it from closely related concepts such as sympathy, emotional contagion and personal distress (see also Coplan, 2011). In retrospect, one can say that Scheler's prolific writing served to make evident the complexity of the construct and the necessity to pursue more precise definitions, a task that has haunted psychologists and philosophers of empathy ever since.

Empathy is often discussed in conceptual tandem with the notion of theory of mind (ToM), i.e., the general capacity to cognitively grasp the mental states of others. Broadly speaking, in philosophy there are currently two main lines of thought within the ToM debate: theory theory (TT) and simulation theory (ST). Currently, many favor a hybrid conception in which both (implicit and explicit) ST and TT play a part (see, for example, de Bruin, Strijbos & Slors, 2014). Theory theorists claim that our mindreading abilities rest fundamentally on theoretical inferences and on an understanding and application of principles drawn from folk psychology. We are able to understand other people's plans, beliefs, values, and desires by way of analogical reasoning, inferring that others are the same in this respect as we are ourselves. Simulation theory advocates, on the other hand, claim that our interpretation and understanding of other people is guided by our ability to empathically put ourselves in the shoes of the other by simulating the mental states we would have in their situation (see, e.g., de Bruin, Strijbos, & Slors, 2014; and see Kögler & Stueber, 2000 for an overview). According to de Bruin et al., (2014) most theorists and philosophers nowadays favor "a 'hybrid' model of mindreading" in which both theory and simulation play a role (2014, p. 173).[2]

Generally assumed to mediate prosocial behavior, empathy is increasingly studied with the objective of mapping its contribution in the nurture of ethically appropriate conduct and moral development. This strand has been taken up by a number of contemporary philosophers, perhaps most notably Martha Nussbaum, who argues that literature and in particular the novel, through its potential for expanding readers' empathy, provide us with the means for developing and fine-tuning a sense of social justice and morality (e.g., the chapter "Cultivating Imagination: Literature and the Arts," in Nussbaum, 2010). The quotation that opens this article by US President Barack Obama falls directly within the scope of Nussbaum's claim.

To sum up, this subsection proposed that recent findings of the correlations between literary reading and behaviors such as sharing, donating and volunteering

2. It is fair to say that analytic philosophy and logical positivism in general would reject both TT and ST as keys to empathy. However, this dichotomy is not as irreconcilable as it may seem (see, for example, Chase & Reynolds, 2014, pp. 238–239).

have prompted interest in comprehensive interdisciplinary research in the neural, psychological, phenomenal, experiential and social dimensions of empathy as a significant part of prosocial behavior. The different approaches demonstrate considerable variation in scientific methods, conceptualizations of mechanisms and use of measurements that challenge the systematic accounts of extant research. However, the original perception of empathy as a philosophical concept within hermeneutics and phenomenology captures two contrasting views that despite not being fully congruent seem to reappear across disciplines, namely the understanding of others in the interpretive and in the experiential senses. This dichotomous understanding of empathy also concurs with contemporary philosophical discussions of theory of mind that distinguish TT and the ability to understand others through analogy from ST, which suggests that our understanding of others' minds rests on our ability to simulate their phenomenal states. The different variations of this polarized approach to empathy are a recurrent theme in the following.

Empathy in contemporary literary theory

Throughout the twentieth century, literary theory shied away from considering the first-person experience of reading. When the act of reading was theorized at all, the reader in question – dubbed 'model,' 'competent,' or the like – was a construct based on the sum of alleged interpretive cues in a text, a disembodied entity possessing the expertise and exclusive intellectual interests of an academic professional. Empathy with fictional characters was mostly seen as the epitome of the naïveté ascribed to non-professional readers, and thus not worthy of academic study. Today, with the sciences of the mind rapidly gaining traction among the general public, literary theorists too are beginning to systematically focus on the affective and cognitive processes associated with understanding literary characters.[3]

3. See, for example, Burke's focus on what he terms 'affective cognition' (as opposed to 'cognitive emotion') in his 2011 study on 'oceanic' modes of literary discourse processing, which draw on LeDoux's 1998 neuroscientific distinction between the 'high road' and 'low road' to emotion. Burke's two concepts are not dualistic categories. Rather, they appear on a continuum and their involvement depends on the context of the reading event. For avid and engaged readers of literary fiction, conscious and non-conscious prompts to affective cognition include (i) the time and location of the physical act of reading, (ii) the pre-reading mood of the individual, (iii) the quality and content of mental imagery generated while reading literature, (iv) the rhetorical style of language deployed (consciously or otherwise), and (v) literary themes involved. These are what Burke refers to as the 'affective inputs' of reading in the oceanic mind. (See also Burke 2013, 2015 & 2016).

With a notable exception (Keen, 2006, 2007), however, reader response processes directly relevant to empathy are currently theorized without extensive reference to the concept of empathy proper. Although the word empathy is increasingly mentioned in literary theoretical writing (e.g., Mellmann, 2010), the mechanics of readers' vicarious experiencing are more often described with reference to the broader conceptual frameworks of embodied and enactive cognition. Varieties and aspects of readers' empathy are treated under different labels such as simulation (e.g., Caracciolo, 2014a), enactment (e.g., Kuzmičová, 2012), intercorporeity (e.g., Chapelle Wojciehowski & Gallese, 2011), and so forth. In addition to emotions, empathy thus broadly conceived encompasses any vicarious experiences in the reader's embodied mind that are contingent upon the embodied experiences of fictional characters. Vicarious sharing of characters' emotions is then understood to go hand in hand, in possibility (Caracciolo, 2014b) or even by necessity (Miall, 2011), with such embodied experiences.

The one author consistently and comprehensively probing the concept of empathy narrowly defined as the vicarious sharing of characters' emotions is Keen (2006, 2007). Although Keen acknowledges that empathic reader response can also enlist other than strictly emotional phenomena (e.g., the bodily sensations of silence and humidity invoked when reading about a forest), her primary focus is on characters' emotions. This is a consequence of her ethical rationale; Keen queries the value of the novelistic genre, advocated by Nussbaum (2010), in fostering good moral sense and social responsibility. In pursuit of this objective, she reviews a large corpus of empirical reader response studies to conclude that no narrative technique (first- vs. third-person narration, past vs. present tense, etc.) has as yet been unequivocally proven to enhance readers' empathy *per se*. In her account, narrative technique always operates in concert with subject matter, reading situation, and other variables. Instead of linking circumscribed textual features with discrete types of reading experience, Keen chooses to present a more coarse-grained typology of novelistic strategies for empathy, one that also concerns the social circumstances of a novel's production and reception. The typology distinguishes between three general strategies: bounded empathy (within an in-group), ambassadorial empathy (addressing a specific audience outside an in-group), and broadcast empathy (addressing anyone outside an in-group).

In absence of compelling evidence for the effect of discrete narrative forms, Keen suggests that novels are possibly distinctive in their capacity to elicit empathy by virtue of being fictitious (Keen, 2007, p. 4), rather than exclusively or primarily for their aesthetic merit. According to Keen, the reader's awareness of reading a piece of fiction, devoid of real-world demands for immediate action on behalf of the wronged, is precisely what could make novels a particularly efficient arena for

emotional training. However, Keen is reluctant to endorse strong generalizations about the long-term moral consequences of such training.

Within the embodied and enactive cognition strands of contemporary literary theory, the narrow notion of empathy is addressed less directly than in Keen's work. Here the primary focus lies outside the strictly emotional realm, and largely also outside ethical concerns. The field is defined by an overarching interest for the role of the body in the pleasures and intellectual adventures of reading. Empathy is usually approached in piecemeal insights concerning the textual underpinnings of embodied aesthetic responses such as character-centered mental imagery (Jajdelska, Butler, Kelly, McNeill, & Overy, 2010; Kuzmičová, 2014), visceral experience from sensuous narrative (Burke, 2011 on reader 'disportation' and Kimmel, 2011), as well as more indistinct experiences such as increased bodily awareness (Esrock, 2004). While most of this literature refrains from systematic adherence to embodied and enactive cognition as a school of philosophical thought, a more comprehensive and philosophically aspiring account can be found in the work of Caracciolo (especially 2014b). Caracciolo (2014b) is also the literary theorist to explicitly tackle the relationships between embodiment, enaction, and empathy in the narrow sense (pp. 129–132).

Caracciolo's (2014b) treatment of empathy and empathy-relevant phenomena in reading is framed by his revision, formulated from the viewpoint of enactivist philosophy of mind, of two influential assumptions of narrative theory: firstly, the assumption that narrative fiction is unique in providing its readers access to the private experiences of other human beings; secondly, the assumption that readers' stance toward literary characters can be straightforwardly modulated by the use of distinct narrative techniques (e.g., internal vs. external focalization). Caracciolo takes care to explain why these assumptions are only partly true.

As for the first assumption, Caracciolo (e.g., 2014b) contends that readers access the minds of literary characters not in some unique way, but in much the same way as they access the minds of their flesh-and-blood peers: by third-person theory of mind, i.e., inference from linguistic expressions and overt behavior (pp. 110–125). This level of engagement with a fictional character's experience is what he calls consciousness-attribution. Sometimes, however, consciousness-attribution serves as the basis for an additional level of engagement, i.e., consciousness-enactment. Consciousness-enactment entails a first-person stance. It is particularly likely to occur when events and existents in a narrative strongly overlap with the reader's own experiential background, i.e., with her unique reservoir of past experiences – emotional, social, sensory, or other. Importantly, consciousness-enactment in one of these domains does not necessarily entail simultaneous consciousness-enactment in all the other domains. For instance, it is possible to enact a character's bodily sensations while consciously retaining third-person

distance from the character's feelings, beliefs, or attitudes. At a later point in the same narrative and reading session, the reverse may become true.

In Caracciolo's account, synchronous consciousness-enactment across all aspects of a character's experience is relatively rare. As for the second assumption under revision, he shares Keen's (2007) skepticism toward any attempts to align enactment effects, in a straightforward one-to-one relationship, with isolated textual features. But he does invent a label – consciousness-focused narration – for narrative styles that are more efficient than others in covering the full range of human experientiality and making it potentially salient to the reader through consciousness-enactment. On the cline from word to paragraph level, the typical features of consciousness-focused narration range from the use of certain pronouns and verbs of experiencing, through expressive punctuation and experiential metaphors, to internal focalization (Caracciolo, 2014b, pp. 104–109, 125–129). While ethical and utilitarian considerations are overtly absent from Caracciolo's theoretical model, its basic tenets have been used to put forward an argument for the power of narrative to open readers' mental horizons, via embodied enactment and empathy, toward otherwise inaccessible concepts and phenomena, including the experiences of non-human beings (Bernaerts, Caracciolo, Herman, & Vervaeck, 2014).

Although some embodied theories of reading have expressly focused on backgrounding textual strategies that make the literary medium as transparent as possible (Jajdelska et al., 2010; Kuzmičová, 2012), there is also a substantial argument toward the view that empathy may be enhanced (Caracciolo, 2014b; Kimmel, 2011), or even preconditioned (Miall & Kuiken, 1999), by defamiliarization and foregrounding (e.g., novel metaphors). Finally, it should be acknowledged that throughout the history of literary theory, ontological entities other than fictional characters, i.e., impersonal narrators (Currie, 2010) and flesh-and-blood authors (Poulet, 1969), have also been cited as the prime objects of empathy-like responses in reading. However, the elusiveness of these entities in terms of circumscribed textual features makes their operationalization in empirically testable hypotheses even more problematic than the above theories of empathy with characters.

The present section has charted diverse approaches to reader-character empathy in contemporary literary theory. With one notable exception (Keen 2006, 2007), empathy is treated more or less tangentially as one of several dimensions or outcomes in the broader landscape of readers' cognitive, affective, and embodied responses. This lack of narrower focus on empathy may partly be explained by the sheer novelty, within a field that was previously strictly text-oriented, of accounting for readers' subjective experiences. Overall, it is fair to say that literary theorists, including Keen, whose work is dedicated to empathy, have been cautious of categorically elevating empathy above other types of response in either aesthetic

or didactic value. Rather, as a first step towards a closer investigation of empathy specifically, an increasing number of theorists are taking care to emphasize that reader response is inseparable from embodied and enactive sense-making more generally. The most important contribution of literary theorists to the debate on empathy in reading may lie in their nuanced view of readers' responses as multi-layered rather than divisible into separate categories. Caracciolo's (2014b) suggestion that first-person empathic enactment of one particular emotion or sensation does not preclude a third-person, more distanced perspective on other aspects of a story, is one particularly potent instantiation of this relative sensitivity of theory. The overall reluctance to align empathic response with circumscribed textual features is another example. Albeit clear and intuitive, such insights potentially push the limits of experimental design in empirical disciplines.

Empirical literary studies on empathy

Many illuminating empirical studies have been conducted on the nexus between narrative reading and individuals' social, cognitive and emotive behavior and experience. However, only a small subset of these studies primarily addresses the construct of empathy and/or empathy-related responses to story characters, specifically.

In an experiment exclusively focusing on long-term effects, Mar et al. (2006) found that contrary to commonplaces that circulate in many communities that 'bookworms' tend to be socially awkward, people who read fiction frequently will enhance and/or maintain their social abilities. This was in contrast to frequent readers of non-fiction. In essence, the claim is that understanding characters in prose fiction appears to be akin to understanding people in the real world, something non-fiction lacks. In the same experiment, the researchers also looked at lifelong exposure to fiction and non-fiction texts focusing on performance on empathy and social-acumen measures. It was discovered that exposure to fiction positively predicted measures of social ability, while exposure to non-fiction was a negative predictor. This experiment was followed up with a second study conducted by Mar, Oatley and Peterson (2009) in which they successfully ruled out the role of personality affecting their results. This trait was statistically controlled for, together with two other important individual differences: (a) the tendency to be drawn into stories, and (b) gender. After accounting for these variables, fiction exposure still predicted performance on an empathy task. The results were extended and it was found that exposure to fiction was still positively correlated with self-reported social support, while exposure to non-fiction was still negatively associated with self-reported social support.

In their study on the potential of literature to increase empathy in the short term, Djikic, Oatley and Moldoveanu (2013) conducted a number of experiments that sought to measure lifelong exposure to fiction and nonfiction, personality traits, and affective and cognitive empathy.[4] They first had the participants read either an essay or a short story. The texts were equivalent in length and complexity. The participants were tested again for cognitive and affective empathy. Finally, they were tested on a non-self-report measure of empathy. The results of the experiment showed that participants who read a short story (and also those who scored low in the category of openness) experienced significant increases in self-reported cognitive empathy.[5] However, no increases in affective empathy were found, and no effects on Reading the Mind in the Eyes (RMET) measures.[6] Participants who were frequent fiction-readers had higher scores on the non-self-report measure of empathy. These results suggest that there is a role for prose fiction to play in assisting the development of empathy.

Johnson (2013) conducted two studies that investigated how literary fiction might be able to reduce prejudice and increase empathy. Participants in the study were asked to read an excerpt from a fictional novel about a non-stereotypical Arab-Muslim woman. Individuals who reported being more transported into the story rated Arab-Muslims significantly lower in stereotypical negative traits. They also exhibited significantly lower negative attitudes toward Arab-Muslims post-reading than individuals who were less transported into the story. Crucially, these effects persisted after controlling for (a) baseline Arab-Muslim prejudice, (b) reading-induced mood change, and (c) demand characteristics. Affective empathy for

4. These terms are taken from Davis' (1983) Interpersonal Reactivity Index which distinguishes scales of Empathetic Concern, which Davis calls Affective Empathy, and the scale of Perspective Taking, which he calls Cognitive Empathy. The distinction here is broadly between the ability to share the feelings of others (sometimes referred to as 'emotional empathy') and the capacity to represent others' intentions and beliefs (sometimes referred to as ToM or Theory of Mind). The two remaining dimensions on Davis' Index are 'fantasy' and 'personal distress'. The first of these relates to the inclinations of subjects to imaginatively transpose themselves into the feelings and actions of characters in films, plays and works of literary fiction. The second measures the self-focussed feelings of individual anxiety and uneasiness that occur in tense interpersonal situations.

5. 'Openness' is a personality trait measured with the 'Big Five Inventory' (see John, Donahue, & Kentle, 1991). The Big Five Inventory is a multidimensional personality, self-report inventory with 44 items designed to measure Extraversion, Conscientiousness, Openness, Agreeableness and Emotional Stability. It consists of short phrases with relatively accessible vocabulary such as "tends to be quiet", "can be moody", etc. Responses are scored on a 5-item Likert scale.

6. The 'Reading the Mind in the Eyes' Test is an advanced test of Theory of Mind and was first developed by Baron-Cohen et al. 2001.

Arab-Muslims and intrinsic motivation to reduce prejudice were also significantly increased by the story and each provided independent explanatory mechanisms for transportation's association with prejudice reduction. Johnson's study suggests not only that transportation into literary fiction reduces prejudice against minorities and increases empathy for them, but that such prose reading episodes can be fruitfully incorporated into educational and applied settings.

In another 'socially-related' study, Koopman (2015) investigated the effects of text genre, personal factors and affective responses during reading on two types of empathy: empathic understanding and pro-social behavior, namely, donating.[7] Participants in her study read two texts within the same genre (expository, nonfiction life narrative, literary narrative) about depression and grief. There was one week between the sessions. The results were as follows: (a) a genre effect was observed for pro-social behavior in the case of depression, with more people donating in the life narrative condition, as compared to the literary condition, (b) personal experience predicted empathic understanding and prosocial behavior for depression, but not for grief, and (c) empathic understanding was further predicted by trait empathy, exposure to literature, and sympathy/empathy with the character. The results of her experiments validate the relevance of looking at readers' personal characteristics. They also suggest a repeated exposure effect of literature on empathic understanding. Another interesting outcome of this study is that it might very well be narrativity, rather than fictionality, that is a key concept here. This is supported by one of the outcomes listed above, namely, that it was the life narrative text/condition and not the literary text/condition that was related to a significantly higher likelihood of donating behavior. As Koopman suggests in her discussion, maybe it was the excessively foregrounded features that are often present in literary fictive texts that affect the quality of the emotions that are generated, something that is not an issue in the often less-foregrounded fluidity of real-life narrative texts.

In a study by Wallentin et al. (2013), young adults were asked to rate emotional intensity on line-to-line level while listening to a fairy tale. They also took an empathy test. The results showed how empathy correlates well with overall level of experienced intensity. Interestingly, no correlation with empathy was found in the parts of the story that received highest intensity ratings across participants. A reverse correlation analysis then revealed that these parts contained physical threat scenarios, while parts where empathy was correlated with intensity described social interaction that can only be understood through mentalizing. The results of

7. Koopman suggests that empathic understanding is an attitudinal measure (empathic reactions) that is more closely related to empathy in real life than to ToM measures (cognitive empathy).

this study suggest that narratives evoke emotions based on both simple physical contagion (i.e., affective empathy) and on complex mentalizing (i.e., affective theory of mind, sometimes alternatively called cognitive empathy) and that these effects may be more or less independent.

Kidd and Castano (2013) conducted a series of five experiments. The results, published in the journal *Science*, showed that reading literary fiction led to better performance on tests of affective theory of mind and cognitive theory of mind (the RMET and the Yoni Test were used) compared to reading non-fiction, popular fiction or nothing at all, suggesting that literary fiction improves a reader's capacity to understand what others are thinking and feeling; in short, that literary reading has an effect on empathic aptitude.[8] A comparable study was conducted by Bal and Veltkamp (2013) into whether reading fiction can change empathy in a reader. In two experiments it was predicted that when people read fiction – and they are emotionally transported into the story – they become more empathic. This increase in a capacity for empathic feeling lasted for at least one week (until the participants were tested again). Conversely, participants who were not transported into the story had lower empathy in both studies. These effects were not found in the non-fiction reading control group. This study suggests that fiction influences reader empathy, but only when readers are transported into a story.

In a study focusing on sympathy, a concept close to empathy (see Scheler's earlier-mentioned six-part division in section 2.0), Cupchik, Oatley and Vorderer (1998) examined emotional responses to excerpts from short stories by the same author.[9] The participants in the experiment read four short story excerpts, each divided into four segments of equal length. Two of the short story excerpts had emotional themes, while two others were descriptively dense. Readers were instructed to be either (a) spectators and feel sympathy for the protagonist (this is what they referred to as the 'spectator set') or (b) to imagine what it is like to be the protagonist (this is what they referred to as the 'identification set'). After reading each segment, the participants had to indicate whether they felt a 'fresh emotion' (i.e., an emotion roughly corresponding to that of a story character) and/or an 'emotional memory' (i.e., an emotional episode retrieved from autobiographical memory). They had to rate each kind of experience on a scale that measured pleasure, intensity and tension. They also had to indicate if they experienced specific

8. The Yoni Test developed by Shamay-Tsoory & Aharon-Peretz (2007) tests cognitive and affective Theory of Mind.

9. A further, very rudimentary, distinction between sympathy and empathy would be that of 'feeling with' as opposed to 'feeling in'. However, it is not so clear-cut here, as Cupchik, Oatley, and Vorderer's definition of sympathy appears to consist of two of Davis' dimensions of empathy mentioned in a previous footnote.

primary emotions (e.g., happiness, anger, etc.). Afterwards, they were given a two-choice recognition memory task pertaining to setting and person-oriented details. The results of this experiment showed that 'fresh emotions' were elicited more frequently than 'emotional memories', though the memories were rated as more pleasant, tense, and intense. The emotional excerpts prompted fresh emotions and emotional memories almost equally, whereas the descriptively dense passages evoked more fresh emotions than memories. The results appear to show that identification makes readers experience 'fresh emotions' in the moment, as it were, in response to the descriptive texts, while being a spectator directs readers toward their 'emotional memories'.

Another paradigm investigating response patterns closely related to empathy is reported in Sikora, Kuiken and Miall (2010). The authors explore the notion of expressive enactment, i.e., a mode of reading wherein narrated characters, objects, and places are experienced as sensuously present across varied iterations. Readers then feel these acutely present 'others' to merge with and transform their selves. Expressive enactment builds on empathy but goes beyond it in that the merging between self and text is experienced to also operate at a metaphorical rather than merely literal level. Sikora, Kuiken and Miall (2010) collected qualitative data provided in response to a poem, *The Rime of the Ancient Mariner* by S. T. Coleridge. Subjects were asked to mark striking and evocative passages and record brief motivations for five of their selections. Importantly, expressive enactment was modulated by previous experience of losing a close person, as the stimulus text invokes death and mournful moods. More specifically yet, the authors found that those bereaved more than two years prior to the experiment had significantly higher expressive enactment scores than those with more recent loss experience or no such experience at all. Sikora, Kuiken and Miall (2010) explain their findings with recourse to the temporal dynamics of mourning, pointing to long-term personality change as yet another factor in the interplay between reading and empathy-related affective response.

The increasing use of tablets and e-readers for pleasure reading introduces medium (or device) as an additional factor in need of systematic empirical investigation. To our knowledge, Mangen and Kuiken (2014) are the first to empirically assess the effects of reading medium and text manipulation on aspects of narrative engagement, including empathy. Their study combined state-oriented measures of narrative engagement and a newly developed measure of interface interference. The experiment concerned a two-by-two, between-subject factorial design; the first focusing on the medium (booklet versus iPad) and the second focusing on the text-type (fiction vs. nonfiction). The experiment produced a number of results. One of these was that the booklet readers were more likely to report a close association between transportation and empathy. This was not the case with the

iPad, suggesting that the ergonomics of the reading medium might be of importance for empathy.

The empirical findings reported in this section show a great diversity of research methods and conceptualizations. For better overview, they can be categorized, e.g., according to whether they measure long-term or short-term effects, whether they make use of a notion of literature with its aesthetic implications or only focus on the distinctiveness of fiction (or yet other concepts), or whether they account for the possible interference between empathy and a text's subject matter in relation to the individual reader's life experience. Differences along these three variables make comparisons difficult.

As for long-term vs. short-term effects, relevant studies converge in suggesting that lifetime exposure to fiction affects empathy, but they diverge in the correlations measured and found more specifically. Using the RMET, Mar et al. (2006, 2009) and Djikic et al. (2013) conclude that empathy increases with fiction compared to non-fiction reading, while Kidd and Castano (2013) make a stronger claim for the specificity of aesthetically marked, literary fiction in particular. Koopman (2015) reports that empathic response to a text was higher in individuals who, in the long term, read more fiction, but her working definition of fiction was constrained to literary fiction. When Djikic et al. (2013), inversely, tested for the short-term effects of distinctly literary fiction (in comparison to expository non-fiction) on RMET scores, they found no such correlation. Koopman's (2015) findings concerning the short-term effects of reading on empathy complicate the discussion further by suggesting that the notion of narrativity may have more explanatory power than both fictionality and literariness. In turn, several studies in our review refrain from comparing different genre conditions (Cupchik et al., 1998, Johnson, 2013; Sikora, Kuiken & Miall, 2010; Wallentin et al., 2013).

Finally, the question of personal relevance, in the sense of a productive match between a text's topic and a reader's previous life experience, is relatively underexplored in empirical literary studies despite its prominence in relevant theoretical writing (Caracciolo, 2014b; Keen, 2006, 2007). While Cupchik et al. (1998) touch upon experiential background (see also Caracciolo, 2014b, pp. 45–71) insofar as they record readers' emotional memories, the idea that impactful life experiences modulate affect in reading is addressed only by Sikora, Kuiken and Miall (2010) and Koopman (2015), and in relation to empathy proper only by the latter. This is a research area in serious need of further development as only an inquiry into the role of personal relevance can reveal how far it is possible to generalize any conclusions on long-term and short-term empathy elicited by reading.

Psychology and neuroscience of empathy

In social cognitive neuroscience, empathy encompasses the ability to respond affectively to another person, often, but not always, by sharing that person's emotional state. This is the capacity to adopt the perspective of another person, and the ability to keep track of self- and other-feelings (Decety & Jackson, 2004) as a response to directly perceived, imagined or inferred feeling states of another being (e.g., Singer & Lamm, 2009).

Everyday language seems to treat empathy, perspective-taking, and ToM, e.g., the capacity to represent others' intentions and beliefs, as synonyms or near-synonyms all referring to the ability to put ourselves in the shoes of another person (Singer, 2006). From a neuroscience perspective, however, empathizing with and mentalizing about others' minds seems to be accomplished in two separate systems, one emotional and one cognitive (e.g., Keysers & Gazzola, 2007; Zaki & Ochsner, 2012). Thus, also neurally we distinguish between the capacity to share the feelings of others (referred to as 'emotional empathy') and the capacity to represent others' intentions and beliefs (ToM or 'cognitive empathy' Singer, 2006).

The emotional system is active when we experience affective reactions as a result of observing the experiences of others, which is when we share a 'fellow feeling' (Shamay-Tsoory, 2011). We can feel empathy for others in a variety of contexts: for basic emotions such as anger, joy, fear, sadness, pain and lust, and for more complex emotions such as guilt, embarrassment and love (Singer, 2006).

Cognitive empathy (ToM), on the other hand, is a cognitive role-taking ability, a capacity to engage in the cognitive process of adopting another's psychological point of view. To have a theory of mind entails that we recognize that other people are agents whose behavior is determined by how they perceive the world. To understand their behavior, we have to take account of their perspective as well as the state of the world from our own perspective. We have to be able to separate and compare these two perspectives (Gallagher & Frith, 2003; Stueber, 2012).

It has been shown that empathizing with another person is related to several different neural networks, including somatosensory and insular cortices, as well as limbic areas and the anterior cingulate cortex. Brain regions activated by cognitive perspective-taking include the medial prefrontal regions and the superior temporal sulcus (STS), extending into the parietal lobe (temporo-parietal junction) and sometimes also the temporal pole (e.g., Hein & Singer, 2008). These differences in brain activity between the two systems reflect the extent to which empathy is processed automatically or voluntarily (Ochsner et al., 2009), suggesting that emotional and cognitive empathy systems have different evolutionary origins (De Waal, 2008). While emotional empathy – to feel what another is feeling – occurs more or less automatically and emerges earlier phylogenetically, cognitive

empathy – to think what another is thinking – depends more on ontogenetic and developmental aspects (e.g. Stueber, 2012) and may be specific to humans (Call & Tomasello, 2008; de Waal & Ferrari, 2010).[10]

Feeling what another is feeling is less cognitively strenuous than thinking what another is thinking. Consequently, emotional and cognitive empathy may also be distinguished on the basis of bottom-up versus top-down, also described as automatic versus conscious control (Keysers et al., 2014, distinguish between spontaneous and voluntary empathy).

In emotional empathy, we obtain knowledge of others' minds by way of simulation. When watching others react in disgust to tainted food, we feel 'their' nausea. The feeling of disgust, a basic emotion apparently explainable in terms of its adaptive benefits (Curtis et al., 2004), is provoked by a wide range of stimuli such as vomit, wounds, rotting meat, slime and maggots, which all share a connotation of infectious disease. Studies that compare feeling disgusted with observing others feeling disgusted point to an *automatic* sharing by the observer of the displayed emotion, thus suggesting that the sharing reflects "a 'primitive' mechanism [that] may protect monkeys and young infants from (the) food poisoning […], even before the evolution/development of sophisticated cognitive skills" (Wicker et al., 2003, p. 661).

Emotional empathy may also explain those instances where we appear to project our own feelings onto others, as demonstrated in a study by van Boven and Loewenstein (2003), in which subjects were told a story about backpackers getting lost in a forest and asked to imagine how the backpackers would be feeling. Subjects' predictions of whether thirst or hunger would be more bothersome to the fictive hikers without food or water were biased in the direction of the participants' own exercise-induced thirst, sustaining the hypothesis that predictions of other people's mental states are fed by body-based simulation of how they themselves would feel in a similar situation. According to Bernhardt and Singer (2012), affective responses to others strongly correlate with the capacity to monitor feeling states of self.

Simulation as a vehicle for empathy and thus knowledge acquisition (even beyond ascriptions of other's mental states; e.g., Barsalou, 2008; Schilhab, 2015c) is widespread. Simulation involves a so-called 'mirror' system in the brain, such that the same areas are activated when we observe another person experiencing an emotion as when we experience that same emotion ourselves (Frith & Frith, 2006). The brain's mirror system is engaged by actions as well as emotions (Rizzolatti & Craighero, 2004) resulting in, for instance, the automatic imitation of others'

10. Note, however, that some of de Waal's work (2009) seems to contradict this, as do studies on the ToM of corvids (see, for example, Bugnyar, Reber and Buckner, 2016).

movements (Chartrand & Bargh, 1999; Mattar et al., 2005). Hence, Keysers et al. (2014) refer to 'motor' empathy when subjects vicariously experience activity in their motor cortices while observing action and to 'somatosensory' empathy (2010) when subjects experience activity in somatosensory brain regions while viewing others' tactile and haptic sensations.

Though described as affect sharing, empathy has to be separated from emotional contagion, which is not considered an empathic response because the person incorporates affective states without being aware that the feeling is not their own (e.g., Bernhardt & Singer, 2012; Hein & Singer, 2008). Hence, the induction of empathy has to involve the perceiving or imagining of an emotional state in another person in the absence of any emotional or sensory stimulation to our own bodies. Though this imagined or perceived feeling is categorized as similar to what we experience ourselves, it is nevertheless distinguishable from feelings that originate in ourselves (Decety & Jackson, 2004; Schilhab, 2015a).

Emotional empathy can be dynamically modulated. When confronted with the suffering of strangers, we become less affected than when facing the suffering of a loved one (Mitchell et al., 2006; Singer et al., 2004). This may result from less motivation to attend to the suffering, wilful ignorance of the event or lack of trust in a stranger's feelings. Studies of factors with modulatory effects on the occurrence of empathy have shown that features of the empathizer (gender, personality and mood), the relationship between empathizer and target (e.g., familiarity with, affective link to and valuation of the other), as well as the empathizer's appraisal of the situation may influence the strength of empathy (Engen & Singer, 2013). Empathic brain responses in men were significantly weaker if the subject in pain was deemed unfair as compared to a sufferer deemed likeable, an effect absent in empathizing women. Likewise, empathic brain responses were reduced if empathizers believed the pain induction to be part of a successful therapeutic intervention. Also, the perception of the intensity of pain influences empathy to varying degrees. Subjects tend to empathize more with people in acute pain as compared to chronic pain (Hein & Singer, 2008).

Cheng et al. (2007) showed that if empathizers are frequently exposed to pain-inflicting events in others, as are, for instance, physicians (medical doctors with at least two years of practice in acupuncture), the strength of empathic brain responses as compared to activity in naïve controls is reduced. The same effect is seen in alexithymic empathizers who are known to have difficulties in identifying and describing their own feelings and bodily sensations (Bernhardt & Singer, 2012).

When observing other people in painful situations, one's perception of another's state is based on online stimuli; empathy emerges as a result of activity in action perception networks. Though the mirror system is ideally suited to tracking the continually changing states of emotion and intention of others, more is

needed to tell us about their attitudes and predilections. If we want to understand why someone is paralyzed by fear, we tend to orient ourselves so we can see what they see. From the knowledge of where a person is looking and what they can see, we may identify the cause of their fear. Seeing the world from another's perspective enables us to realize that other people can have different knowledge from us, including, possibly, false beliefs about the world (Frith & Frith, 2006).

In situations where online stimuli are missing, for instance when *reading* about a fictitious figure being hospitalized or socially estranged, the relevant stimuli are offline (Wilson, 2002), and affective states depend on the employment of perspective-taking and mentalizing (Engen & Singer, 2013). Mentalizing is then accomplished top-down, associated with voluntary control; this appears to depend critically on training during ontogeny (Schilhab, 2015a, 2015b).[11] Regarding the emergence of ToM, Slaughter et al. (2007) found that mothers of pre-schoolers seem to vary both with respect to the frequency with which they address mental states while narrating stories and to their production of causal and contrastive clarifications on mentalist themes, processes which seem uniquely associated with children's developing ToM (for detailed interpretations of how language influences children's understanding of mental states, see Harris et al., 2005). According to Pavarini et al. (2012), however, the capacity to mentalize about others' mental states may result from a number of co-operative parameters and not exclusively from verbal exchange. Pavarini et al. (2012) reviewed 78 research reports regarding how to nurture young children's understanding of the mind, summarizing three main suggestions. First, parents should act sensitively and responsively to a child's mental states from very early in their development. Secondly, parents should speak to children about mental states in an elaborate and connected way, pointing out their causes and consequences and explaining that these may be different for different people. Finally, they should expose their children to a wide range of emotions without expressing an overly-frequent or inconsistent negative affect.

The trainability of ToM may also explain cultural differences in ToM. According to Shahaeian et al. (2011), Western children are typically encouraged to think for themselves, to develop their own ideas, and to assert their opinions freely, leading many children to form initial conceptualizations of mind in terms of differences of opinion. By contrast, Chinese children are typically taught filial respect and encouraged to conform to the cultural models, rules and traditions conveyed by their elders, such that key concepts of mind are initially constructed

11. Note that the mirror neuron system also needs training (Catmur et al., 2007). Heyes (2010, p. 789) states: "mirror neurons are formed in the course of individual development and via the same learning process that produces Pavlovian conditioning".

around the insight that people can be either knowledgeable or ignorant (for an anthropological approach to ToM see Luhrmann, 2011).

In light of the online/offline distinction, reading depends on imagination (for a discussion of processing abstract visual cues, see Bernhardt & Singer, 2012). Consequently, neural activity that corroborates empathizing with fictitious characters seems to be top-down controlled, as in cognitive empathy. However, individuals seem to differ with respect to which neural systems are employed while listening to excerpts from novels (Chow et al., 2015). Nijhof and Willems (2015) found that participants who had high activation in the mentalizing network (anterior medial prefrontal cortex) when listening to the mentalizing content of literary fiction had lower motor-cortex activity when listening to the action-related content of the story, and *vice versa*. Thus, narratives may elicit different mental activities in different people, with some listeners being drawn into a story mostly by mentalizing about the thoughts and beliefs of others, while others are preferentially simulating more concrete, action-oriented events (see also Willems & Casasanto, 2011).

In this subsection, we focused on neuroscience studies of empathy that base the distinction of cognitive and emotional empathy on their correlation with different brain activities. This distinction reiterates the distinction between the phenomenal and interpretive senses of empathy discussed in section 2 as well as the distinction between consciousness-attribution and consciousness-enactment presented in section 3.

In the neuroscience version of the bifurcated view of empathy, the automatic, bottom-up and simulated view (emotional) is contrasted with the conscious, top-down and cognitive view. While the neuroscience conception of emotional empathy, by which we obtain knowledge of others' minds using simulation, is highly contentious and antagonistic to phenomenologically motivated interpretations, due to its focus on automatic neural processes which implicitly disregard the phenomenal feel, the position gains traction from neurophysiological evidence. In the neurosciences, simulation as a phenomenon refers to the re-enaction (re-activation) of neural correlates that sustain particular phenomenal experiences. Hence, when empathizers are said to simulate others' emotions, for instance the feeling of disgust, they empathize because they re-activate the neural correlate corroborating their own previous feeling of disgust. In principle, this re-enaction may or may not involve phenomenal experiences or consciously perceived states of mind in the simulator.

In the corroboration of this understanding, emotional empathy is typically triggered by online signs and depends less on cognizing than on cognitive empathy, which seems far more deliberate, trainable and thus variable as a result of cultivation during development. Moreover, since in the neuroscience interpretation

cognitive empathy draws on mentally strenuous abilities to imagine, it is especially this version of empathy that seems to be engaged when reading. Although consciousness-enactment has certain overlaps with emotional empathy, it still seems to depend on more severe cognitive efforts and a certain level of conscious awareness than normally associated with the more spontaneous emotional empathy.

Discussion

Now that a wide-ranging overview has been given of the main empirical literary studies and neuroscientific studies on empathy, it is time to turn to questions of comparison, contrast, novel insights and further study.

How do the empirical literary results compare and contrast with neuroscientific ones?

The foregoing discussion clearly illustrates the difficult middle position of, and the pressing need for, interdisciplinary endeavors such as empirical studies of literature. While subtle literary theorizing about readers' first-person experiences of empathy and related phenomena is free from the practical constraints of empirical testability, neuroscience provides limited insight into empathy as a verbally reportable experience. From the viewpoint of literary theory, the empirical literary studies largely fail to address a key distinction between first-person and third-person experiences of empathy in the broad sense, as elaborated for instance in Caracciolo's (2014b) terms of consciousness-attribution and consciousness-enactment. But from the viewpoint of neuroscience, too, they may seem to study empathy and empathy-like phenomena with insufficient conceptual precision.

The neuroscience literature reviewed in Section 5 suggests that empathy in literary reading possibly comprises a previously non-reflected number of dimensions or levels: a lower-order embodied level (e.g., simple sensory and motor experiences), a lower-order emotional level (basic emotions, e.g., fear), a higher-order emotional level (complex emotions and motivations, e.g., guilt), various levels of more or less consciously controlled mentalizing (monitoring others' intentions, beliefs, attitudes), and so forth. Some of these dimensions have been shown (Hein & Singer, 2008) to operate independently of each other as they are channeled through separate neural pathways: the pathway for contagion and the pathway for mentalizing. But insofar as empirical literary study is concerned with verbally reportable experiences rather than their neural underpinnings, it may not be entirely safe to treat these dimensions as necessarily independent or even separate. Their

experiential distinctiveness is up to empirical literary studies to establish, using their own set of research methodologies relying on various forms of self-report.

With the exception of Wallentin et al.'s (2013) study, which seems to corroborate the neuroscientifically grounded distinction – or even trade-off (Nijhof & Willems, 2015) – between contagion and mentalizing, none of the empirical literary studies reviewed in Section 4 expressly address this relationship. It is desirable, however, that the relationship is addressed more closely in future studies, not least because of the specific ontological nature of fiction; readers of fiction may typically be aware, at some level, that their story-based experiences are prompted by cues outside themselves, and even outside their immediate reality (Keen, 2007). The specific status of fictional stimulation could entail that it is inaccurate, in the case of literary reading, to conflate all lower-order (e.g., somatic) responses with mere contagion, or to talk about mere contagion on the level of experience in the first place. In neuroscience nomenclature (e.g., Schilhab, 2015b), story-driven responses in reading may hypothetically be experienced as top-down controlled, regardless of the psychological complexity of experiential content. This view can also be gleaned from Caracciolo's (2014) theory of narrative experientiality, where it is proposed that in reading, first-person consciousness-enactment always co-occurs with *some degree* of third-person mentalizing, i.e., consciousness-attribution (but not *vice versa*).

In line with the latter view, Cupchik et al.'s (1998) study seems to document a complex interplay, rather than dissociation, between contagion and mentalizing. In the study, subjects who were explicitly instructed to mentalize ("imagine what it is like to be the protagonist", p. 366) reported experiencing more character-centered emotions, i.e., emotions that might have largely enlisted the affective shortcuts of contagion. Meanwhile, first-person emotional memories, relying on autobiographical analogy with characters' emotions, were paradoxically more common in readers who were instructed to distance themselves as 'sympathetic spectators' (p. 366). However, the relationship between lower- and higher-order empathic experience – or mere contagion vs. mentalizing – could also vary as an artefact of stimulus topic and size. Wallentin et al.'s (2013) stimulus fairy tale (*The Ugly Duckling*), and the way it was segmented into lines for the purposes of the study, may have teased apart experiences that co-occur in other and/or more naturalistic text units. The differences in empathic responses to narratives about depression vs. grief observed by Koopman (2015), for example, could also have been partly due to differences in subjects' preconceptions of the two psychological conditions with regard to their more distinctly somatic (depression) vs. more complex emotional (grief) nature. Empathizing with the former condition would then have elicited more lower-order affect. As Wallentin et al., propose, such affect can be associated with higher intensity levels when compared to mentalizing,

hence the higher self-reported empathy. But it is unlikely that an entire narrative about depression elicited little or no mentalizing.

A yet more obvious role for the text topic to play in empathic reading comes with the question of its familiarity and personal relevance to the individual reader. Koopman (2015) observes that, among other things, prior personal experience with either of the two extreme conditions led to higher empathy in reading. But prior exposure to fiction/literature was another predictor, in agreement with Mar et al.'s (2006) and Djikic et al.'s (2013) findings. Throughout readers' lifetimes, fiction tends to offer, even on the level of single texts, a broad variety of topics such that experienced empathy decrease due to stimulus habituation (Cheng et al., 2007) seems unlikely. Finally, the fact that the literary and/or fictional nature (Keen, 2007) of reading materials can override readers' biases, observed on neural levels (Mitchell et al., 2006; Singer et al., 2004), toward favoring the familiar over the unfamiliar is encouraging (perhaps most poignantly in Johnson, 2013) to all advocates of the use value of reading. More nuanced self-report designs are needed to empirically ground the experiential salience of the contagion vs. mentalizing distinction and to determine which degrees of topic unfamiliarity (see also Keen's typology of empathy strategies, Section 3 above) most effectively open readers' minds toward the unfamiliar.

Novel empathy interpretations: from neuroscience to empirical literary findings

As discussed above, empirical literary studies cannot depend on conceptualizations advanced within neuroscience alone, but must pursue their own research methodologies and traditions. However, neuroscience studies may inspire this endeavor by pointing to relations assumed to be significant between narrative reading and individuals' cognitive processing. For instance, scrutinizing cognitive processes relating to the distinction between empathy activated bottom-up and top-down may prove especially helpful in qualifying how the novel provides us with the means for developing and fine-tuning a sense of social justice and morality, as Nussbaum (2010) claimed.

From a neuroscientific approach, when feeling the feelings of others in place of thinking what others are thinking, though top-down activity co-occurs, the involuntary bottom-up activity leaves the reader in the grasp of her emotions. Though experientially invigorating, phenomenally rich mental states will not, on their own, lead to a better understanding of the minds of others.[12] Philosophically,

12. Note that multiple experiences with different affective states are probably necessary ontogenetic preconditions for the later development of ToM (Schilhab, 2015a; 2015b), rendering literature that prompts 'fresh emotions' (e.g. Cupchik et al., 1998) similarly important.

it is possible to be in a phenomenally rich conscious state in the sense of being in pain or hungry, while still lacking meta-awareness of that state in the sense that we know we are in pain and can take actions to obtain relief (Winkielman & Schooler, 2011).[13]

On the other hand, when we take the position of a spectator (e.g., Cupchik et al., 1998), we seem to draw on different circuits that downplay phenomenally experienced affective states. It is possible then that when subjects experience the more reflective and mentally meta-aware cognitive empathy, they distance themselves from complete immersion in the affective state in question. Thus, top-down activation likely provides us with the option to switch from 'fresh' emotions triggered bottom-up in the present and lacking in meta-awareness to a more distanced, bird's-eye view. For instance, adopting the perspective of the self or a loved one in pain – that is, assuming similarity – leads to increased ratings of pain compared to projecting a stranger into the same situation. Projecting a stranger leads to lesser pain experiences, as recruited regions now also include those involved in the self-other distinction (Bernhardt & Singer, 2012).

That employment of networks in addition to the somatosensory is important for meta-cognitive processing, such as perspectivizing, is corroborated by studies on psychological self-distancing from egocentric perspectives (e.g., Kross, Ayduk, & Mischel, 2005; Kross & Ayduk, 2009). The ability to adopt a self-distanced perspective when processing particularly negative emotions and experiences (a distanced why strategy) enables 'cool,' reflective processing of emotions, in which individuals can focus on their experience without reactivating excessively 'hot' negative effects. When analyzing feelings from a self-distanced perspective, processing relies somewhat more on reconstruing and perspectivizing, which appears more closely connected to deep understanding than to the processing of 'fresh emotions' (Kross et al., 2011).

Self-distancing and the ability to perspectivize may also explain Johnson's (2013) finding that the extent of transportation into the narrative is correlated with affective empathy and reduced prejudice. The process of temporarily leaving one's own reality behind during such transportation is likely associated with a shift from a state of external monitoring and focus on goal-directed activity, namely, 'looking out', to a more free-form, internally directed mental state independent of external stimulus, namely, 'looking in' (Immordino-Yang et al., 2012). Looking-in

13. Winkielman and Schooler (2011) proposed a tripartite model to distinguish between unconscious (mental states of which we are genuinely unaware), conscious (aware, but lacking meta-awareness), and meta-conscious (internally articulated as states of the perceiver) states (see also Schooler et al., 2011). Emotional contagion (e.g., Hein & Singer, 2008; Bernhardt & Singer, 2012) then involves feeling what others are feeling without meta-awareness.

transcends the here and now and reduces externally focused attention or vigilance to the environment, thereby increasing opportunities for deeper reflection. The shift from looking out to looking in, as it occurs in narrative immersion, advances thinking from "what happened" or "how to do this" to constructing knowledge about "what this means for the world and for the way I live my life" (Immordino-Yang et al., 2012, p. 357). In a study by Immordino-Yang et al. (2009), subjects reported that learning about others' virtue or psychological pain from narratives imbued in them a desire to lead a meaningful life or to feel gratitude for their own good circumstances.

It is likely that readers who are not easily transported may pay more attention to the external world, thus having less time for deep reflection. When naïve iPad users experienced dislocation within a text and an awkwardness in handling the medium, they also experienced difficulties with narrative transportation (Mangen & Kuiken, 2014). Unfamiliarity with the device was relatively more likely to stimulate externally focused attention at the expense of 'looking in' and narrative transportation; hence such users experienced comparatively fewer feelings of empathy.

Importantly, improving self-distancing and deep thinking does not diminish the significance of a subject's interoceptive abilities, that is the somatosensory awareness of the internal body (Herbert & Pollatos, 2012; Saxbe et al., 2013). Rather, mentalizing aligns with so-called 'reperceiving', which allows one to deeply experience each event of the mind and body without identifying with or clinging to it (Shapiro et al., 2006), a capability often cultivated by meditative techniques (Papies et al., 2012). Handling shifts in perspectives is also closely connected to our age-dependent (e.g., White & Carlson, 2015) and somewhat trainable executive functions (Diamond & Lee, 2011), such as reasoning, problem solving, and planning (Diamond, 2013).

Thus, in terms of cognitive processes, the novel's ability to provide us with the means for developing a sense of social justice and morality relies on advanced cognition, which needs considerable tuition to fully develop (e.g., Slaughter et al., 2007). This leaves open the question of whether subjects barred from extensive training of online mentalizing (e.g. Schilhab, 2015a) test lower on empathic skills despite the improvements expected as a result of reading (e.g. Mar et al., 2009; Djikic et al., 2013).

Empathy and digitization

Along with a sharpened, interdisciplinary focus on emotional and affective processes of reading, the current digitization adds dimensions that may deepen our understanding of the links between narrative reading and empathy. Whether literary or other, reading is typically considered a mental phenomenon involving

primarily the visual perception of black letters on a page. Basically, the perceptual process entails the recognition and identification of letters and words, and the sensory salience of the text 'as such' (imprinted on paper, or displayed on a screen) is minimal. Different from, e.g., paintings and music, literature has hence been characterized as an "'indiscernible' art form […] [without] a seemingly straightforward, one-to-one sensory fit" (Burke, 2015) and where perceptual processing is assumed to be marginal to the overall experience (para. 2).[14]

Experiments are beginning to reveal, however, that reading is indeed multimodal and involves sensory modalities beyond vision, as Burke (2015) has suggested. For instance, it has been shown that even silent reading involves the auditory cortex (see, e.g., Brück et al., 2014; Petkov & Belin, 2013). Additionally, reading, and in particular long-form literary reading, entails haptic and tactile feedback: We typically hold the text (in a print book or e-book) in our hands and engage in manual actions when turning pages, positioning the device for optimal angle and distance, and browsing. Often, these sensorimotor inputs are goal-directed and purposeful, as when tracking particular text segments by page-turning. They may however be less deliberate and more akin to tinkering, as when moving the fingers of the right hand towards the upper right corner to prepare for the page turn before the eyes have actually reached the bottom of the page (Scarry, 2001, p. 147). Although often anecdotally claimed to contribute to the reading pleasure, the nature of this contribution has yet to be empirically established. The increasing use of tablets (e.g., iPad) and e-readers (e.g., Kindle) for narrative literary reading is a timely catalyst for such research.

Perhaps reflecting a visual bias in reading research, there is by now a substantial amount of research on the effect of visual ergonomics of tablets and e-readers on aspects of performance (e.g., legibility; visual discrimination; memory and recall). A common finding is that reading on e-ink e-readers matches print reading, whereas reading on LCD screens is more often associated with visual fatigue and poorer performance (Benedetto et al., 2013; Benedetto et al., 2014; Kang, Wang, & Lin, 2009; Siegenthaler et al., 2011; Siegenthaler et al., 2012). With a few exceptions (e.g., Benedetto et al., 2013), experiments are typically conducted with short texts where no page turning is needed. Alternatively, to ensure adequate experimental control, haptics is disabled by, e.g., the experimenter turning the pages on cues from the participant (Kretzschmar et al., 2013).

Some interesting empirical evidence at a general level of haptics and empathy has also started to emerge in the past year. This is with regard to how engaging

14. Note, however, Burke's (2015) remark that the perceptibility of literary reading operates on a continuum and needs to be operationalized in line with a number of parameters, e.g., kind of literature; reading situation; channel of transmission/mediation (para. 7).

with rough or smooth surfaces can affect empathy levels. In a study that employed five different behavioral, neuroscientific and field experiments relating to the donating behavior of individuals with regard to charities, Wang, Zhu and Handy (2015) discovered that interacting manually with rough surfaces generated higher levels of empathy than interacting with smooth surfaces. The exposure to a haptic sensation of roughness (as opposed to one of smoothness) led to enhanced levels of attention. This heightened attention in turn led to an enhanced empathic response and a greater awareness to the plight of ill-fated others and subsequently to more generous donating behavior. This study clearly underscores the impact of contextual cues that are presented outside of conscious awareness. This is relevant when it comes to reading literature, as books and electronic devices clearly afford different non-conscious tactile experiences. When reading literature this can be of pronounced importance. In a recent qualitative study, participants were shown to have resilient feelings as to whether or not they would consider reading a novel on a digital device (Burke & Bon, in press). It also depends which way the reading experience is considered. For example, the paper and card of both hardback and paperback books can readily be seen as 'rough' to the touch, whereas e-readers, laptops and mobile phones have a smooth, sleek quality to them, a feature that is actively promoted in e-reader advertising campaigns.[15] Conversely, books are often seen to have a warm, organic feel to them, whereas electronic devices can feel cold and detached (see Burke & Bon in press). Clearly, experimental work is needed here at the level of literary reading, taking the Wang, Zhu and Handy study as a starting point.

Interestingly, there have also been recent studies that have explored the advantages of applying empathy-related knowledge to both the design and the development of human-centred technologies, such as those found both in the manufacturing and service industries (Wachowicz et al., 2016). Such design and development concerns could easily be expanded and applied to the entertainment industry, and to e-readers in particular, in order to enhance the empathic and emotive quality of the digital literary reading experience.

Since paper-based and screen-based substrates have different sensorimotor contingencies (O'Regan & Noë, 2001), future empirical research should accommodate measures of the effects of different ergonomic affordances on aspects

15. The following advertising text – taken from an online review of Amazon's digital devices for PC World by Michael Brown, the Executive Editor of TechHive (November 24, 2015) – is typical of how digital devices are often marketed … "The $200 Kindle Voyage sits at the tippy top of Amazon's Kindle lineup, and we really dig it. Its cover glass is silky smooth to the touch, and it's flush with its bezel. These are features you'll really notice if you swipe to turn pages". http://www.pcworld.com/article/3007395/holiday/how-to-choose-the-right-amazon-e-reader.html

of perhaps particularly long-form reading behavior and experience. As noted (Section 4.0), to our knowledge only one study has so far empirically assessed the effect of haptic and tactile feedback on emotional aspects of narrative, literary reading. For this purpose, Mangen and Kuiken (2014) developed the Interface Interference Scale (IIS), targeting aspects of haptic engagement and readers' sense of text location.[16] Combining such self-report measures[17] with more objective methodologies (e.g., eye tracking; peripheral physiological measures) can support improved assessments of the role of different medium interfaces, and their material and technical features, on emotional aspects of narrative, literary reading, such as empathy. Ideally, such multi-method approaches may enable us to specify the contributions of particular affordances (haptic; tactile, audiovisual; olfactory) on a range of aspects of emotional engagement, hence shedding further light on the truly embodied nature of reading.

Conclusions

In this paper we have discussed empirical findings within literary studies on empathy, ToM and related constructs in light of recent theoretical and empirical developments at the nexus of the neurosciences, philosophy of mind and cognitive psychology. Results in empirical literary studies indicate that narrative reading has a potential for expanding our empathy. Studies in the neurosciences and cognitive psychology point to likely cognitive processes corroborating this expansion. Together, these findings lead to exciting new research questions. One such question is whether narratives in the sense of presenting the perspective of other people as well as whole world scenarios only partly revealed to the protagonist in question are especially efficient in training executive functions and thereby strengthening the cognitive capacity for representing. Representing the mental representation of a fictive person, especially of what she or he does not know, is probably one of the most difficult cognitive operations of all. It is all about taking on the perspective

16. The IIS consists of three multi-item subscales: Resistance to Distraction (e.g., "The features of the iPad [booklet] interfered with my involvement in the story"), Awkwardness (e.g., "I felt awkward manipulating the iPad [booklet] during reading"), and Dislocation (e.g., "I always knew how much text I had left to read"). (see Appendix in Mangen & Kuiken, 2014). For a mainly qualitative study on the location and means of literary reading see Burke & Bon (forthcoming).

17. In addition to the IIS, the Haptic Dissonance Scale (Gerlach & Buxmann, 2011) is particularly relevant here. A sub-category of cognitive dissonance, haptic dissonance refers to the sense of missing the tactile feel and haptic attributes of an object, e.g., the feel of paper; the weight of the book; the texture of the binding and spine.

of someone else with regard to a matter that we know of, and simultaneously ignoring what we know (Battistelli & Farneti, 2015). Another burning question is whether replacing printed text with e-reading reduces the potential of narrative reading for the expansion of empathy. Recent dramatic increases in the use of electronic reading platforms urge literary researchers to intensify studies on whether changing the platform for reading extinguishes the means for developing and fine-tuning a sense of social justice and morality in narrative reading. As President Obama, leader of the 'free world,' recently remarked in an audio podcast cited at the beginning of this paper, "the most important stuff I've learned, I think I've learned from novels." Would he, we wonder, have made the same claim had all his literary reading been done on electronic devices?

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Authors' addresses

Michael Burke
University College Roosevelt
Langenoordstraat 1, 4331 CB
Middelburg
The Netherlands

m.burke@ucr.nl