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Evaluating whether stories can promote social cognition: Introducing the Social Processes and Content Entrained by Narrative (SPaCEN) framework

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ABSTRACT

Stories have long been theorized to influence how we perceive our social world and our peers. Empirical research on this topic has begun to grow, with many studies exploring how stories and social cognition relate, across a range of different approaches. In order to structure past work and guide future investigations, this article presents a research framework that formalizes how, when, and why engagement with stories might promote social cognition. This Social Processes and Content Entrained by Narrative (SPaCEN) framework posits that stories could bolster social cognition either through (1) frequent engagement of social-cognitive processes or (2) the presentation of explicit content about social relations and the social world. These two accounts are not mutually exclusive, and both rest on different sets of necessary tenets. An example is provided to illustrate the utility of this framework, evaluating the extant work on whether exposure to stories can improve mentalizing.

Can stories promote social cognition?

Theorists have long posited that stories might present a powerful influence on our lives, with fictional narratives likely to affect how we think and feel about the real-world (Hakemulder, 2000; Oatley, 1999). The idea dates as far back as the time of Aristotle (350 BCE/1987), who wrote a treatise on drama in which he theorized that narratives can teach us about reality. For Aristotle, narratives were any form of language that both represents the real-world and provides an experience that mimics our actual experiences in the world. Notably, Aristotle was explicit in stating that this could occur regardless of whether the narrative has any basis in true past events (i.e., is fictional or nonfictional). For many subsequent thinkers, stories hold an attractive potential to help us better understand others, encouraging us to empathize and thereby act more morally (Hakemulder, 2000; Nussbaum, 1995). This article presents a research framework for evaluating the empirical evidence that stories might aid social cognition, which refers to the accurate processing and application of valid social information. This framework is based on two possible accounts of how such facilitation might occur: (1) stories may evoke *social processes* that are then improved through practice or (2) stories may present *social content* that is then learned and applied. Reflecting these two accounts, this framework is henceforth referred to as the Social Processes and Content Entrained by Narrative (SPaCEN) framework. The Social Process account is based on three central tenets. If social processes are improved via narrative engagement, then the following must be true: (1) stories must represent the social world, (2) social processes must be engaged by stories, and (3) these social processes must be improved by frequent engagement. Similarly, if social content is learned from narratives, then (1) stories must contain accurate social content, (2) this content must be learned during story comprehension, and (3) this content must be applied in the real-world (see Figure 1). This framework formalizes and specifies the theoretical arguments

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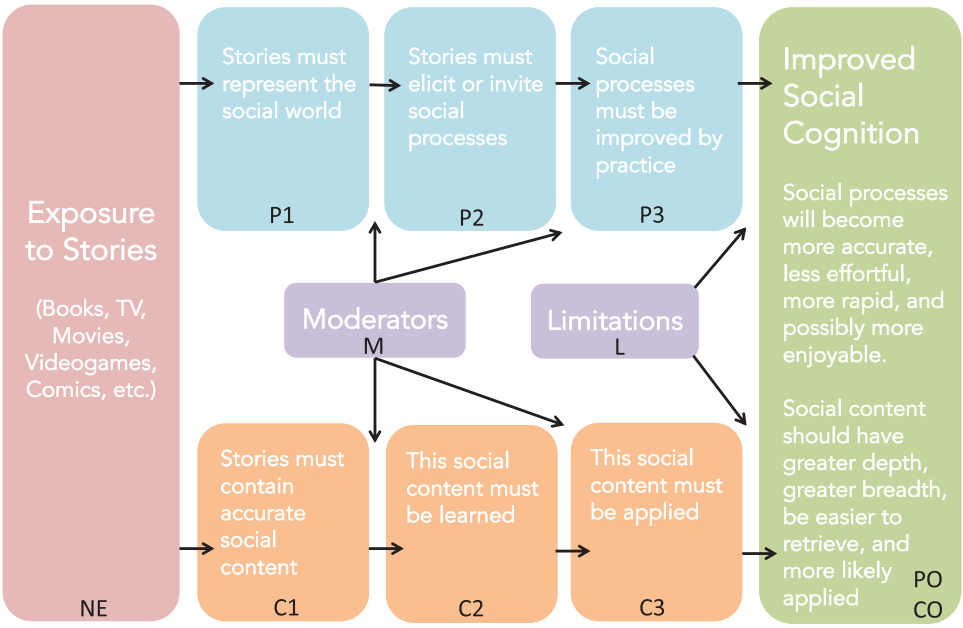

Figure 1. The Social Processes and Content Entrained by Narrative (SPaCEN) framework, illustrating how Narrative Experience (NE) results in various outcomes for social cognition (PO/CO) based on either the Social Process account and its necessary tenets (P1, P2, P3) or the Social Content account and its tenets (C1, C2, C3), taking into account various Moderators (M) and Limitations (L).

for how stories might influence social cognition, with this specification allowing the current evidence to be organized and systematically evaluated as a result. This in turn helps identify which theoretical aspects have support and which require more empirical attention. Currently, no model of discourse processing focuses sufficiently on the social cognitive implications of narrative to serve these functions, with current discourse-learning frameworks unable to accommodate the training of social cognitive processes, for example. Before expanding on the SPaCEN framework, we begin by sketching out the theoretical background that supports it.

When discussing the potential for stories to promote social cognition, it is important to first define exactly what is meant by a story. Although narrative fiction is often contrasted with expository nonfiction, for the purposes here it is the narrative aspect that is thought to be key, rather than the distinction between fiction or nonfiction. Consistent with Aristotle's (350 BCE/1987) early assertion, whether a story has its origins in true past events (i.e., its fictionality) has no bearing on its ability to inform real life. In other words, a nonfiction story such as a biography would be expected to have the same impact on social cognition as a fiction story. It is the narrative aspect of stories—the use of language to both represent and evoke experiences akin to the real-world—that is essential; any connection to actual past events is immaterial.

Having established that our focus is on narrativity or story quality rather than fictionality, what then should we consider to be a story? Within the psychology of discourse, stories have traditionally been defined by their structure (Rumelhart, 1975; Schank & Abelson, 1995; Trabasso & van den Broek, 1985), as a series of goal-centered events arranged in a coherent temporal order, according to a set grammar or schema (Stein & Glenn, 1975; Stein & Trabasso, 1981). These story schemas typically include a context or setting, an inciting incident or conflict that initiates action, followed by several causally-linked goal-based events that embody either progress or setbacks, producing an increase in tension or stakes, culminating in a resolution of the central conflict followed by a brief denouement. These structural models of stories have proven enormously successful in identifying

what makes for a story and unpacking story comprehension. However, when examining the broader influence of stories—such as a possible impact on social cognition—it may be helpful to go beyond the structure of these representations and also consider their content. Any impact of stories is likely to be determined as much, or more, by *what* is actually presented in addition to *how* that content is presented. Examining the common content of most stories, their essentially social nature becomes obvious as stories typically involve social agents and social interactions (Hogan, 2003; Mar & Oatley, 2008; Oatley, 1999). And so our working definition of a story is as follows: agent-centered accounts of goal-motivated causally-linked events that represent and evoke experiences akin to those found in the real world. This definition is entirely consistent with past structural accounts of narrative, which mandated that stories include goal-oriented agents that drive the temporally-organized and causally-linked events (Trabasso & van den Broek, 1985). Our definition thus simply highlights an existing aspect of past definitions. However, by shifting the focus from these events to the agents and their interactions, it becomes intuitive to look for a potential social impact of stories. Might frequent contact with the fictional social worlds depicted in stories have some influence on real-world social cognition?

In beginning to answer this question, it cannot be ignored that humans produce stories in various ways. We tell stories in the oral tradition, write short stories and novels, produce television shows and films, craft graphic novels, stage theatrical plays and musicals, create podcasts, and even develop narrative-based videogames. The ideas discussed herein are theorized to apply to all forms of narrative, regardless of modality, provided that the essential ingredient is present: the presentation of content that both reflects human experience and provides an imitation of this experience Aristotle (350 BCE/1987). In other words, so long as a narrative medium supports a rich mental simulation of human experience (Mar & Oatley, 2008), we would anticipate the SPaCEN framework to apply. Accordingly, we use the term *narrative consumers* for those engaging with narrative media, in lieu of modality-specific terms like *reader, viewer*, or *player*.

The SPaCEN framework

In broad strokes, the SPaCEN framework proposes that there are at least two different accounts of how stories might exert a salutary influence on social cognition, by evoking social processes or presenting social content. Social processes such as mental inferencing might be improved by stories if narratives regularly evoke the social cognitive mechanisms through which we understand our social world, and this regular evocation acts as a form of practice leading to improvement (Mar & Oatley, 2008; Mason & Just, 2009; Zunshine, 2006). Alternatively, social content such as veridical information regarding personality traits could be learned from stories if stories explicitly present social knowledge that can then be learned and applied to the real-world (Johnson, Carrol, Gottschall, & Kruger, 2011). This distinction between process and content is subtle but important, as Funder (1990) has observed: "Cognitive mechanisms serve to process information, but they are not the information itself" (p. 207). In the SPaCEN framework, the Processes and Content accounts are not mutually exclusive: both might be true, both might occur simultaneously, and evidence for one does not constitute evidence against the other. Moreover, the SPaCEN framework does not explicitly rule out other accounts or view them as unlikely, with the incorporation of other accounts being possible in the future. At a holistic level, both accounts of the SPaCEN framework begin with frequent and prolonged exposure to narratives (Figure 1), resulting in improvements in social cognition. The Social Process and Social Content accounts describe how this might occur, with each account containing three necessary tenets that must be true in order for the account to be plausible (P1–P3 and C1–C3). These two accounts result in different expected outcomes (PO and CO). Below, details of the Process and Content accounts are explicated, followed by an example of the framework in use.

The Social Process account: Honing social processes through practice

The Social Process account makes the claim that stories frequently engage social cognitive processes, with these processes being improved through this frequent engagement. This idea builds on the observation by Richard Gerrig (1993) that story comprehension relies on the same cognitive processes employed to understand the real-world. Because stories are primarily social in nature, social processes likely support story comprehension (Mar & Oatley, 2008).

What social processes might be affected?

Social cognitive processes allow humans to accurately navigate the social world (Fiske & Taylor, 2013; Happé, Cook, & Bird, 2017). Because social cognition is a large umbrella category (Happé et al., 2017), there are a wealth of possible processes that could be influenced by stories. As these processes are often distinct (Kanske, Böckler, Trautwein, Parianen Lesemann, & Singer, 2016; Valk et al., 2017), they could each be influenced in different ways and to varying degrees by exposure to narratives. As a result, the SPaCEN framework argues that each candidate process should be examined individually: evidence in favor of the Social Process account based on one cognitive process should not be seen as evidence that this account holds true for other social processes. However, if stories constitute a social stimulus then any social process that we might employ in the real-world could also be engaged by stories and improved through practice. It remains important to examine each process individually and to be specific about precisely which social process is under discussion. What follows is a brief, nonexhaustive, list of social cognitive processes that are likely engaged by stories.

Theory-of-mind and mentalizing. Perhaps the most frequently discussed social process is theory-of-mind, an awareness that develops in children that other people have mental states and that these states might differ from their own (Carruthers & Smith, 1996). In children, this is often studied with a false-belief task, in which children reason about a story character who holds a belief about the world that is untrue, with good reasons for this false belief (e.g., the state of the world has changed when not under observation). Currently, however, the term *theory-of-mind* is used to describe all kinds of reasoning about the mental states of others, such as inferring other people's thoughts, beliefs, attitudes, emotions, and motivations. This is also known as mentalizing (Achim, Guitton, Jackson, Boutin, & Monetta, 2013; Carruthers & Smith, 1996; Singer, 2006). Human behavior is driven most of all by these mental states, but they are not directly observable, which makes the ability to infer mental states essential for predicting, coexisting with, and collaborating with our peers. A closely-related construct to mentalizing is perspective-taking: seeing the world as another person sees it. Perspective-taking is one way in which we might engage in mentalizing, inferring the mental states of others by viewing the world through their eyes. Mentalizing is the process that has received the most empirical attention with respect to the influence of stories on social cognition.

Empathy and sympathy. The term empathy originates in the German word *einfühlung*, which can be translated into English as "feeling into" (Preston & de Waal, 2002). This describes how empathizing with another involves feeling the same emotions as they are currently feeling. If we imagine watching a speaker who is very nervous to be presenting, empathizing with that speaker would entail also feeling emotions akin to nervousness. In addition, some researchers have drawn a distinction between cognitive empathy and emotional empathy (Preston & De Waal, 2002). Cognitive empathy could be interpreted as thinking what other people are thinking, whereas emotional empathy is feeling what other people are feeling. In some cases, however, people make reference to cognitive empathy when what they mean is mentalizing or perspective-taking. Like mentalizing, empathy is another social process that has been examined with respect to the influence of stories, with Koopman and Hakemulder (2015) providing an authoritative review and theoretical synthesis of work on this topic.

Sympathy is a social process closely related to empathy that refers to a "feeling for" another person, rather than "feeling into" that person (Mar, Oatley, Djikic, & Mullin, 2011; Miall & Kuiken,

2002). To provide a parallel example, if we were to feel sympathy for a nervous speaker, we would feel sorry for that person rather than feel nervous ourselves (which would be an empathic reaction), experiencing emotions akin to caring. Although sympathy is closely related to empathy, it has received relatively less research attention with respect to the effects of narrative exposure (cf. Koopman, 2015, 2016).

Social memory and social schemas. Although mentalizing, empathy, and sympathy have all received some empirical attention with respect to the influence of stories, many other candidate processes have been ignored. One example is memory processes, which help to facilitate our social interactions (Olson, McCoy, Klobusicky, & Ross, 2013; Spreng & Mar, 2012). Memory includes both process and content components, with the encoding, manipulation, and retrieval of information constituting cognitive processes, and the information being operated upon constituting the mental contents. One social memory process likely relevant to stories is social semantic memory: the ability to encode and retrieve knowledge pertaining to the social world (Olson et al., 2013). Social semantic memory helps us to communicate and collaborate with our peers effectively, operating on broad propositional knowledge about human psychology and human relations. In addition, social semantic memory supports the encoding and recall of information about specific individuals, facilitating our interactions with them and helping to form bonds. Another form of memory relevant to story comprehension is social working memory, which allows us to bring online, manipulate, and maintain social information (Meyer, Spunt, Berkman, Taylor, & Lieberman, 2012). Social working memory may help to support other social processes, such as visuospatial perspective-taking (Meyer, Taylor, & Lieberman, 2015). These social memory processes not only help us remember information about individuals, they also help us recall the relationships between people.

Another construct closely related to social memory is that of social schemas or scripts (Carver, Ganellen, Froming, & Chambers, 1983; Fiske & Linville, 1980). We possess structured knowledge representations of both individuals and social situations (Gilboa & Marlatte, 2017), and the processes that support the construction, maintenance, and application of these representations could be engaged by fiction. Our models of individuals are known as person models or person schemas (Hassabis et al., 2014; Park, 1986; Park et al., 1994; Thornton & Mitchell, 2017), and the processes that support the construction and maintenance of these models may be fostered by frequent contact with story characters. In support of this idea, those who read more fiction are better at inferring the traits of writers based on a piece of writing (Hall, Goh, Mast, & Hagedorn, 2016).

Mentalizing, empathy, sympathy, and social memory processes do not form an exhaustive list of the cognitive processes possibly influenced by our engagement with stories, but they do illustrate the kinds of processes hypothesized to be affected. To the degree that our comprehension of stories engages these different social processes, we would expect frequent and prolonged story exposure to result in an improvement of these processes.

Necessary tenets for the Social Process account

In order for social processes to be improved by engaging with stories, the SPaCEN framework posits that at least three distinct tenets must be true. They are as follows: (P1) Stories must provide representations of the social world that are suitable targets for social processes; (P2) stories must evoke or invite social processes; and (P3) the social processes in question must be amenable to improvement through practice. If this first tenet is true, it will hold true for all social processes, but the latter two tenets (P2 and P3) must be addressed individually for each specific social process in question. Whether stories invite mentalizing and whether mentalizing can be improved in adults does not inform whether the same is true for updating social schemas, and so both processes must be investigated individually. The Social Process account might well hold for

some social processes but not others. Below, we discuss each of the necessary tenets for the Social Process account in detail.

P1. Stories must represent (or evoke representations) of the social world

In order for stories to be a target for social processes, they must involve representations that bear some relation to our social world. The simplest possibility is that stories explicitly represent our social world with some degree of fidelity. Importantly, stories need not represent human psychology and human relationships with perfect accuracy in order to support the Social Process account (Oatley, 1999), they need only provide representations that provide plausible targets for social cognitive processes. Seeing as how narratives include social agents in the form of characters and portray the interactions of these agents, narratives would seem to be a good target for social processes. Correspondingly, the Social Process account focuses on story characters and their suitability as targets for social processes, as opposed to story plots and themes. Admittedly, however, the question of whether stories proffer suitable targets for social processes may be rather difficult to investigate empirically, given the scope and nature of the question. That said, it may also be a rather uncontroversial assumption. Although exceptions certainly exist, the majority of narratives would seem to center around human psychology, human relationships and interactions, and human society (Mar & Oatley, 2008). Theoretically, it is intuitively sensible for narratives to primarily be about humans and their social world because narratives are a human product—perhaps our most universal and long-standing cultural product (Boyd, 2009; Hogan, 2003)—one that reflects our intrinsically social nature (Kudo & Dunbar, 2001). In fact, this social nature might explain much of what makes humans unique (Dunbar, 2004; Kudo & Dunbar, 2001). Because we depend so heavily on one another to survive and propagate our genes, understanding others and how to relate to them has enormous value. It should come as no surprise then that narratives, which allow us to mentally simulate interactions between people, are of immense interest (Boyd, 2009). We created stories, and their enduring appeal reflects the fact that they are a direct manifestation of our interest in others. It stands to reason, therefore, that more realistic representations of human psychology and human relationships are likely to be of greater interest than less realistic representations. Because our interest in stories likely stems from our motivation to understand those around us and our own lives, stories that depart drastically from reality are unlikely to satisfy this need. In fact, stories that lack correspondence to the real-world are readily criticized, with stories that lack realistic representations of human psychology and behavior often derided for being "cheesy" or "corny."

The above notwithstanding, humans also have a powerful ability to treat a wide variety of objects as social targets, in the form of anthropomorphization (Epley, Waytz, & Cacioppo, 2007). Human readily ascribe mental-states and other human qualities to a broad swath of targets that lack mentality, including plants and even simple geometric shapes (Heider & Simmel, 1944). This likely stems from a motivation similar to what explains our attraction to stories. It is so important for us to understand those around us, whose mental states are not directly observable, that this tendency to infer and ascribe mentality is a bit overactive. As a result, it may well be that although stories quite obviously center around human psychology and human relationships, there is considerable latitude when it comes to stories providing adequate targets for social cognitive processes. If our social cognition can be applied to simple geometric shapes, the bar for realism in narratives might be rather low. Although stories on the whole may strive for realism in the portrayal of mental states and relationships, this does not prevent rather peculiar stories that drastically depart from reality in this depiction from potentially evoking social cognitive processes.

P2. Stories must elicit or invite social processes

For each of the candidate social processes we wish to investigate, we must examine the evidence that it is engaged during story comprehension. There are a number of reasons why a particular social process might play a role during story comprehension. One possibility is that media consumers are required to use the process in order to successfully comprehend the story. This would be the

strongest form of argument in favor of a social process being involved in story comprehension. However, it is not the only possibility. A social process might also be rewarding for media consumers to engage, even if it is not necessary for story comprehension. One could, for example, still understand a story in the end without engaging social memory to monitor and track the motivations of the characters, but perhaps a story is more pleasurable for those who are motivated and able to do so. A third possibility is that a social process might be spontaneously engaged when stories are presented, regardless of necessity or reward. We might, for example, engage in mentalizing when presented with a fictional character, even though doing so is not necessary for story comprehension, nor might it relate to pleasure or reward. That is, mental state inferences might be spontaneously evoked by the presentation of a suitable stimulus, as some neuroscience research suggests (Mar, Kelley, Heatherton, & Macrae, 2007; Moessnang et al., 2017). Currently, there is intriguing evidence that social cognitive abilities play a central role in the comprehension and recall of narrative content, with children and adolescents being relatively impaired in their comprehension as a result of still developing social-cognitive abilities (Pavias, van den Broek, Hickendorff, Beker, & Van Leijenhorst, 2016).

P3. Social processes must be amenable to improvement through practice

In order for social processes to be improved through frequent exposure to stories, the processes in question must be amenable to improvement through practice or frequent engagement. This potential may vary depending on the specific social process in question, with certain social processes perhaps more malleable than others. The lability of a social process may also vary depending on the population under investigation. It might be, for example, that a particular social process can be improved among young children who have not yet fully developed this ability but that this same ability is resistant to improvement among normally-developing adults who have already achieved this developmental landmark. Or it could be that, even among children, the development of a certain ability could be encouraged for those lagging behind their same-aged peers, but not for those developing as expected. When seeking evidence for whether a particular social process can be improved through practice, it is important to specify the population under investigation to which any results can be generalized. Evidence from training studies that employ children as participants may not provide evidence that the same social process is sensitive to practice effects among adults. That said, in general, there does appear to be evidence that social processes can be trained in normally-developing adults, with respect to social working memory (Meyer & Lieberman, 2016), visual perspective-taking (Santiesteban et al., 2012), and empathy (Teding van Berkhout & Malouff, 2016), for example.

Outcomes for social processes (PO)

If the three necessary tenets for the Social Process account are met, then what outcomes would we expect for the social processes in question? One possibility is that people who are exposed to more stories would exhibit superior performance for these social processes compared to those exposed to fewer stories. Another possibility is that frequent engagement with stories might have two opposing influences, one leading to a decrement in social processes as a result of social isolation and the other improving these processes through practice. If removing oneself from the real social world leads to atrophy for the social processes used to comprehend the social world, but consuming stories while doing so engages these same processes, then we would expect frequent narrative consumers to possess social abilities that are less impaired relative to others who pursue an isolated activity that does not improve social cognition. So, if this account is accurate, we would expect people who consume stories more frequently to exhibit either superior performance as a function of improving their social processes, or equivalent performance via maintaining them and preventing their decline, relative to peers.

It is important to be specific about what is meant by improvement, however. There are various ways in which social-cognitive processes might be strengthened through frequent encounter with stories, including increased accuracy, decreased effort, and increased speed.

Benefits to accuracy would entail an increase in the likelihood of inferring the true mental state of another. Social processes might also become less effortful, with fewer cognitive resources required in order to achieve an equivalent level of accuracy relative to others. If these processes become less effortful and more efficient, they might also be less likely to be disrupted by competing processes or mental tasks (e.g., as in a dual-task paradigm). It might also be the case that social cognition could become quicker or more rapidly enacted, either coming online and being brought to bear more quickly, or taking less time to complete. To research this, it would be interesting to examine reaction-time performance for a mentalizing task, for example. Importantly, all of these outcomes are mutually exclusive of one another. A social process might become quicker but no less effortful or accurate. The pattern of improvement across these various dimensions might also be distinct for different social processes. One process might become quicker and less effortful, whereas another might become more accurate but no less rapid or effortful. This is another reason why it is important to investigate the different social processes individually. Finally, this is not an exhaustive list of how a social process might be affected by frequent engagement with stories. Any way in which a process is influenced through practice could plausibly be observed as an influence of stories on social processes. Oatley (1999, 2008, 2016) has written extensively on this idea, describing time spent imagining the world of stories as akin to time spent on a flight simulator in preparation for a pilot's license. In this fashion, social interactions imagined during engagement with fiction might provide a simulation of experience that has benefits akin to real social experiences.

In addition to social processes becoming more accurate, less effortful, and more rapid, it is also possible that other, more distal, outcomes might be observed as an indirect result of improved empathy or mentalizing. Several theorists and researchers have investigated whether stories might make people more moral (Nussbaum, 1995), more altruistic toward others (Barraza, Alexander, Beavin, Terris, & Zak, 2015; Johnson, 2012; Larsen, Lee, & Ganea, in press), or more tolerant of differences (Hakemulder, 2000, 2008; Johnson, Jasper, Griffin, & Huffman, 2013), perhaps resulting in a reduction of intergroup prejudice (Paluck & Green, 2009). These are possible downstream consequences of any improvements in social processes and, as such, effects of this kind are expected to be smaller in magnitude than that observed for improvements in social processing. Last, if social processes are improved, they might also become more pleasurable to engage as they become more efficient and effective, perhaps resulting in an upward spiral as is observed with verbal ability and reading (Mol & Bus, 2011).

The Social Content account: Learning and applying social knowledge

The Social Content account rests on the proposal that stories contain a wealth of useful knowledge about the social world. In engaging with stories, consumers are exposed to this information, encode and store it, and then apply it fruitfully in real-world contexts. Although the processes supporting the encoding and retrieval of this social knowledge fall under the Social Process account, explaining the influence of this content knowledge entails the specification of a different set of necessary tenets. Stories must first contain useful knowledge about the social world (C1), consumers of stories must learn this information by engaging with stories (C2), and this learned content must then be applied outside the story context to the real-world (C3), resulting in a set of measurable outcomes for social cognition (CO). Before expanding on each of these tenets, it is necessary to first elucidate precisely what sort of information can be learned from stories.

What kind of social content can be learned from narratives?

The most obvious candidate for social content knowledge that can be learned from stories is propositional knowledge about human psychology, human experience, and human relationships. This can be thought of as broad, probabilistic statements regarding humans, their mental states, and likely behavior. Although we are all likely familiar with quite simple "truths" regarding humans, stories can succeed in portraying more complex truths about human nature. One can imagine all

kinds of useful propositional knowledge regarding human tendencies: that people sometimes project their faults onto others, that people can crave external validation, that anger in the face of frustration can sometimes be misdirected, and so forth. Carefully crafted public narratives like novels and films are often created by people who are intensely interested in human psychology and the human experience (Djikic, Oatley, & Peterson, 2006; Doyle, 1998), and so it would not be surprising if stories explored complex and nuanced aspects of our very being.

In addition to this propositional knowledge, it is also possible that narratives might communicate the content of various memory schemas described above. Whereas the Social Process account entails the cognitive operations for building and updating these schemas, the Social Content account tackles how the content of these models might be learned and applied. While watching *Sex and the City*, for example, the Social Process account asks whether we are honing the processes required to construct models of the characters. In contrast, the Social Content account asks whether we then apply the content of one character model to interpret the real world, such as informing a friend that they are "such a Miranda!"

Stories might also communicate social content in the form of emotional experiences (Miall & Kuiken, 2002). Some emotions are only experienced rarely in real life, if at all, and stories might allow us to explore these emotions vicariously (Oatley, 1994, 1999). We might never experience true terror in our lifetime, but horror stories allow us to vicariously experience and explore these emotions safely, which might help to explain their appeal. We may also come to better understand certain emotions after experiencing these emotions vicariously within a fictional world (Mar et al., 2011; Miall & Kuiken, 2002; Oatley, 1994, 1999, 2002). This is directly tied to what are known as eudaimonic motivations for engaging with media, which describes a search for meaning in entertainment experiences (Oliver & Raney, 2011). Consistent with this idea, children learn culturally appropriate display norms for emotions from storybooks (Tsai, Louie, Chen, & Uchida, 2007). By exploring emotional experiences through fiction, we may well come to better understand a broader range of emotions.

By coming to a better understanding of emotions through vicarious experience, we could come to better understand those who have experienced these same emotions firsthand. Although we might not have personal experience with the loss of a parent, narrative might allow us to gain some insight into what that might be like, better equipping us to understand and provide support for someone who is currently experiencing this very emotional situation. The emotional content of stories might not only help us understand the emotional experiences of others, but it could aid us in better understanding ourselves and our past affective experiences (Kuiken, Miall, & Sikora, 2004; Oatley, 1994, 1999). Similar to how we are often more adept at judging the flaws of others than seeing our own flaws, stories might allow us to gain the emotional distance from a situation needed in order to foster self understanding (Cupchik, 2002). In other words, stories might provide the distance required to gain insight into the complex interior states that often drive our actions and reactions.

In summary, stories are likely to contain both concrete propositional knowledge about human psychology and interpersonal interactions, as well as opportunities to explore human emotions vicariously. Both are experienced from a psychological distance, which might promote an easier path to understanding the self and others through reflection (Cupchik, 2002; Koopman & Hakemulder, 2015). In order for story content to result in better social cognition, however, three necessary tenets must first be found to be true.

C1. Stories must contain social content

The first tenet of the Social Content account states that if people learn social knowledge from stories, then stories must contain this type of information. Whereas the Social Process account focuses primarily on story characters, the Social Content account is more concerned with the plots and themes that are presumed to contain this social knowledge. This is not an absolute difference, however, and some overlap is to be expected, as is seen with respect to the content of person schemas. The question of whether stories contain social knowledge is, admittedly, rather daunting to prove using a strictly empirical approach. Assessing whether one book contains social knowledge,

and of what sort, is a task with no obvious agreed-upon operationalizations, not to mention the major question of whether this book is representative of books in general. Disciplines other than psychology may well be better suited to answer this question. For example, the literary scholar Patrick Hogan (2003) conducted an exhaustive cross-cultural survey of stories and identified various universal themes. These themes center around interactions between individuals and the emotional reactions that result, consistent with this necessary tenet. Further insight into the universal themes present in stories around the world can be found throughout the humanities (Boyd, 2009; Campbell, 1949; Hogan, 1997) and provide conclusions consistent with the idea that stories contain useful social truths (Oatley, 1999). There is, however, some empirical evidence regarding the presentation of social content for a particular form of story: children's literature. Content analyses of children's storybooks have found that a great majority of these books contain language about the mental states of others, with one estimate placing this number at about 75% (Cassidy et al., 1998). Another analysis found that these references to mental states occurred frequently, about every three sentences or so (Dyer et al., 2000). Moreover, these references could be quite complex, with over a third of books surveyed including situational irony (Dyer et al., 2000) or explicit mention of false beliefs (Cassidy et al., 1998). If children's books are rife with social content, books intended for adults seem likely to contain just as much if not more social content.

C2. Social content must be learned from narratives

If stories contain social content that is to be usefully applied, people must first learn this content. This can be achieved either intentionally, with consumers consciously attending to and attempting to encode social information, or unconsciously through implicit learning processes (Reber, 1989). There is, at the moment, no direct evidence that people learn about the social world from stories. However, there is a great deal of indirect evidence that this is likely to be the case. For one, a large body of work based on Bandura's (1986) Social Cognitive Theory has demonstrated that people can learn social information from observing others, including mass media representations (Bandura, 2001). In the case of audiovisual presentations of narratives—such as television, film, and theater—the parallel should be obvious. If we can learn social norms and expectations from others in the real-world, then it seems likely that we might also do the same while observing fictional characters in a story world (Tsai et al., 2007). Narrative consumers might additionally benefit from the vicarious social feedback received by the characters with whom they are identifying, strengthening the effect of observational learning.

There is also ample evidence that we can, and do, learn a multitude of things from fictional narratives within the field of communications (Valkenburg, Peter, & Walther, 2016), with cultivation research demonstrating that our media consumption habits shape how we see the world (Calzo & Ward, 2009; Gerbner, 1969; Morgan & Shanahan, 2010; O'Guinn & Shrum, 1997; Ward, 2003, 2016; cf. Potter, 2014). Individuals who watch more network television see their real-world as similar to what is portrayed: more dangerous, more populated by certain occupations, more likely to be just, and so forth (Appel, 2008; Callanan & Rosenberger, 2015; Gerbner, Gross, Morgan, & Signorielli, 1980; Morgan & Shanahan, 1997; Till, Truong, Mar, & Niederkrotenthaler, 2016). Moreover, social cognition might underlie many of these media effects, based on our profound desire to understand the social world and the shortcomings of our attempts to do so (Shrum, 2002). Research on narrative persuasion has also demonstrated that exposure to the themes in a story can have a causal influence in shifting our beliefs and attitudes (Green & Brock, 2000; Green, Strange, & Brock, 2002; Prentice, Gerrig, & Bailis, 1997). Intriguingly, fictional narratives may be more powerful than expository essays in this regard (Hakemulder, 2000). Fiction actually appears more effective than explicit instruction when it comes to forming novel mental associations (Foroni & Mayr, 2005), with the persuasive power of fiction perhaps being a function of mental simulation (Hodson, Choma, & Costello, 2009). A separate, and large, body of research demonstrates that people can learn falsehoods embedded within fictional stories (Marsh, Meade, & Roediger, 2003; Rapp, 2016). False beliefs engendered by fictional narratives are resistant to change once formed (Marsh & Fazio, 2006), and

the strength of these beliefs increases over time (Appel & Richter, 2007). Importantly, the influence of stories depends in part on past experience, with personal experience enhancing persuasion when the content rings true (Green, 2004), but also aiding in the rejection of false content when it does not (Richter, Schroeder, & Wöhrmann, 2009). Demonstrations that false information can be learned from fictional narratives, along with parallel work on the learning of questionable beliefs (e.g., regarding traditional gender roles; Richter, Appel, & Calio, 2014), highlight the fact that narratives can have positive and negative influences. We should not misinterpret research on narratives and social cognition as evidence that the effects of narratives are solely salutary. However, if people can readily learn falsehoods placed within stories for experiments, it seems very likely that people could also learn truths about the social world from fiction as well. It is an open question as to whether stories contain social truths or more truths than falsehoods. That said, writers appear to make great efforts to pursue truth in their writing (Doyle, 1998) and consumers of fiction typically react poorly to depictions that ring untrue (Richter et al., 2009). Future studies should directly investigate this tenet by employing the established paradigms of cultivation theory and narrative persuasion but using social content knowledge as the dependent variable.

C3. Learned social content must be applied in the real-world

The third tenet of the Social Content account is that consumers must generalize the social information they have learned from stories to the real-world. As with the second tenet, there is not much direct evidence for this, but a great deal of indirect evidence does exist. Much of the research on cultivation theory, narrative persuasion, and the learning of falsehoods from fiction, demonstrates that social content knowledge can be applied to judgments of the real-world (Green et al., 2002; Morgan & Shanahan, 2010; Rapp, 2016). Importantly, these effects occur despite the fact that people recognize that these fictions are not meant to be taken as reality. Although social content has not been examined directly in work on narrative persuasion, there is no reason why this could not be done. In narrative persuasion research, attitudes toward things like sunscreen use are routinely measured; replacing measurement of these attitudes with knowledge regarding human psychology would seem to be both possible and informative. In summary, although there is indirect evidence that knowledge gleaned from fictional narratives can be learned and applied to the real-world, direct evidence that this occurs with respect to social knowledge is somewhat wanting.

CO. Outcomes for social content

If all of these necessary tenets hold true, and the social content embedded in stories is learned and applied, what sorts of outcomes would we expect to see? First, those who engage more frequently with stories would be expected to exhibit a greater depth of social knowledge, demonstrating a deeper understanding of human psychology and human relationships. This could take the form of holding more detailed and nuanced representations of social constructs, or exhibiting a greater capacity for elaboration when probed for social knowledge. Second, these individuals might exhibit a greater breadth of social knowledge. This would mean possessing a wider range of social concepts, perhaps accompanied by greater diversity in these concepts, relative to those with less story exposure. We also might expect frequent story consumers to be more likely to apply social content knowledge. Importantly, all of these possibilities are mututally exclusive. Last, similar to the distal outcomes expected for the Social Process account, improvements in moral behavior and reasoning, prosocial behavior, and tolerance for differences in thinking and action might also be observed. These distal outcomes should be less likely and less pronounced than the proximal outcomes hypothesized above, however.

There is, unfortunately, very little empirical research examining these possible outcomes of the Social Content account. An unpublished study on narrative exposure and social concept fluency, performed in collaboration with Camiel Beukeboom, examined whether lifetime exposure to stories predicts greater fluency when generating examples of trait-related behavior (Beukeboom & Mar, unpublished data). Based on data from 240 participants (150 female), those exposed to more narrative

fiction generated a higher number of concrete behaviors tied to the Big Five personality traits (John & Srivastava, 1999), controlling for various other factors using partial correlation (i.e., gender, age, nonfiction exposure, response bias), pr = .16 (95% CI: .01, .30), p = .01. Adding fluency for a nonsocial topic as an additional control (i.e., Art) attenuated this correlation, pr = .11 (95% CI: -.02, .22), p = .11. Based on these data, associations between stories and social concept fluency are likely to be small, with large samples required to detect effects.

Boundaries and limitations

There are notable boundaries and limitations to the theoretical account laid out by the SPaCEN framework. First, it must be emphasized that any putative outcome associated with story engagement will not occur for all people, all of the time. Stories are not a magical panacea that can force the acquisition of social knowledge or guarantee the improvement of a cognitive process. The idea that media consumers can be easily shaped by a particular message was debunked long ago, in the form of the "direct injection" hypothesis of media effects (Valkenburg et al., 2016). Rather, it is more appropriate to view stories as an opportunity: an opportunity to engage social processes by thinking about characters and an opportunity to learn about human nature. Not everyone will be sufficiently motivated and capable of taking up this opportunity. As a result, there are likely to be a wide variety of moderators that influence whether stories impact social cognition. These moderators are likely to exert the greatest influence between the first and second and second and third tenets of both the Process and Content accounts (Figure 1). For example, stories might be more likely to elicit social processes among individuals who possess certain traits, such as an openness to new ideas (i.e., Openness to Experience; McCrae & Sutin, 2009), or a tendency to become deeply absorbed (Tellegen & Atkinson, 1974) or engaged with narratives (known as narrative transportation; Busselle & Bilandzic, 2009; Gerrig, 1993; Green & Brock, 2000). Similarly, social content may be more likely to be learned by individuals who are highly motivated to do so, as a function of their trait agreeableness (Graziano & Eisenberg, 1997), or those with a chronically-activated goal to learn about others. There are also likely to be situational moderators for individual story presentations. A noisy environment might make it too distracting to either engage social cognitive processes or learn social content, for example. Different people also prefer different kinds of stories, with fit between narrative consumers and the narrative presented likely being a key moderator of any effects (Panero et al., 2016). In sum, it is apparent that there exist several likely moderators associated with the individual, the narrative, the situation, and their interaction. These moderators will result in an attenuated effect for individual cases, resulting in an overall attenuation of effects when examining group averages.

Second, even if we learn from stories, it is important to recognize that stories are not an ideal platform for learning. Learning occurs most rapidly in contexts when accurate feedback is immediate, when corrections follow errors, and when rewards follow successes. With stories, however, we might not immediately know if we made an incorrect inference regarding a character's mental state or if some putative piece of social knowledge is actually incorrect. Moreover, there would seem to be few consequences for errors. In most cases, ambiguities regarding such things are not seriously deleterious to the enjoyment of a narrative with many things eventually made clear by the end of a story. Because narratives appear to be a weak training context, any influence of stories on social cognitive processes and social knowledge seem likely to emerge only after prolonged, repeated, and frequent exposure. Similar to any other relatively subtle influence that might occur inconsistently, effects should emerge as a result of cumulative experience. If we adopt the metaphor of exercising a muscle (Zunshine, 2006), it would take some time for any effect of a single attempted push-up each week to emerge, and we should harbor similar expectations for the influence of stories on social cognition. This notable limitation will also attenuate any observable effects or outcomes (Figure 1, L).

Third, for the outcomes under question (i.e., social processes and social knowledge), there are a great many contributors and influences, with exposure to stories playing just one, possibly minor, role. Social cognitive processes and social knowledge arise from a great many sources, including

interactions between genetic inheritance, affordances of the environment, personal experience, and motivation. Exposure to stories would therefore constitute just one part of our personal experience and should accordingly be seen as just one possible contributor to the development of very complex abilities. When there are multiple causes for a single outcome, the association between any single cause and that outcome will be small. If, for example, only four separate factors determine some outcome, the maximum correlation between any factor and that outcome will be .45 (Ahadi & Diener, 1989; Strube, 1991). It is certainly easy to imagine more than four possible contributors to our social cognitive abilities, and so our expectations for the magnitude of association between narratives and social cognition should be tempered accordingly.

For all these reasons, we should expect to see a small effect of stories on social cognition. Because the average effect-size in psychology is equivalent to an r of about .25 (Hemphill, 2003; Richard, Bond, & Stokes-Zoota, 2003) with a standard deviation of about .17 (Fraley & Marks, 2007), it would not be surprising for the effects of stories on social cognition to fall within a range of r = .08 to .25 (within 1 SD below the mean). As always, it is important to remember that the practical or meaningful significance of any effect is not established by effect-size magnitude (or statistical significance; Fraley & Marks, 2007), with the practical meaning of any effect being a function of context and outcomes (Meyer et al., 2001). If social cognition is seen as an important and valuable outcome, therefore, then even small improvements in social cognition might be meaningful and worth investigating.

An example of the SPaCEN framework in use

The SPaCEN framework provides an organizing structure for evaluating the available evidence that stories have a positive influence on social cognition. In order to use the framework, a particular social process or type of social knowledge should be interrogated with respect to each of the necessary tenets outlined by the framework. With respect to social processes, this means evaluating what evidence exists that the process is elicited by stories (P2), that this process can be improved through practice (P3), and whether there is a benefit to this process as a result of narrative consumption (PO). The first tenet of the Social Process account (P1) applies to all social processes equally and so does not require evaluation for each specific process, but it should be broadly investigated nonetheless. For social content knowledge, it must be established that the relevant content appears in stories (C1), that it is learned by readers (C2), and then applied in the real-world (C3), resulting in the expected outcomes (CO). To illustrate the utility of this framework, we present an example of how the SPaCEN framework can be used to organize and evaluate the current evidence that stories improve mentalizing, because mentalizing is the social process that has been investigated most exhaustively thus far.

The evocation of mentalizing

According to the Social Process account of the SPaCEN framework, we should first examine what evidence exists that stories elicit or invite mentalizing. As for many questions regarding the presence or absence of covert mental processes, some of the strongest evidence originates in neuroscience research. An early review of patient and brain-imaging studies pertaining to story comprehension implicated a set of brain areas that resembles the mentalizing network (Mar, 2004; Mason & Just, 2009). Subsequent quantitative meta-analyses confirmed that neuroimaging studies on story comprehension and those on mentalizing identify a set of shared brain regions associated with both (Ferstl, Neumann, Bogler, & von Cramon, 2008, Mar, 2011). This is consistent with the idea that mentalizing is evoked during story comprehension. A real strength of these reviews is that their conclusions are based on a large number of studies originating in many different labs. Moreover, these studies were not intended to study how story comprehension and mentalizing relate, but rather each process individually, ruling out participant reactivity or experimenter demand. The fact that similar patterns of results are observed for both patient studies and neuroimaging studies is also

encouraging. However, it is important to be cautious in interpreting these reviews. Although there are overlapping brain regions implicated for both story comprehension and mentalizing, there are also areas of nonoverlap. Moreover, although it is true that these shared regions could indicate that mentalizing is evoked during story comprehension, other interpretations exist. This shared network could represent some other, more basic, process underlying both story comprehension and mentalizing, or this network might perform different functions depending on the current context and goals (Ferstl & von Cramon, 2002; Mar, 2011). Moving forward, regions of nonoverlap should be examined in order to better evaluate how story comprehension and mentalizing relate. Moreover, within-subject studies that examine both processes within the same individuals would help us better answer this question (e.g., Ferstl & von Cramon, 2002). For example, Tamir and colleagues (2016) found that people who had read more stories in their lifetime had greater activation of the mentalizing network in response to the social content of stories compared to those who had read fewer stories. Importantly, this response to the social content of stories helped to partially explain the correlation between lifetime reading habits and mentalizing performance. This exemplary study should be adopted as a model for examining how the social content of stories relates to the evocation of mentalizing processes. In addition, it would be nice to see investigations using other approaches, since neuroscience and neuroimaging studies generally suffer from low statistical power as a result of pragmatic considerations like cost and recruitment (Button et al., 2013; cf. Mar, Spreng, & DeYoung, 2013).

The malleability of mentalizing

Second, the SPaCEN framework proposes that it is necessary to evaluate the evidence that mentalizing can be improved through practice or training. Many of the studies on training theory-of-mind abilities examine children, and a good proportion of these studies focus on special populations, such as children with autism spectrum disorder (ASD; Barnes, 2012) or social handicaps (Steerneman, Jackson, Pelzer, & Muris, 1996). The results of these studies are a bit mixed, which is not surprising given the heterogeneous nature of ASD. Some studies have demonstrated that theory-of-mind skills can be successfully trained in children with ASD (Fisher & Happé, 2005; Hale & Tager-Flusberg, 2003), with numerous interventions employing fictional stories (Tsunemi et al., 2014; Waugh & Peskin, 2015). However, this training can fail to generalize beyond specific tasks and may lead to superficial learning (Begeer et al., 2011; Swettenham, 1996). In studies of normally-developing children, participants are often preselected based on a difficulty with theory-of-mind. Based on these populations, story-based training appears to be effective in improving theory-of-mind (Benson, Sabbagh, Carlson, & Zelazo, 2013; Knoll & Charman, 2000; Lu, Su, & Wang, 2008; Slaughter & Gopnik, 1996), and the benefits may last for weeks (Guajardo & Watson, 2002), although they may not generalize to other tasks (Knoll & Charman, 2000).

Some studies have also examined normally-developing children without preselecting for theory-of-mind difficulty. These often examine older children and take quite a different approach. For example, children from larger families are better at false-belief reasoning, illustrating that social experience might foster mentalizing (e.g., Perner, Ruffman, & Leekam, 1994; Ruffman, Perner, Naito, Parkin, & Clements, 1998). Drama classes might also aid social skills (Schellenberg, 2004), although there are contradictory findings in this area (Goldstein & Winner, 2012). Most promisingly, children guided through structured conversations prompted by stories exhibit better improvement in theory-of-mind relative to controls (Ornaghi, Brockmeier, & Grazzani, 2014). One other study found that role-playing a character helped children later take the perspective of this character (Furumi & Koyasu, 2014), which has obvious parallels to identifying with a fictional character.

Research on adults parallels the evidence with children, focusing primarily on individuals with mentalizing deficits (e.g., those with ASD) and demonstrating that training programs can be effective (e.g., Kandalaft, Didehbani, Krawczyk, Allen, & Chapman, 2013; Turner-Brown, Perry, Dichter, Bodfish, & Penn, 2008). There is some research, however, demonstrating the malleability of mentalizing ability in normally-developing adults. A single dose of oxytocin (a neuropeptide linked

to affiliative behavior) is sufficient to produce improvements in mentalizing compared to placebo controls, for example (Domes, Heinrichs, Michel, Berger, & Herpertz, 2007). Training programs intended to foster self-understanding or develop meditation practice have also shown promise (Böckler, Herrmann, Trautwein, Holmes, & Singer, 2017; Mascaro, Rilling, Tenzin Negi, & Raison, 2012). On the whole, then, there is encouraging evidence that mentalizing ability is amenable to improvement through practice, for a variety of populations.

The outcomes for mentalizing

Finally, the SPaCEN framework predicts that if stories present or evoke representations of the social world, resulting in the engagement of mentalizing processes, and these processes can be improved through training, then we should see some benefits for mentalizing ability among those exposed to more stories. Mentalizing should be more accurate, less effortful, more rapid, and possibly more enjoyable for those exposed to more stories. Despite this variety of expected outcomes, the great majority of past research has focused on the question of accuracy. One notable exception is a study demonstrating that exposure to text predicts better understanding of mental-state verbs, even after controlling for education, academic performance, and reading comprehension (Siddiqui et al., 1998). This study did not differentiate between narrative and non-narrative texts, however. A subsequent study examined the association between reading narrative texts and mentalizing accuracy, controlling for exposure to non-narrative expository texts, and found that stories uniquely predict mentalizing accuracy (Mar, Oatley, Hirsh, Dela Paz, & Peterson, 2006). This correlation between exposure to narrative texts and mentalizing accuracy is robust and replicable, based on a recent meta-analysis of 14 similar studies (Mumper & Gerrig, 2017). On average, the effect-size of this association was estimated to be an r of .21 (95% CI: .15, .27), which falls on the lower bound of the middle third for effect-sizes observed in psychology (Hemphill, 2003). Exposure to nonfiction texts was also found to predict mentalizing accuracy in this meta-analysis, albeit at half the magnitude (r = .09; 95% CI: .02, .16). However, many of these studies do not control for the variance shared between fiction and nonfiction exposure (and the two are highly correlated; e.g., r = .60; Mar, Oatley, & Peterson, 2009). In studies that have controlled for this shared variance, fiction exposure remains a predictor of mentalizing accuracy, whereas nonfiction does not (Mar et al., 2006, 2009; Mumper & Gerrig, 2017).

A separate body of research examines the same question but from a developmental perspective: are children who are exposed to more storybooks also more advanced in their theory-of-mind development? Based on the available evidence, the answer would appear to be yes. Parents who are better at recognizing the authors and titles of children's storybooks have children with more advanced theory-of-mind (Mar, Tackett, & Moore, 2010). Importantly, parental recognition of adult authors does not predict child mentalizing ability, and the correlation between storybook exposure and theory-of-mind remains even after controlling for the child's age, gender, verbal ability, and parental income. There is also some evidence that this association is present cross-culturally. In Spain, for example, parental reports of child reading predicts performance on a false-task for these children (Adrian, Clemente, Villanueva, & Rieffe, 2005).

All of these studies are correlational, however, which means that causal direction cannot be inferred. It may be that exposure to fiction is responsible for improving mentalizing accuracy, those with more accurate mentalizing abilities might be more attracted to narrative fiction, or some third variable could be responsible for the association between the two. In order to attempt to rule out third-variable explanations, past studies of this type have controlled for other factors statistically, including gender, trait tendencies to become absorbed by fiction (i.e., trait transportation), English language fluency, age, the personality trait Openness to Experience, and general intelligence (g). That said, it is very difficult to appropriately rule out the influence of third-variables statistically (Westfall & Yarkoni, 2016), and so further investigation of potential third-variable explanations is warranted.

Other researchers have adopted an experimental paradigm to investigate whether reading narrative fiction has a causal influence on mentalizing ability. In these studies, participants are typically randomly-assigned to read a short narrative text or an alternative, with mentalizing accuracy

measured directly after. For example, Kidd and Castano (2013) employed this approach and reported that only literary fiction had an effect, but not reading popular fiction, expository nonfiction, or nothing at all (cf. Kidd, Ongis, & Castano, 2016). However, subsequent attempts to replicate these results have failed to reproduce them (Panero et al., 2016; Samur, Tops, & Koole, 2017; cf. Kidd & Castano, 2017; Panero et al., 2017) and how to define or identify literary fiction has long been debated (Louwerse, Benesh, & Zhang, 2008). Some of the other experiments that have successfully demonstrated a causal influence of stories on mentalizing ability have either employed a long-term intervention (e.g., reading a book for 2 weeks; Pino & Mazza, 2016) or a within-subjects design that controls for individual differences between conditions (Black & Barnes, 2015a). Experimental research on other media has also shown some promise, with award-winning narrative television causing a short-term increase in mentalizing accuracy, but not award-winning documentary television (Black & Barnes, 2015b). In addition, attending to the narrative elements of a video game results in improvements in mentalizing accuracy, relative to attending to other aspects of the game (e.g., control scheme) or playing a nonnarrative game (Bormann & Greitemeyer, 2015). (For a meta-analysis aggregating experiments on mentalizing with those for other social cognitive abilities, see Dodell-Feder & Tamir, in press).

One limitation of these experimental investigations is that they do not appear to map well onto the theoretical account advanced thus far. If improvements in mentalizing accuracy result from frequent and prolonged practice effects based on repeated exposure, then one would not expect to see such improvements following a single brief exposure. To draw a parallel, this would be akin to studying whether cigarettes cause cancer by randomly assigning participants to smoke a single cigarette or not, then looking for evidence of cancer. This lack of theoretical justification for an immediate effect based on a brief exposure may perhaps explain the mixed findings observed thus far. Moreover, when effects are observed at all, they may reflect an entirely different process or phenomenon than the one theorized to underlie the effects observed across a lifespan of exposure. It may be, for example, that exposure to a narrative puts consumers into a mentalizing mental mode that carries over for a brief time after consumption, making them briefly more interested and motivated to infer mental states. This would explain any short-term and immediate benefits to mentalizing following narrative exposure, but this carry-over effect may or may not play an essential role in the process that explains any long-term effects that accumulate over time. Another limitation of these studies is that it is not known how long any effects, when observed, may last. It may be that the experimental method, although powerful in its ability to support causal influences when enacted properly, could be a poor fit for this topic. Because exposure to narratives is typically a very personal, self-selected leisure activity (Nell, 1988) and its influence is likely to be cumulative, occurring over long spans of time, randomly assigning people to briefly read or watch something they normally would not seems unlikely to produce behaviors akin to the real-world phenomena under question.

In employing the SPaCEN framework to examine the Social Process account and mentalizing in particular, we can see that most of the evidence appears to relate to outcomes and mentalizing accuracy. There are, however, several notable limitations to this work. Most notably, studies of this type have relied heavily on a single measure of mentalizing accuracy, the Reading-the-Mind-in-the-Eyes-Test—Revised (RMET; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). This test involves presenting pictures of a person's eye-region, and asking respondents to choose the mental state that person is currently feeling from among four options. Validity evidence for the RMET has accrued in various forms. It is sensitive to the mentalizing deficit found in ASD (Baron-Cohen et al., 2001), replicates the mentalizing advantage held by women (Kirkland, Peterson, Baker, Miller, & Pulos, 2013; Warrier et al., 2017), is influenced by oxytocin (Domes et al., 2007), engages brain regions typically associated with mentalizing (see Appendix of Adams et al., 2010), has acceptable test–retest reliability (Khorashad et al., 2015), and possesses clear advantages over self-report (i.e., does not rely on meta-cognitive awareness or honest reporting).

This measure, however, has not escaped criticism. It may be multidimensional in nature (Olderbak et al., 2015; cf. Preti, Vellante, & Petretto, 2017), for example, and might better reflect

the recognition of facial emotions rather than the inference of mental states (Oakley, Brewer, Bird, & Catmur, 2016). If the latter is true, this would be problematic in terms of conceptual clarity, but in the current context it is no less interesting that narratives correlate with emotion recognition rather than mentalizing. A more damning criticism is that RMET scores also reflect verbal intelligence (Baker, Peterson, Pulos, & Kirkland, 2014), with the meta-analytic estimate of their association equivalent to an *r* of .24 (95% CI [.13, .34]; Baker et al., 2014). This means that the association between narrative and mentalizing accuracy could partly reflect the link between reading and verbal ability (Mol & Bus, 2011). This possibility is even more unsettling because narrative fiction has stronger associations with verbal ability than expository nonfiction (Mar & Rain, 2015). However, some studies have controlled for verbal intelligence and observed robust associations between narrative texts and RMET scores (Fong, Mullin, & Mar, 2013; Mar et al., 2006, 2009; cf. Westfall & Yarkoni). That said, relying predominantly on a single measure for a key construct is detrimental to any research enterprise and can lead to fragile results. Future studies should employ a wider diversity of measures for mentalizing (cf. Ickes, 1997; Kidd & Castano, 2013; Mar et al., 2006; Pino & Mazza, 2016), and these measures should not rely heavily on language comprehension, unless appropriate steps are taken to control for comprehension abilities (Dodell-Feder, Lincoln, Coulson, & Hooker, 2013; Gregory et al., 2002; Nettle & Liddle, 2008).

Conclusions for mentalizing

In summary, this example of how the Social Process account of the SPaCEN framework can be applied to research on narrative and mentalizing has highlighted the strengths of this framework and provided evidence of its utility. By formalizing the necessary tenets of the Social Process account, the SPaCEN framework has helped organize extant research and identify both the strengths and weaknesses of research on narrative and mentalizing. We appear to have the most evidence regarding the outcomes that should result from practicing mentalizing during story comprehension, along with decent neuroscience evidence that stories elicit mentalizing. This framework has also helped identify a number of areas that require further investigation. This includes a need for direct evidence that mentalizing can be improved through practice and greater attention to other kinds of outcomes aside from accuracy (e.g., effort, speed, and possibly enjoyment). In structuring this brief review of the mentalizing research available, the SPaCEN framework has also brought to light several areas for improvement, such as investigating the nonoverlapping brain areas for our neuroscience evidence, the theoretical isolation and inconsistency of experimental investigations into mentalizing accuracy, and the heavy reliance on a single measure for most of these accuracy studies. The SPaCEN framework should be useful for evaluating the existing research on other social processes (e.g., empathy) as well as guiding future work on social content.

General conclusion

The SPaCEN framework formalizes theoretical thinking around whether and why stories might promote social cognition by outlining the necessary tenets and expected outcomes for two major accounts: (1) that Social Processes improve through practice during engagement with stories, and (2) that Social Content is learned during engagement with stories and later applied. By specifying the necessary tenets of these two accounts, the SPaCEN framework serves two major purposes: (1) identifying those elements of the theoretical accounts that currently benefit from strong evidence and (2) identifying those research questions that require further investigation.

Research questions with the most evidence thus far

It appears that a great deal more evidence exists for the Social Process account relative to the Social Content account. Within the Social Process account, most of the evidence surrounds just one particular process: mentalizing. Moreover, the majority of the mentalizing evidence supports

only one of the necessary tenets of this account (i.e., the evocation of mentalizing) and only one of the possible outcomes (i.e., mentalizing accuracy). Although there is relatively greater evidence for these aspects of the framework compared to others, this should not be interpreted to mean that there is sufficient evidence for these ideas. On the whole, although there has been an uptick in research on this topic, the SPaCEN framework identifies many research questions in need of direct evidence.

Research questions requiring direct evidence and future directions

It is important to expand our examination of the social processes evoked by stories beyond mentalizing, see if these processes are amenable to improvement through practice, and investigate a diversity of possible benefits. This includes other outcomes of mentalizing aside from accuracy, such as the speed of mental inferences, the effort required, and the likelihood of initiating a mentalizing process. More research should also be directed toward the study of other social processes entirely, such as empathy, sympathy, and social memory processes. Currently, research on the relation between stories and empathy is likely the next most prevalent after mentalizing (Bal & Veltkamp, 2013; Djikic, Oatley, & Moldoveanu, 2013; Koopman & Hakemulder, 2015; Stavrova & Meckel, 2017) and the SPaCEN framework should prove useful for evaluating and guiding this work.

Currently, there is little research on the Social Content account, and this promising hypothesis is deserving of greater attention. There has been almost no direct research on whether social content is learned from stories and applied to the real-world, despite the fact that indirect evidence based on other domains of knowledge make this possibility appear rather likely. Whether frequent consumers of stories exhibit benefits with respect to social content knowledge should be a focus of future investigation. Each of the different tenets of the SPaCEN framework can be studied individually with no particular priority specified. That said, if no evidence can be found to support a particular domain with respect to outcomes (e.g., no observable benefit to the accuracy of social memory), then it would be less fruitful to delve into the necessary tenets required to explain such outcomes. Following a similar logic, because the Social Content account has received such little empirical attention thus far, researchers should focus on the proposed outcomes for the various forms of social content.

In addition, there are several other future directions for research that are understudied or nascent. This includes the exploration of moderators related to the individual and individual differences (e.g., transportation, attachment style; Bal & Veltkamp, 2013; Valkenburg & Peter, 2013; Valkenburg et al., 2016). Various aspects of the narrative itself should also be considered as potential moderators, including the interactivity afforded by video games (Bormann & Greitemeyer, 2015; Greitemeyer & Mügge, 2014), the audio–visual presentation of television and films (Black & Barnes, 2015b; Mar et al., 2010; Rosenqvist, Lahti-Nuuttila, Holdnack, Kemp, & Laasonen, 2016), as well as the genre of the narrative. Regarding the latter, there has been a smattering of studies that have highlighted the relative strength of various genres in promoting social cognition, including suspense (Lehne et al., 2015; Zunshine, 2006), Romance (Carney, Wlodarski, & Dunbar, 2014; Fong et al., 2013), and literary fiction (Kidd & Castano, 2013, 2017; Koopman, 2016; Wulandini & Handayani, 2018). Results have been inconsistent, however, and more research on genre is required.

In conclusion, the SPaCEN framework makes it clear that although a great number of studies have been conducted on this topic, there is still much that can be improved upon and many promising avenues that remain unexplored. We hope that this framework provides some useful guidance to researchers interested in whether stories might promote social cognition.

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References

Achim, A. M., Guitton, M., Jackson, P. L., Boutin, A., & Monetta, L. (2013). On what ground do we mentalize? Characteristics of current tasks and sources of information that contribute to mentalizing judgments. *Psychological Assessment*, *25*(1), 117–126. doi:10.1037/a0029137

Adams, Jr., R. B., Rule, N. O., Franklin, Jr, R. G., Wang, E., Stevenson, M. T., Yoshikawa, S., … Ambady, N. (2010). Cross-cultural reading the mind in the eyes: An fMRI investigation. *Journal of Cognitive Neuroscience*, *22*(1), 97–108. doi:10.1162/jocn.2009.21187

Adrian, J. E., Clemente, R. A., Villanueva, L., & Rieffe, C. (2005). Parent–child picture-book reading, mothers' mental state language and children's theory of mind. *Journal of Child Language*, *32*, 673–686. doi:10.1017/S0305000905006963

Ahadi, S., & Diener, E. (1989). Multiple determinants and effect size. *Journal of Personality and Social Psychology*, *56*(3), 398–406. doi:10.1037/0022-3514.56.3.398

Appel, M., & Richter, T. (2007). Persuasive effects of fictional narratives increase over time. *Media Psychology*, *10*(1), 113–134.

Appel, M. (2008). Fictional narratives cultivate just-world beliefs. *Journal of Communication*, *58*(1), 62–83. doi:10.1111/j.1460-2466.2007.00374.x

Aristotle. (330 BCE/1987). *Poetics* (R. Janko, Trans.). Cambridge, MA: Hackett.

Baker, C. A., Peterson, E., Pulos, S., & Kirkland, R. A. (2014). Eyes and IQ: A meta-analysis of the relationship between intelligence and "Reading the Mind in the Eyes". *Intelligence*, *44*, 78–92. doi:10.1016/j.intell.2014.03.001

Bal, P. M., & Veltkamp, M. (2013). How does fiction reading influence empathy? An experimental investigation on the role of emotional transportation. *PLoS ONE*, *8*, e55341. doi:10.1371/journal.pone.0055341

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (2001). Social cognitive theory of mass communication. *Media Psychology*, *3*(3), 265–299. doi:10.1207/S1532785XMEP0303_03

Barnes, J. L. (2012). Fiction, imagination, and social cognition: Insights from autism. *Poetics*, *40*, 299–316. doi:10.1016/j.poetic.2012.05.001

Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The "Reading the Mind in the Eyes" test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry*, *42*(2), 241–251. doi:10.1111/jcpp.2001.42.issue-2

Barraza, J. A., Alexander, V., Beavin, L. E., Terris, E. T., & Zak, P. J. (2015). The heart of the story: Peripheral physiology during narrative exposure predicts charitable giving. *Biological Psychology*, *105*, 138–143. doi:10.1016/j.biopsycho.2015.01.008

Begeer, S., Gevers, C., Clifford, P., Verhoeve, M., Kat, K., Hoddenbach, E., & Boer, F. (2011). Theory of mind training in children with autism: A randomized controlled trial. *Journal of Autism and Developmental Disorders*, *41*(8), 997–1006. doi:10.1007/s10803-010-1121-9

Benson, J. E., Sabbagh, M. A., Carlson, S. M., & Zelazo, P. D. (2013). Individual differences in executive functioning predict preschoolers' improvement from theory-of-mind training. *Developmental Psychology*, *49*(9), 1615–1627. doi:10.1037/a0031056

Black, J. E., & Barnes, J. L. (2015a). The effects of reading material on social and non-social cognition. *Poetics*, *52*, 32–43. doi:10.1016/j.poetic.2015.07.001

Black, J. E., & Barnes, J. L. (2015b). Fiction and social cognition: The effect of viewing award-winning television dramas on theory of mind. *Psychology of Aesthetics, Creativity, and the Arts*, *9*, 423–429. doi:10.1037/aca0000031

Böckler, A., Herrmann, L., Trautwein, F. M., Holmes, T., & Singer, T. (2017). Know thy selves: Learning to understand oneself increases the ability to understand others. *Journal of Cognitive Enhancement*, *1*(2), 197–209. doi:10.1007/s41465-017-0023-6

Bormann, D., & Greitemeyer, T. (2015). Immersed in virtual worlds and minds: Effects of in-game storytelling on immersion, need satisfaction, and affective theory of mind. *Social Psychological and Personality Science*, *6*, 646–652. doi:10.1177/1948550615578177

Boyd, B. (2009). *On the origin of stories: Evolution, cognition, and fiction*. Cambridge, MA: Harvard University Press.

Busselle, R., & Bilandzic, H. (2009). Measuring narrative engagement. *Media Psychology*, *12*, 321–347. doi:10.1080/15213260903287259

Button, K. S., Ioannidis, J.P.A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E.S.J., & Munafó, M. R. (2013). Power failure: Why small sample size undermines the reliability of neuroscience. *Nature Reviews Neuroscience*, *14*(5), 365–376. doi:10.1038/nrn3475

Callanan, V., & Rosenberger, J. S. (2015). Media, gender, and fear of crime. *Criminal Justice Review*, *40*(3), 322–339. doi:10.1177/0734016815573308

Calzo, J. P., & Ward, L. M. (2009). Media exposure and viewers' attitudes toward homosexuality: Evidence for mainstreaming or resonance? *Journal of Broadcasting & Electronic Media*, *53*(2), 280–299. doi:10.1080/08838150902908049

Campbell, J. (1949). *The hero with a thousand faces*. Princeton, NJ: Princeton University.

Carney, J., Wlodarski, R., & Dunbar, R. (2014). Inference or enaction? The impact of genre on the narrative processing of other minds. *PloS One*, *9*(12), e114172. doi:10.1371/journal.pone.0114172

Carruthers, P., & Smith, P.K. (Eds.). (1996). *Theories of theories of mind*. Cambridge,UK: Cambridge University Press.

Carver, C. S., Ganellen, R. J., Froming, W. J., & Chambers, W. (1983). Modeling: An analysis in terms of category accessibility. *Journal of Experimental Social Psychology*, *19*(5), 403–421. doi:10.1016/0022-1031(83)90019-7

Cassidy, K. W., Ball, L. V., Rourke, M. T., Werner, R. S., Feeny, N., Chu, J. Y., & Perkins, A. (1998). Theory of mind concepts in children's literature. *Applied Psycholinguistics*, *19*(03), 463–470.

Cupchik, G. C. (2002). The evolution of psychical distance as an aesthetic concept. *Culture & Psychology*, *8*(2), 155–187. doi:10.1177/1354067X02008002437

Djikic, M., Oatley, K., & Peterson, J. B. (2006). The bitter-sweet labor of emoting: The linguistic comparison of writers and physicists. *Creativity Research Journal*, *18*(2), 191–197. doi:10.1207/s15326934crj1802_5

Djikic, M., Oatley, K., & Moldoveanu, M. C. (2013). Reading other minds: Effects of literature on empathy. *Scientific Study of Literature*, *3*(1), 28–47. doi:10.1075/ssol.3.1

Dodell-Feder, D., Lincoln, S. H., Coulson, J. P., & Hooker, C. I. (2013). Using fiction to assess mental state understanding: A new task for assessing theory of mind in adults. *PLoS One*, *8*(11), e81279. doi:10.1371/journal.pone.0081279

Dodell-Feder, D., & Tamir, D. I. (in press). Fiction reading has a small positive impact on social cognition: A meta-analysis. *Journal of Experimental Psychology: General*.

Domes, G., Heinrichs, M., Michel, A., Berger, C., & Herpertz, S. C. (2007). Oxytocin improves "mind-reading" in humans. *Biological Psychiatry*, *61*(6), 731–733. doi:10.1016/j.biopsych.2006.07.015

Doyle, C. L. (1998). The writer tells: The creative process in the writing of literary fiction. *Creativity Research Journal*, *11*(1), 29–37. doi:10.1207/s15326934crj1101_4

Dunbar, R. I. (2004). Gossip in evolutionary perspective. *Review of General Psychology*, *8*(2), 100–110. doi:10.1037/1089-2680.8.2.100

Dyer, J. R., Shatz, M., & Wellman, H. M. (2000). Young children's storybooks as a source of mental state information. *Cognitive Development*, *15*, 17–37. doi:10.1016/S0885-2014(00)00017-4

Epley, N., Waytz, A., & Cacioppo, J. T. (2007). On seeing human: A three-factor theory of anthropomorphism. *Psychological Review*, *114*(4), 864–886. doi:10.1037/0033-295X.114.4.864

Ferstl, E. C., Neumann, J., Bogler, C., & von Cramon, D. Y. (2008). The extended language network: A meta-analysis of neuroimaging studies on text comprehension. *Human Brain Mapping*, *29*(5), 581–593. doi:10.1002/(ISSN)1097-0193

Ferstl, E. C., & von Cramon, D. Y. (2002). What does the frontomedian cortex contribute to language processing: Coherence or theory of mind? *NeuroImage*, *17*(3), 1599–1612. doi:10.1006/nimg.2002.1247

Fisher, N., & Happé, F. (2005). A training study of theory of mind and executive function in children with autistic spectrum disorders. *Journal of Autism and Developmental Disorders*, *35*(6), 757–771. doi:10.1007/s10803-005-0022-9

Fiske, S. T., & Linville, P. W. (1980). What does the schema concept buy us? *Personality and Social Psychology Bulletin*, *6*(4), 543–557. doi:10.1177/014616728064006

Fiske, S. T., & Taylor, S. E. (2013). *Social cognition: From brains to culture*. London, England: SAGE Publications.

Fong, K., Mullin, J. B., & Mar, R. A. (2013). What you read matters: The role of fiction genre in predicting interpersonal sensitivity. *Psychology of Aesthetics, Creativity, and the Arts*, *7*(4), 370–376. doi:10.1037/a0034084

Foroni, F., & Mayr, U. (2005). The power of a story: New, automatic associations from a single reading of a short scenario. *Psychonomic Bulletin & Review*, *12*(1), 139–144. doi:10.3758/BF03196359

Fraley, R. C., & Marks, M. J. (2007). The null hypothesis significance testing debate and its implications for personality research. In R. W. Robins, R. C. Fraley, & R. Krueger (Eds.), *Handbook of research methods in personality psychology* (pp. 149–169). New York, NY: Guilford Press.
Funder, D. C. (1990). Process versus content in the study of judgmental accuracy. *Psychological Inquiry*, *1*(3), 207–209. doi:10.1207/s15327965pli0103_6
Furumi, F., & Koyasu, M. (2014). Role-play facilitates children's mindreading of those with atypical color perception. *Frontiers in Psychology*, *5*. doi:10.3389/fpsyg.2014.00817
Gerbner, G. (1969). Toward "cultural indicators": The analysis of mass mediated public message systems. *AV Communication Review*, *17*(2), 137–148.
Gerbner, G., Gross, L., Morgan, M., & Signorielli, N. (1980). The "mainstreaming" of America: Violence profile no. 11. *Journal of Communication*, *30*(3), 10–29. doi:10.1111/j.1460-2466.1980.tb01987.x
Gerrig, R.J. (1993). *Experiencing narrative worlds*. New Haven, CT: Yale University Press.
Gilboa, A., & Marlatte, H. (2017). Neurobiology of schemas and schema-mediated memory. *Trends in Cognitive Sciences*, *21*, 618–631. doi:10.1016/j.tics.2017.04.013
Goldstein, T. R., & Winner, E. (2012). Enhancing empathy and theory of mind. *Journal of Cognition and Development*, *13*(1), 19–37. doi:10.1080/15248372.2011.573514
Graziano, W. G., & Eisenberg, N. (1997). Agreeableness: A dimension of personality. *Handbook of Personality Psychology*, *18*, 185–213.
Green, M. C. (2004). Transportation into narrative worlds: The role of prior knowledge and perceived realism. *Discourse Processes*, *38*(2), 247–266. doi:10.1207/s15326950dp3802_5
Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, *79*(5), 701–721. doi:10.1037/0022-3514.79.5.701
Green, M. C., Strange, J. J., & Brock, T. C. (Eds.). (2002). *Narrative impact*. Mahwah, NJ: Lawrence Erlbaum Associates.
Gregory, C., Lough, S., Stone, V., Erzinclioglu, S., Martin, L., Baron-Cohen, S., & Hodges, J. R. (2002). Theory of mind in patients with frontal variant frontotemporal dementia and Alzheimer's disease: Theoretical and practical implications. *Brain*, *125*(4), 752–764. doi:10.1093/brain/awf079
Greitemeyer, T., & Mügge, D. O. (2014). Video games do affect social outcomes: A meta-analytic review of the effects of violent and prosocial video game play. *Personality and Social Psychology Bulletin*, *40*(5), 578–589. doi:10.1177/0146167213520459
Guajardo, N. R., & Watson, A. C. (2002). Narrative discourse and theory of mind development. *The Journal of Genetic Psychology*, *163*(3), 305–325. doi:10.1080/00221320209598686
Hakemulder, J. (2000). *The moral laboratory: Experiments examining the effects of reading literature on social perception and moral self-concept* (vol. 34). Amsterdam, NL: John Benjamins.
Hakemulder, J. (2008). Imagining what could happen: Effects of taking the role of a character on social cognition. In S. Zyngier, M. Bortolussi, A. Chesnokova, & J. Auracher (Eds.), *Directions in empirical literary studies* (pp. 139–160). Amsterdam, NL: John Benjamins.
Hale, C. M., & Tager-Flusberg, H. (2003). The influence of language on theory of mind: A training study. *Developmental Science*, *6*(3), 346–359. doi:10.1111/desc.2003.6.issue-3
Hall, J. A., Goh, J. X., Mast, M. S., & Hagedorn, C. (2016). Individual differences in accurately judging personality from text. *Journal of Personality*, *84*(4), 433–445. doi:10.1111/jopy.2016.84.issue-4
Happé, F., Cook, J. L., & Bird, G. (2017). The structure of social cognition: In(ter)dependence of sociocognitive processes. *Annual Review of Psychology*, *68*, 243–267. doi:10.1146/annurev-psych-010416-044046
Hassabis, D., Spreng, R. N., Rusu, A. A., Robbins, C. A., Mar, R. A., & Schacter, D. L. (2014). Imagine all the people: how the brain creates and uses personality models to predict behavior. *Cerebral Cortex*, *24*, 1979–1987. doi:10.1093/cercor/bht042
Heider, F., & Simmel, M. (1944). An experimental study of apparent behavior. *The American Journal of Psychology*, *57*(2), 243–249. doi:10.2307/1416950
Hemphill, J. F. (2003). Interpreting the magnitudes of correlation coefficients. *American Psychologist*, *58*(1), 78–79. doi:10.1037/0003-066X.58.1.78
Hemphill, J. F. (2003). Interpreting the magnitudes of correlation coefficients. *American Psychologist*, *58*, 78–80. doi:10.1037/0003-066X.58.1.78
Hodson, G., Choma, B. L., & Costello, K. (2009). Experiencing alien-nation: Effects of a simulation intervention on attitudes toward homosexuals. *Journal of Experimental Social Psychology*, *45*(4), 974–978. doi:10.1016/j.jesp.2009.02.010
Hogan, P. C. (1997). Literary universals. *Poetics Today*, *18*(2), 223–249. doi:10.2307/1773433
Hogan, P. C. (2003). *The mind and its stories: Narrative universals and human emotion*. Cambridge, England: Cambridge University Press.
Ickes, W. (Ed.). (1997). *Empathic accuracy*. New York, NY: Guilford Press.

John, O. P., & Srivastava, S. (1999). The big five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). New York, NY: Guilford Press.

Johnson, D. R. (2012). Transportation into a story increases empathy, prosocial behaviour, and perceptual bias toward fearful expressions. *Personality and Individual Differences*, *52*(2), 150–155. doi:10.1016/j.paid.2011.10.005

Johnson, D. R., Jasper, D. M., Griffin, S., & Huffman, B. L. (2013). Reading narrative fiction reduces Arab-Muslim prejudice and offers a safe haven from intergroup anxiety. *Social Cognition*, *31*(5), 578–598. doi:10.1521/soco.2013.31.5.578

Johnson, J. A., Carroll, J., Gottschall, J., & Kruger, D. (2011). Portrayal of personality in Victorian novels reflects modern research findings but amplifies the significance of agreeableness. *Journal of Research in Personality*, *45*(1), 50–58. doi:10.1016/j.jrp.2010.11.011

Kandalaft, M. R., Didehbani, N., Krawczyk, D. C., Allen, T. T., & Chapman, S. B. (2013). Virtual reality social cognition training for young adults with high-functioning autism. *Journal of Autism and Developmental Disorders*, *43*(1), 34–44. doi:10.1007/s10803-012-1544-6

Kanske, P., Böckler, A., Trautwein, F. M., Parianen Lesemann, F. H., & Singer, T. (2016). Are strong empathizers better mentalizers? Evidence for independence and interaction between the routes of social cognition. *Social Cognitive and Affective Neuroscience*, *11*(9), 1383–1392. doi:10.1093/scan/nsw052

Khorashad, B. S., Baron-Cohen, S., Roshan, G. M., Kazemian, M., Khazai, L., Aghili, Z., … Afkhamizadeh, M. (2015). The "Reading the Mind in the Eyes" test: Investigation of psychometric properties and test–retest reliability of the Persian version. *Journal of Autism and Developmental Disorders.*, *45*(9), 2651–2666. doi:10.1007/s10803-015-2427-4

Kidd, D., Ongis, M., & Castano, E. (2016). On literary fiction and its effects on theory of mind. *Scientific Study of Literature*, *6*(1), 42–58. doi:10.1075/ssol

Kidd, D. C., & Castano, E. (2013). Reading literary fiction improves theory of mind. *Science*, *342*(6156), 377–380. doi:10.1126/science.1239918

Kidd, D. C., & Castano, E. (2017). Panero et al. (2016): Failure to replicate methods caused the failure to replicate results. *Journal of Personality and Social Psychology*, *112*(3), e1–e4. doi:10.1037/pspa0000072

Kirkland, R. A., Peterson, E., Baker, C. A., Miller, S., & Pulos, S. (2013). Meta-analysis reveals adult female superiority in "Reading the Mind in the Eyes Test". *North American Journal of Psychology*, *15*(1), 121–146.

Knoll, M., & Charman, T. (2000). Teaching false belief and visual perspective taking skills in young children: Can a theory of mind be trained? *Child Study Journal*, *30*(4), 273.

Koopman, E.M.E. (2015). How texts about suffering trigger reflection: Genre, personal factors, and affective responses. *Psychology of Aesthetics, Creativity, and the Arts*, *9*(4), 430–441. doi:10.1037/aca0000006

Koopman, E.M.E. (2016). Effects of "literariness" on emotions and on empathy and reflection after reading. *Psychology of Aesthetics, Creativity, and the Arts*, *10*(1), 82–98. doi:10.1037/aca0000041

Koopman, E.M.E., & Hakemulder, F. (2015). Effects of literature on empathy and self-reflection: A theoretical-empirical framework. *Journal of Literary Theory*, *9*(1), 79–111. doi:10.1515/jlt-2015-0005

Kudo, H., & Dunbar, R.I.M. (2001). Neocortex size and social network size in primates. *Animal Behaviour*, *62*(4), 711–722. doi:10.1006/anbe.2001.1808

Kuiken, D., Miall, D. S., & Sikora, S. (2004). Forms of self-implication in literary reading. *Poetics Today*, *25*(2), 171–203. doi:10.1215/03335372-25-2-171

Larsen, N. E., Lee, K., & Ganea, P. A. (in press). Do storybooks with anthropomorphized animal characters promote prosocial behaviors in young children? *Developmental Science*, e12590.

Lehne, M., Engel, P., Rohrmeier, M., Menninghaus, W., Jacobs, A. M., & Koelsch, S. (2015). Reading a suspenseful literary text activates brain areas related to social cognition and predictive inference. *PLoS ONE*, *10*, e0124550. doi:10.1371/journal.pone.0124550

Louwerse, M. M., Benesh, N., & Zhang, B. (2008). Computationally discriminating literary from non-literary texts. In S. Zyngier, M. Bortolussi, A. Chesnokova, & J. Auracher (Eds.), *Directions in empirical literary studies* (pp. 175–192). Amsterdam, NL: Benjamins.

Lu, H., Su, Y., & Wang, Q. (2008). Talking about others facilitates theory of mind in Chinese preschoolers. *Developmental Psychology*, *44*(6), 1726–1736. doi:10.1037/a0013074

Mar, R. A. (2004). The neuropsychology of narrative: story comprehension, story production and their interrelation. *Neuropsychologia*, *42*, 1414–1434. doi:10.1016/j.neuropsychologia.2003.12.016

Mar, R. A. (2011). The neural bases of social cognition and story comprehension. *Annual Review of Psychology*, *62*, 103–134. doi:10.1146/annurev-psych-120709-145406

Mar, R. A., Oatley, K., Hirsh, J., Dela Paz, J., & Peterson, J. B. (2006). Bookworms versus nerds: Exposure to fiction versus non-fiction, divergent associations with social ability, and the simulation of fictional social worlds. Journal of Research in Personality, *40*(5), 694–712. doi:10.1016/j.jrp.2005.08.002

Mar, R. A., Kelley, W. M., Heatherton, T. F., & Macrae, C. N. (2007). Detecting agency from the biological motion of veridical versus animated agents. *Social Cognitive And Affective Neuroscience*, *2*, 199–205. doi:10.1093/scan/nsm011

Mar, R. A., & Oatley, K. (2008). The function of fiction is the abstraction and simulation of social experience. *Perspectives on Psychological Science*, *3*, 173–192. doi: 10.1111/j.1745-6924.2008.00073.x

Mar, R. A., Oatley, K., & Peterson, J. B. (2009). Exploring the link between reading fiction and empathy: Ruling out individual differences and examining outcomes. *Communications*, *34*(4), 407–428. doi:10.1515/COMM.2009.025

Mar, R. A., Tackett, J. L., & Moore, C. (2010). Exposure to media and theory-of-mind development in preschoolers. *Cognitive Development*, *25*(1),69–78. doi:10.1016/j.cogdev.2009.11.002

Mar, R. A., Oatley, K., Djikic, M., & Mullin, J. (2011). Emotion and narrative fiction: Interactive influences before, during, and after reading. *Cognition and Emotion*, *25*(5), 818–833. doi:10.1080/02699931.2010.515151

Mar, R. A., Spreng, R. N., & DeYoung, C. G. (2013). How to produce personality neuroscience research with high statistical power and low additional cost. *Cognitive, Affective, and Behavioral Neuroscience*, *13*(3), 674–685. doi:10.3758/s13415-013-0202-6

Mar, R. A., & Rain, M. (2015). Narrative fiction and expository nonfiction differentially predict verbal ability. *Scientific Studies of Reading*, *19*(6), 419–433. doi:10.1080/10888438.2015.1069296

Marsh, E. J., Meade, M. L., & Roediger, H. L. (2003). Learning facts from fiction. *Journal of Memory and Language*, *49* (4), 519–536. doi:10.1016/S0749-596X(03)00092-5

Marsh, E. J., & Fazio, L. K. (2006). Learning errors from fiction: Difficulties in reducing reliance on fictional stories. *Memory and Cognition*, *34*(5), 1141–1149. doi:10.3758/BF03193260

Mascaro, J. S., Rilling, J. K., Tenzin Negi, L., & Raison, C. L. (2012). Compassion meditation enhances empathic accuracy and related neural activity. *Social Cognitive and Affective Neuroscience*, *8*(1), 48–55. doi:10.1093/scan/nss095

Mason, R. A., & Just, M. A. (2009). The role of the theory-of-mind cortical network in the comprehension of narratives. *Language and Linguistic Compass*, *3*(1), 157–174. doi:10.1111/j.1749-818X.2008.00122.x

McCrae, R. R., & Sutin, A. R. (2009). Openness to experience. In M. R. Leary & R. H. Hoyle (Eds.), *Handbook of Individual Differences in Social Behavior* (pp. 257–273). New York, NY: The Guilford Press.

Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R., … Reed, G. M. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist*, *56*(2), 128–165. doi:10.1037/0003-066X.56.2.128

Meyer, M. L., Spunt, R. P., Berkman, E. T., Taylor, S. E., & Lieberman, M. D. (2012). Evidence for social working memory from a parametric functional MRI study. *Proceedings of the National Academy of Sciences*, *109*(6), 1883–1888. doi:10.1073/pnas.1121077109

Meyer, M. L., Taylor, S. E., & Lieberman, M. D. (2015). Social working memory and its distinctive link to social cognitive ability: An fMRI study. *Social Cognitive and Affective Neuroscience*, *10*(10), 1338–1347. doi:10.1093/scan/nsv065

Meyer, M. L., & Lieberman, M. D. (2016). Social working memory training improves perspective-taking accuracy. *Social Psychological and Personality Science*, *7*(4), 381–389. doi:10.1177/1948550615624143

Miall, D. S., & Kuiken, D. (2002). A feeling for fiction: Becoming what we behold. *Poetics*, *30*(4), 221–241. doi:10.1016/S0304-422X(02)00011-6

Moessnang, C., Otto, K., Bilek, E., Schäfer, A., Baumeister, S., Hohmann, S., … Meyer-Lindenberg, A. (2017). Differential responses of the dorsomedial prefrontal cortex and right posterior superior temporal sulcus to spontaneous mentalizing. *Human Brain Mapping*, *38*(8), 3791–3803. doi:10.1002/hbm.v38.8

Mol, S. E., & Bus, A. G. (2011). To read or not to read: A meta-analysis of print exposure from infancy to early adulthood. *Psychological Bulletin*, *137*(2), 267–296. doi:10.1037/a0021890

Morgan, M., & Shanahan, J. (1997). Two decades of cultivation research: An appraisal and meta-analysis. *Annals of the International Communication Association*, *20*(1), 1–45. doi:10.1080/23808985.1997.11678937

Morgan, M., & Shanahan, J. (2010). The state of cultivation. *Journal of Broadcasting & Electronic Media*, *54*(2), 337–355. doi:10.1080/08838151003735018

Mumper, M. L., & Gerrig, R. J. (2017). Leisure reading and social cognition: a meta-analysis. *Psychology of Aesthetics, Creativity, and the Arts*, *11*, 109–120. doi:10.1037/aca0000089

Nell, V. (1988). The psychology of reading for pleasure: Needs and gratifications. *Reading Research Quarterly*, 6–50. doi:10.2307/747903

Nettle, D., & Liddle, B. (2008). Agreeableness is related to social-cognitive, but not social-perceptual, theory of mind. *European Journal of Personality*, *22*(4), 323–335. doi:10.1002/(ISSN)1099-0984

Nussbaum, M. C. (1995). *Poetic justice: The literary imagination and public life*. Boston, MA: Beacon Press.

O'Guinn, T. C., & Shrum, L. J. (1997). The role of television in the construction of consumer reality. *Journal of Consumer Research*, *23*(4), 278–294. doi:10.1086/209483

Oatley, K. (1994). A taxonomy of the emotions of literary response and a theory of identification in fictional narrative. *Poetics*, *23*, 53–74. doi:10.1016/0304-422X(94)P4296-S

Oatley, K. (1999). Why fiction may be twice as true as fact: Fiction as cognitive and emotional simulation. *Review of General Psychology*, *3*(2), 101–117. doi:10.1037/1089-2680.3.2.101

Oatley, K. (2002). Emotions and the story worlds of fiction. In M. C. Green, J. J. Strange, & T. C. Brock (Eds.), *Narrative impact: Social and cognitive foundations* (pp. 39–69). Mahwah, NJ: Lawrence Erlbaum Associates.

Oatley, K. (2008). The mind's flight simulator. *The Psychologist*, *21*(12), 1030–1032.

Oatley, K. (2016). Fiction: Simulation of social worlds. *Trends in Cognitive Sciences*, *20*(8), 618–628. doi:10.1016/j.tics.2016.06.002

Oakley, B. F. M., Brewer, R, Bird, G., & Catmur, C. (2016). Theory of mind is not theory of emotion: a cautionary note on the reading the mind in the eyes test. *Journal of Abnormal Psychology*, *125*, 818–823. doi:10.1037/abn0000182

Olderbak, S., Wilhelm, O., Olaru, G., Geiger, M., Brenneman, M. W., & Roberts, R. D. (2015). A psychometric analysis of the reading the mind in the eyes test: Toward a brief form for research and applied settings. *Frontiers in Psychology*, *6*, 1–14. doi:10.3389/fpsyg.2015.01503

Oliver, M. B., & Raney, A. A. (2011). Entertainment as pleasurable and meaningful: Differentiating hedonic and eudaimonic motivations for entertainment consumption. *Journal of Communication*, *61*(5), 984–1004. doi:10.1111/j.1460-2466.2011.01585.x

Olson, I. R., McCoy, D., Klobusicky, E., & Ross, L. A. (2013). Social cognition and the anterior temporal lobes: A review and theoretical framework. *Social Cognitive and Affective Neuroscience*, *8*(2), 123–133. doi:10.1093/scan/nss119

Ornaghi, V., Brockmeier, J., & Grazzani, I. (2014). Enhancing social cognition by training children in emotion understanding: A primary school study. *Journal of Experimental Child Psychology*, *119*, 26–39. doi:10.1016/j.jecp.2013.10.005

Paluck, E. L., & Green, D. P. (2009). Prejudice reduction: What works? A critical look at evidence from the field and the laboratory. *Annual Review of Psychology*, *60*, 339–367. doi:10.1146/annurev.psych.60.110707.163607

Panero, M. E., Weisberg, D. S., Black, J., Goldstein, T. R., Barnes, J. L., Brownell, H., & Winner, E. (2016). Does reading a single passage of literary fiction really improve theory of mind? An attempt at replication. *Journal of Personality and Social Psychology*, *111*(5), e46–e54. doi:10.1037/pspa0000064

Panero, M. E., Weisberg, D. S., Black, J., Goldstein, T. R., Barnes, J. L., Brownell, H., & Winner, E. (2017). No support for the claim that literary fiction uniquely and immediately improves theory of mind: A reply to Kidd and Castano's commentary on Panero et al. (2016).*Journal of Personality and Social Psychology*, *112*(3), e5–e8. doi:10.1037/pspa0000079

Park, B. (1986). A method for studying the development of impressions of real people. *Journal of Personality and Social Psychology*, *51*, 907–917. doi:10.1037/0022-3514.51.5.907

Park, B., DeKay, M. L., & Kraus, S. (1994). Aggregating social behavior into person models: perceiver-induced consistency. *Journal of Personality and Social Psychology*, *66*, 437–459. doi:10.1037/0022-3514.66.3.437

Pavias, M., van den Broek, P., Hickendorff, M., Beker, K., & Van Leijenhorst, L. (2016). Effects of social-cognitive processing demands and structural importance on narrative recall: Differences between children, adolescents, and adults. *Discourse Processes*, *53*(5–6), 488–512. doi:10.1080/0163853X.2016.1171070

Perner, J., Ruffman, T., & Leekam, S. R. (1994). Theory of mind is contagious: You catch it from your sibs. *Child Development*, *65*(4), 1228–1238. doi:10.2307/1131316

Pino, M. C., & Mazza, M. (2016). The use of "literary fiction" to promote mentalizing ability. *PLoS ONE*, *11*, e0160254. doi:10.1371/journal.pone.0160254

Potter, W. J. (2014). A critical analysis of cultivation theory. *Journal of Communication*, *64*(6), 1015–1036. doi:10.1111/jcom.2014.64.issue-6

Prentice, D. A., Gerrig, R. J., & Bailis, D. S. (1997). What readers bring to the processing of fictional texts. *Psychonomic Bulletin Review*, *4*(3), 416–420. doi:10.3758/BF03210803

Preston, S. D., & De Waal, F. B. (2002). Empathy: Its ultimate and proximate bases. *Behavioral and Brain Sciences*, *25*(1), 1–20.

Preti, A., Vellante, M., & Petretto, D. R. (2017). The psychometric properties of the "Reading the Mind in the Eyes" test: An item response theory (IRT) analysis. *Cognitive Neuropsychiatry*, *22*(3), 233–253. doi:10.1080/13546805.2017.1300091

Rapp, D. N. (2016). The consequences of reading inaccurate information. *Current Directions in Psychological Science*, *25*(4), 281–285. doi:10.1177/0963721416649347

Reber, A. S. (1989). Implicit learning and tacit knowledge. *Journal of Experimental Psychology: General*, *118*(3), 219. doi:10.1037/0096-3445.118.3.219

Richard, F. D., Bond, C. F., Jr., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology*, *7*, 331–363. doi:10.1037/1089-2680.7.4.331

Richter, T., Appel, M., & Calio, F. (2014). Stories can change the self-concept. *Social Influence*, *9*, 172–188. doi:10.1080/15534510.2013.799099

Richter, T., Schroeder, S., & Wöhrmann, B. (2009). You don't have to believe everything you read: Background knowledge permits fast and efficient validation of information. *Journal of Personality and Social Psychology*, *96*(3), 538–558. doi:10.1037/a0014038

Rosenqvist, J., Lahti-Nuuttila, P., Holdnack, J., Kemp, S. L., & Laasonen, M. (2016). Relationship of TV watching, computer use, and reading to children's neurocognitive functions. *Journal of Applied Developmental Psychology*, *46*, 11–21. doi:10.1016/j.appdev.2016.04.006

Ruffman, T., Perner, J., Naito, M., Parkin, L., & Clements, W. A. (1998). Older (but not younger) siblings facilitate false belief understanding. *Developmental Psychology*, *34*(1), 161–174. doi:10.1037/0012-1649.34.1.161

Rumelhart, D. E. (1975). Notes on a schema for stories. In D. G. Bobrow & A. Collins (Eds.), *Representation and understanding: Studies in cognitive science* (pp. 2–34). New York, NY: Academic Press.

Samur, D., Tops, M., & Koole, S. L. (2017). Does a single session of reading literary fiction prime enhanced mentalising performance? Four replication experiments of Kidd and Castano (2013). *Cognition and Emotion*, *27*, 1–15.
Santiesteban, I., White, S., Cook, J., Gilbert, S. J., Heyes, C., & Bird, G. (2012). Training social cognition: From imitation to theory of mind. *Cognition*, *122*(2), 228–235. doi:10.1016/j.cognition.2011.11.004
Schank, R. C., & Abelson, R. P. (1995). Knowledge and memory: The real story. In J. R. S. Wyer (Ed.), *Advances in social cognition* (vol. 8, pp. 1–85). Hillsdale, NJ: Lawrence Erlbaum Associates.
Schellenberg, E. G. (2004). Music lessons enhance IQ. *Psychological Science*, *15*(8), 511–514. doi:10.1111/j.0956-7976.2004.00711.x
Shrum, L. J. (2002). Media consumption and perceptions of social reality: Effects and underlying processes. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 66–96). Mahwah, NJ: Lawrence Erlbaum Associates.
Siddiqui, S., West, R. F., & Stanovich, K. E. (1998). The influence of print exposure on syllogistic reasoning and knowledge of mental-state verbs. *Scientific Studies of Reading*, *2*, 81–96. doi:10.1207/s1532799xssr0201_4
Singer, T. (2006). The neuronal basis and ontogeny of empathy and mind reading: Review of literature and implications for future research. *Neuroscience & Biobehavioral Reviews*, *30*(6), 855–863. doi:10.1016/j.neubiorev.2006.06.011
Slaughter, V., & Gopnik, A. (1996). Conceptual coherence in the child's theory of mind: Training children to understand belief. *Child Development*, *67*(6), 2967–2988. doi:10.2307/1131762
Spreng, R. N., & Mar, R. A. (2012). I remember you: A role for memory in social cognition and the functional neuroanatomy of their interaction. *Brain Research*, *1428*, 43–50. doi:10.1016/j.brainres.2010.12.024
Stavrova, O., & Meckel, A. (2017). Perceiving emotion in non-social targets: The effect of trait empathy on emotional contagion through art. *Motivation and Emotion*, *41*, 492–509. doi:10.1007/s11031-017-9619-5
Steerneman, P., Jackson, S., Pelzer, H., & Muris, P. (1996). Children with social handicaps: An intervention programme using a theory of mind approach. *Clinical Child Psychology and Psychiatry*, *1*(2), 251–263. doi:10.1177/1359104596012006
Stein, N. L., & Glenn, C. G. (1975). *An analysis of story comprehension in elementary school children: A test of a schema*. ERIC Document Reproduction Service, ED 121 474.
Stein, N. L., & Trabasso, T. (1981). *What's in a story: An approach to comprehension and instruction* (Center for the Study of Reading Technical Report; no. 200). University of Illinois, US: Center for the Study of Reading.
Strube, M. J. (1991). Multiple determinants and effect size: A more general method of discourse. *Journal of Personality and Social Psychology*, *61*(6), 1024–1027. doi:10.1037/0022-3514.61.6.1024
Swettenham, J. (1996). Can children with autism be taught to understand false belief using computers? *Journal of Child Psychology and Psychiatry*, *37*(2), 157–165. doi:10.1111/jcpp.1996.37.issue-2
Tamir, D. I., Bricker, A. B., Dodell-Feder, D., & Mitchell, J. P. (2016). Reading fiction and reading minds: The role of the default network. *Social Cognitive and Affective Neuroscience*, *11*(2), 215–224. doi:10.1093/scan/nsv114
Teding van Berkhout, E., & Malouff, J. M. (2016). The efficacy of empathy training: A meta-analysis of randomized controlled trials. *Journal of Counseling Psychology*, *63*(1), 32–41. doi:10.1037/cou0000093
Tellegen, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences ("absorption"), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology*, *83*(3), 268–277. doi:10.1037/h0036681
Thornton, M. A., & Mitchell, J. P. (2017). Consistent neural activity patterns represent personally familiar people. *Journal of Cognitive Neuroscience*, *29*, 1583–1594. doi:10.1162/jocn_a_01151
Till, B., Truong, F., Mar, R. A., & Niederkrotenthaler, T. (2016). Blurred world view: A study on the relationship between television viewing and the perception of the justice system. *Death Studies*, *40*, 538–546. doi:10.1080/07481187.2016.1186761
Trabasso, T., & van den Broek, P. W. (1985). Causal thinking and the representation of narrative events. *Journal of Memory and Language*, *24*(5), 612–630. doi:10.1016/0749-596X(85)90049-X
Tsai, J. L., Louie, J. Y., Chen, E. E., & Uchida, Y. (2007). Learning what feelings to desire: Socialization of ideal affect through children's storybooks. *Personality and Social Psychology Bulletin*, *33*(1), 17–30. doi:10.1177/0146167206292749
Tsunemi, K., Tamura, A., Ogawa, S., Isomura, T., Ito, H., Ida, M., & Masataka, N. (2014). Intensive exposure to narrative in story books as a possibly effective treatment of social perspective-taking in schoolchildren with autism. *Frontiers in Psychology*, *5*(2), 1–8. doi:10.3389/fpsyg.2014.00002
Turner-Brown, L. M., Perry, T. D., Dichter, G. S., Bodfish, J. W., & Penn, D. L. (2008). Brief report: Feasibility of social cognition and interaction training for adults with high functioning autism. *Journal of Autism and Developmental Disorders*, *38*(9), 1777–1784. doi:10.1007/s10803-008-0545-y
Valk, S. L., Bernhardt, B. C., Böckler, A., Trautwein, F. M., Kanske, P., & Singer, T. (2017). Socio-cognitive phenotypes differentially modulate large-scale structural covariance networks. *Cerebral Cortex*, *27*(2), 1358–1368.
Valkenburg, P. M., & Peter, J. (2013). The differential susceptibility to media effects model. *Journal of Communication*, *63*(2), 221–243. doi:10.1111/jcom.2013.63.issue-2
Valkenburg, P. M., Peter, J., & Walther, J. B. (2016). Media effects: Theory and research. *Annual Review of Psychology*, *67*, 315–338. doi:10.1146/annurev-psych-122414-033608

Ward, L. M. (2003). Understanding the role of entertainment media in the sexual socialization of American youth: A review of empirical research. *Developmental Review*, *23*(3), 347–388. doi:10.1016/S0273-2297(03)00013-3

Ward, L. M. (2016). Media and sexualization: State of empirical research, 1995–2015. *The Journal of Sex Research*, *53* (4–5), 560–577. doi:10.1080/00224499.2016.1142496

Warrier, V., Grasby, K. L., Uzefovsky, F., Toro, R., Smith, P., Chakrabarti, B., … Baron-Cohen, S. (2017). Genome-wide meta-analysis of cognitive empathy: Heritability, and correlates with sex, neuropsychiatric conditions and cognition. *Molecular Psychiatry*, mp2017122.

Waugh, C., & Peskin, J. (2015). Improving the social skills of children with HFASD: An intervention study. *Journal of Autism and Developmental Disorders*, *45*(9), 2961–2980. doi:10.1007/s10803-015-2459-9

Westfall, J., & Yarkoni, T. (2016). Statistically controlling for confounding constructs is harder than you think. *PLOS ONE*, *11*, e0152719.

Wulandini, I. A., & Handayani, E. (2018). *The effect of literary fiction on school-aged children's theory of mind (ToM). Diversity in Unity: Perspectives from Psychology and Behavioral Sciences*.

Zunshine, L. (2006). *Why we read fiction: Theory of mind and the novel*. Columbus, OH: Ohio State University Press.