INTERIOR MUSIC: AN EXAMINATION OF THE SOCIOCOGNITIVE ABILITIES OF FICTION WRITERS

by

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Abstract

A two-part study was undertaken to investigate the relationship between fiction writing and social cognition: the ability to make inferences about the mental states of others. First, an online survey was administered that assessed beliefs held by the general public about the social cognition of fiction writers compared to a variety of other professions. The findings revealed that the general public believes fiction writers demonstrate above average sociocognitive abilities. Next, the possibility of an empirical relationship between social cognition and fiction writing was explored by comparing two groups of fiction writers (established/published and intermediate writers) and a control group on measures directly assessing different facets of social cognition (e.g., social perception, interpreting body language, and making inferences about interpersonal interactions on video and in written vignettes). Participants were also asked to self-report their own sociocognitive abilities via a questionnaire assessing perspective taking. Related variables to social cognition were also tested, including self-reported interpersonal/social reactivity and cognitive complexity/differentiation. Potential confounding variables, including age, level of depression, verbal IQ, and tendency to read fiction were also measured and accounted for. All participants provided a short story writing sample which was scored by three experts for quality, as well as potential textual determinants of social cognition: character transparency and point of view. The results of the study consistently revealed a lack of between-group differences on measures of social cognition as well as the related measure of cognitive complexity/differentiation. Fiction writing quality and character transparency correlated only with cognitive complexity/differentiation, but not with any variables directly assessing social cognition. Taken together, the results of the study suggest that, contrary to public perceptions, and contrary to the hypotheses of many theorists in the literature, fiction writers do not demonstrate superior sociocognitive abilities.
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Interior Music: An Examination of the Sociocognitive Abilities of Fiction Writers

Prologue

“A reader of a novel is looking to ride through the world looking out through a different set of eyes for a while. You [the writer] have to supply literally the vision—what they are seeing when they look out, specific and particular—and some sense of the interior music, the machinery of thinking and feeling.”
— Peter Behrens (Author)

Before I begin, I want to invite you first to imagine that you are a fiction writer. It seems appropriate that an exploration into the ability of fiction writers to make inferences about the mental states of others—thoughts, feelings, desires, beliefs, and so forth—should begin by first inviting the reader to envision for themselves, at least briefly, the mental states of a writer.

So, here’s a chair; have a seat. It’s comfortable, and it conforms to your proportions, because you’ve sat here so many times, doing just this. You turn on your computer, and it hums, churns. You wait. You chew briefly on the edge of a pen, drum your fingers on the desk. And then, there it is, a blank screen. You feel a soft tingling at the base of your spine. A tingling of what? Expectation perhaps. Or the beginnings of something. The beginnings of characters, maybe—of people, vague and nebulous. Not yet fully formed. The beginnings of a sequence of events, the way these people will interact with one another via words, your words. What do these characters know? What do they think? How do they behave? What do they feel? What secrets do they keep?

A story bubbles its way up your spine, travels the synapses of your brain, and then moves down into your neck and shoulders and arms and hands and fingers until it rests at the keyboard, poised, about to begin. This world, these people, they are yours. Ask yourself—what are you going to do with all of it, with all of them?

Except, really, you are not here to imagine yourself as a fiction writer. This was not
your intent when you began to read. Perhaps your intention was to gain a more thorough understanding of the sociocognitive abilities of fiction writers.

So then, let me begin.

This study examined the relationship between fiction writing and social cognition, with the goal of determining whether or not fiction writers demonstrate above average sociocognitive abilities compared to individuals who do not write creatively—a commonly held belief that, prior to this study, had yet to be scientifically tested. Before beginning this research, I was quick to theorize that fiction writers, who spend long hours imagining characters interacting with one another, would be more socially perceptive and would be better able to make inferences about the mental states of others. I expected this study to be an “open-and-shut” case, for the data to confirm what seemed intuitive.

Yet, as I began to delve into this topic—to read deeply, think critically, and discuss the subject matter with both writers and individuals who do not write creatively—I began to understand the complexity that underlies the question that I believed to be so simple. The aim of this study thus became to explore a complex topic, to test myths and uncover truths, and to open minds to the intricacies and contradictions in the relationship between social cognitive abilities and fiction writing.
Chapter 1: Introduction

Social cognition refers to the ability to make inferences and draw conclusions about the mental states (e.g., thoughts, feelings, beliefs, etc.) of others. Social cognition has important implications for social functioning in interpersonal relationships, and research has begun to investigate its variation in individuals and groups. Individuals who write fiction are one group that could plausibly demonstrate above average sociocognitive abilities; however this possibility has yet to be empirically tested. The purpose of the current study was to examine differences in social cognition between writers of varying skill levels (i.e., established and intermediate) compared with a comparison group from the general population.

This line of investigation is significant for the following reasons: a) it is important to determine whether theoretical claims that fiction writers demonstrate superior sociocognitive reasoning abilities is true or a myth; b) should the study reveal that fiction writers do possess superior sociocognitive abilities, and a causal relationship be found wherein fiction writing fosters social cognition, the results have potential implications for the use of fiction writing instruction as an intervention to improve sociocognitive abilities; and c) depending on the outcome of the results, the study has the potential to impact the way fiction writing is taught.

The specific objectives of the study were to compare three groups (established writers, intermediate writers, and the control group) on a battery of tasks measuring different facets of sociocognitive ability. Additionally, writing samples were obtained from all participants to explore a potential relationship between fiction writing ability and social cognition.
Chapter 2: Social Cognition

This chapter will cover the basic concept of social cognition, how it was defined for the current research, and what is known about its development. Implications of having good sociocognitive abilities will be discussed.

2.1 – Social Cognition: Concept and Definition

For the purpose of this study, the term “social cognition” is defined as being synonymous with the following definition of Empathic Accuracy (Ickes, Stinson, Bissonnette, & Garcia, 1990): “(a) a skill, ability, or facility (b) to understand, apprehend, infer, interpret (c) with accuracy (d) the private, covert, subjective (e) phenomenological reality, mental experience, thoughts and feelings (f) of some other person” (p. 713). This ability “can be accomplished rapidly and automatically as part of online interaction, or it may be the product of more conscious and in-depth cognition (e.g., ‘I wonder what she was really thinking?’)” (Thomas & Fletcher, 2003, p. 1080), and refers to the ability to infer moment-by-moment interactions versus enduring dispositions (Thomas & Fletcher, 1997).

The term “social cognition” will be used in this study as a broad concept intended to encompass the varying terms used in the literature, including theory of mind, empathic accuracy, mind reading, empathic sensitivity, perspective taking, and so forth. While there are slight variations among the concepts represented by these terms, social cognition (defined herein) refers to the ability to understand, perceive, and make inferences about the mental states of others.

Goldstein and Winner (2009) distinguish between social perception and social cognition (or what they refer to as “social perceptual theory of mind” and “social cognitive theory of mind”). For purposes of the current study, both social perception and social cognition, as Goldstein and Winner define them, fall under the umbrella of what I refer to as “social
cognition.” Goldstein and Winner define social perception as accurately perceiving what another person is thinking or feeling based on facial expression or body language. A common task that measures social perception is The Reading the Mind in the Eyes test\(^1\) (RME; Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). This involves inferring mental states via pictures of only the eye region of a face. This measure will be described in greater detail later in this manuscript. Because it is important to accurately perceive what others are thinking and feeling in order to make inferences about the intentions and behaviour of others, having good social perceptual skills is an important component of social cognition, and is included in the definition of social cognition used in this study.

It is also important, for the purposes of this research, to define what social cognition is not. In the current study, social cognition is distinguished from empathy. While social cognition involves identifying perceiving, and predicting what another thinks or feels or will think or feel, empathy takes this one step further, and involves sharing or identifying with that feeling. Paal and Berczkei (2007) referred to social cognition as “cold empathy” and empathy as “hot empathy,” while Gleason et al. (2009) used the terms “empathic accuracy” (social cognition) and “empathic concern” (empathy). Goldstein and Winner (2011) consider “theory of mind” to be synonymous with social cognition, as understanding others’ mental states, while they define “empathy” as matching another’s mental state. Feagin (1988) argued that empathy “involve[s] higher order beliefs than those involved in the emotion with which one empathizes: beliefs about someone else’s beliefs” (p. 490). de Vignemont and Singer (2006) have provided a precise clarification of the difference between empathy and perspective taking:

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\(^1\) Refer to Table 2 for more details about this task; this task henceforth will be referred to as the RME.
There is empathy if: (i) one is in an affective state; (ii) this state is isomorphic to another person’s affective state; (iii) this state is elicited by the observation or imagination of another person’s affective state; (iv) one knows that the other person is the source of one’s own affective state….Cognitive perspective-taking, for example, does not meet the first condition. One represents the mental states of others, including affective states, without being emotionally involved (e.g. based on my knowledge of you, I infer from your behavior that you are anxious but I do not feel anxious). (p. 435).

The difference between empathy and social cognition was further illustrated by Richell et al. (2003). These authors found no differences on the RME (the aforementioned measure of social perception involving inferring mental states via pictures of eyes) when 19 male individuals with psychopathy were compared to 18 male controls (identified via scores on a clinically-based rating scale of psychopathy). These results suggest that individuals who score high on measures of psychopathy, and thus are characterized by callousness and a lack of remorse, still have intact social perception (which falls under the umbrella term of social cognition). That is, such individuals appear able to accurately perceive or identify the thoughts and feelings of someone else, but are not likely to empathize with them. In the current study, the ability to perceive, identify, and reason about the mental states of others (i.e., theory of mind, empathic accuracy, or cold empathy) was the primary focus.

This thesis will refer to level of sociocognitive skill or ability as the outcome being explored, using the terms “social cognition” or “sociocognitive ability” or “sociocognitive skill” interchangeably. Other terms may be used if included in an original quotation. While referring to “skill” or “ability,” it is important to note that performance on the various tasks used in this study may reflect: a) a level of skill each person has, which may or may not be relatively static, and which may vary between individuals; b) the ability of individuals to apply their sociocognitive abilities; or c) some combination of both. Keysar, Lin, and Barr (2003) asserted that while adults have the capability to make social inferences, they do not always
reliably use these capabilities. Keysar et al. drew a “distinction between having a tool, and using the tool as part of one’s routine operation” (p. 26). According to Apperly (2012), tasks that claim to assess adult social cognition (or what he termed a “higher order theory of mind”) may not actually be tapping into some sort of advanced sociocognitive ability, but rather the “ability to use ‘standard’ ToM [theory of mind] concepts in a flexible, pragmatically appropriate, context-sensitive manner” (p. 833). Apperly also argued that there is individual variation in motivation, which may also affect performance.

Ultimately, Apperly (2012) argued against the idea that social cognition is “a unidimensional entity that an individual simply has to a greater or lesser degree. The everyday notion that some people are better at ToM than others includes the possibility of varying conceptual sophistication, varying capacity to deploy those concepts in a timely and contextually appropriate manner, and varying motivation” (p. 835). Meins, Fernyhough, Johnson, and Lidstone (2006) also argued that, “having a ToM is different from using one’s ToM capacities to describe other people and explain their behaviour” (p. 193).

2.2 – Development of Social Cognition

“Might we not say that every child at play behaves like a creative writer, in that he creates a world of his own, or, rather, re-arranges the things of his world in a new way which pleases him?”
- Sigmund Freud (Psychologist)

Theory of mind reasoning in children emerges in a particular developmental sequence (outlined by Stone, Baron-Cohen, & Knight, 1998), beginning with joint attention, and followed by protodeclarative pointing, pretend play, and the understanding that others can desire or want something. At approximately three to five years of age, individuals acquire a representational understanding that other people’s knowledge states differ from their own and are able to pass false belief tasks, which indicate the achievement of what researchers refer to as theory of mind (Wellman, Cross, & Watson, 2001; Stone et al., 1998). Much of
the research on theory of mind focuses on the preschool years—the time typical children achieve this theory of mind litmus test (Apperly, 2012). However the ability to employ sociocognitive skills efficiently and in context continues to develop as individuals age and mature, with children “acquiring an increasingly sophisticated grasp of different mental states, with simpler concepts emerging earlier, and forming the basis for the later acquisition of more sophisticated concepts” (Apperly, p. 828).

According to Keysar et al. (2003), social cognition involves being able to distinguish between one’s own mental states and the mental states of others, as well as the understanding that different people can represent reality in different ways. Carpendale and Chandler (1996) further draw a distinction between a representational theory of mind (achieved when a child passes the false belief test) and an interpretive theory of mind (when an individual understands that two different people can interpret the same stimulus in two different ways). They noted that the interpretive nature of knowing is a complicated developmental process that continues to evolve into adolescence and early adulthood. Carpendale and Chandler reported that an interpretive theory of mind does not emerge until approximately seven or eight years of age, while Stone et al. (1998) cited this ability as occurring slightly earlier, at approximately six or seven years of age.

Moving further down the line of development, Stone et al. (1998) reported that, between the ages of nine and 11 years, children appear to acquire the ability to understand faux pas, or situations in which “someone says something they should not have said, not knowing or not realizing they should not say it” (p. 641). Faux pas reasoning involves understanding two mental states: the lack of knowledge of the speaker, and the insult or hurt perceived by the listener. As such it is an increasingly complex understanding due to its requirement that individuals perceive both cognitive situational components (e.g.,
understanding knowledge states) and emotional/affective situational components (e.g., perceiving hurt feelings). Another type of reasoning that requires the understanding of two mental states is that of verbal irony—a figure of speech in which the literal meaning is different from the figurative or intended meaning. One example of verbal irony is sarcasm. To correctly interpret an ironic statement, the listener must understand what the speaker wants the listener to know. Such statements are typically not comprehended until approximately six to eight years of age (Winner & Leekam, 1991).

Additional complexity was argued by Keysar et al. (2003), who highlighted variations in the application of theory of mind beyond childhood. Essentially, even once someone has the ability to reason about the mental states of others, they do not necessarily use this ability reliably; for some, this application is more effortful, while for others, it is more spontaneous and non-reflective. Their research suggests that it is difficult for individuals to inhibit their own knowledge or beliefs and consider only what the other knows or believes (i.e., individuals tend to adopt an egocentric perspective). This point was also raised by Apperly (2012). In the real world, Keysar and his colleagues suggested that, “directly computing what another person knows or does not know at a given moment might be more trouble than it’s worth” (p. 39).

Individuals continue to vary in their sociocognitive abilities long after having achieved the milestone of first-order theory of mind. In this vein, Bosacki and Astington (1999) found variations in adult social cognition, while Dumontheil, Apperly, and Blakemore (2010) asserted in their recently published article that individual variation is attributable to the development of other cognitive factors—such as executive functioning—as individuals age. Apperly (2012) argued that theory of mind ability is highly intertwined with other cognitive abilities such as language, memory, and executive functioning. Evidence from
neuroimaging studies suggests that areas involved in theory of mind reasoning continue to develop beyond childhood. Stone et al. (1998) demonstrated that patients with lesions in the orbitofrontal cortex (OFC) of the brain showed deficits in understanding faux pas but were able to pass control tasks (e.g., controlling for memory load), which suggests that the OFC appears to be involved in theory of mind reasoning. The OFC has also been shown to be a later-maturing part of the brain, with neuroimaging studies showing continued development into adolescence and early adulthood (Gogtay et al., 2004).

Additionally, several populations have been shown to have deficiencies in social perception, reasoning, and the like, which provides further evidence in support of the idea that sociocognitive skill varies, even in adults. These populations include individuals with specific mental illnesses such as depression (Lee, Harkness, Sabbagh, & Jacobsen, 2005), bipolar disorder (Shamay-Tsoory, Harari, Szepsenwol, & Levkovitz, 2009), and alcoholism (Maurage et al., 2011), as well as individuals with autism spectrum disorders (Baron-Cohen, Leslie, & Frith, 1985). For example, Stone et al. (1998) noted that individuals with theory of mind deficits (e.g., individuals on the autism spectrum) might show impairments at various points along the developmental trajectory. Some may be able to pass earlier theory of mind tests, but fail more subtle forms, which may “only be picked up with the most developmentally advanced tasks” (p. 641). More detail about populations shown to have deficiencies in social cognition and related skills will be discussed in greater detail in sections 3.4.1 and 3.4.2 respectively.

2.3 – Benefits of Strong Sociocognitive Abilities

Strong social cognitive skills have several positive implications for day-to-day functioning. According to Domes, Heinrichs, Michel, Berger, and Herpertz (2007), “the ability to infer the internal state of another human being is a cornerstone of all human social
interactions” (p. 731). These benefits include social competency, success in interpersonal relationships, success in specific careers, success in cooperation and competition, and protection against negative social outcomes.

First, Bosacki and Astington (1999) found that social cognitive abilities in preadolescents were related to levels of social competency, or success in navigating the social world. According to Ickes, Gesn, and Graham (2000), social cognitive skills have an effect on one’s success throughout the lifespan—as a “student in the classroom, as playmates and platonic friends, as dating and marriage partners, as parents, as members of the work force, and as members of the larger community” (p. 96). These authors also claimed that individuals highly skilled in social cognition are those most likely to become advisors, diplomats, negotiators, politicians, salespersons, teachers, and therapists. Good mind reading abilities have been highlighted as being helpful in terms of facilitating both cooperation and competition (Paal & Bereczkei, 2007). Additionally, empathic accuracy has been shown to act as a buffer against poor peer relationships and personal adjustment in children and teens (Gleason, Jensen-Campbell, & Ickes, 2009). Highlighting just how important sociocognitive abilities are, Boyd (2006) argued that, “Biologists explaining the origins of intelligence largely concur that the most powerful amplifier of intelligence is sociality, especially in the need to infer what others of one’s own species want and intend so that one can react and plan accordingly” (p. 595).

Because of these important implications, Laurent and Hodges (2008) argued the value of research that aims to identify groups able to demonstrate high levels of the ability to infer the thoughts and feelings of others, as well as to examine why and under what circumstances they are able to demonstrate such skill. Thus, empirically testing the sociocognitive abilities of different groups that potentially demonstrate above average or
superior social cognition, such as fiction writers, is important.

2.4 – Summary

On the whole, social cognition is a varied ability that goes far beyond simply recognizing that others can hold different beliefs or desires. It involves both accurately perceiving mental states and reasoning about them (e.g., making interpretations and predications based on them). This skill continues to develop into adulthood, appears to vary among typically developing adults, and varies between typically and atypically developing populations.
Chapter 3: The Relationship Between Social Cognition and Fiction Writing

“We are a species that needs and wants to understand who we are. Sheep lice do not seem to share this longing, which is one reason why they write so little.”

- Anne Lamott (Author)

Beliefs about the likely sociocognitive superiority of fiction writers seem to be well grounded in general and theoretical writings about literature. This chapter will cover the theoretical and empirical literature on fiction writing (and related disciplines) and how it relates to social cognitive abilities.

With respect to writings about literature, the late novelist Jerome Badanes, when interviewed by Charlotte Doyle (1998) about his writing process, said, “Fiction is very good training for moral behavior. It teaches you to see other points of view. You really see the other point of view, feel it” (p. 35). Similarly, author Barbara Gowdy, in describing her writing process, explained, “I found myself wondering, how would I behave if…my sense of smell was my predominant sense, if I accidentally decapitated my baby, and so on. It was fun, it was like a game” (Bush, Behrens, Gowdy, Heti, & Moore, 2007). In her own fiction, Gowdy has explored the points of view of a man who kidnaps a young girl, and of a series of elephants, necessitating that she explore the mental states of characters whose experiences she, herself, can never herself experience, being neither male nor pachyderm. Thus, she can only invent such characters by playing her game of “how would I behave if?” Certainly, it would appear to be intuitive that fiction writers, who spend considerable time thinking about the internal worlds of their characters—how these characters would think, feel, and act in response to various other characters and situations—would have better sociocognitive abilities than individuals in the general public.

Dunbar (2000, 2005) and Keen (2006) have claimed that fiction writers undoubtedly
have better skills in social cognition or related abilities, such as empathy.\(^2\) According to Keen, “novelists themselves often vouch for the centrality of empathy to novel reading and writing and express belief in narrative empathy’s power to change the minds and lives of readers. This belief mirrors their experiences as ready empathizers” (p. 215). She went on to argue that for authors, “empathy may be an intrinsic element of successful fictional worldmaking” (p. 221). Myers and Hodges (2009) also claimed that fiction writers demonstrate superior perspective taking abilities, as evidenced by the following quote: “Being able to come up with a reasonable answer to the question ‘what was she thinking?’ is as important for promoting smooth social interactions as it is for creating a compelling work of fiction” (p. 292). Flavell (2004) referred to writers as “virtuosos” (p. 285) of social cognition, along with “therapists, or others who have acquired exceptional perspective taking or introspective skills,” while Grow (1990) applied Gardner’s (1993) theory of interpersonal intelligences to writers, claiming that authors must be able to delve deeply into others’ situations and must have sensitivity to others’ desires and intentions. Grow noted that interpersonal intelligence may manifest in writers in terms of interest in humans, sensitivity to the audience, character development, and dialogue. Piirto (2009) described the personalities of creative writers and argued that creative writers have “a psychological concern with what makes human beings tick” (p. 20). She also listed “empathy” (p. 7) as one of the personality attributes of writers, though her arguments were drawn from qualitative studies of interviews or memoirs of writers as opposed to empirical tests. Finally, Kaufman and Kaufman (2007) argued that “emotional insight” might be important in the development of a writer’s craft.

\(^2\) Recall that social cognition seems to be a necessary, but not sufficient criteria for empathy (which requires the additional step of feeling the same feelings as another person).
Yet, while the idea that writers would demonstrate advanced sociocognitive skills appears intuitive, and the aforementioned researchers, writers, and theorists have argued in favour of its truth, there have not, as of yet, been any direct empirical tests of the phenomenon to support or disprove this line of reasoning. While Grow (1990), Dunbar (2000, 2005), Flavell (2004), Keen (2006), Kaufman and Kaufman (2007), Myers and Hodges (2009), Piirto (2009) and Zunshine (2003, 2006, 2007) all argued that fiction writers do or should have superior sociocognitive (or related) abilities compared with individuals who do not write fiction, an examination of the literature on this topic provides conflicting information. The lines of reasoning that will be discussed are as follows: (1) Audience Awareness, (2) Characterization, (3) Understanding Mental States in Written Texts, (4) Similarities Between Writers and Other Populations, (5) Empirical Evidence, (6) Generalizability to Real Life Scenarios, and (7) Causality.

### 3.1 – Audience Awareness

“No one can write decently who is distrustful of the reader’s intelligence or whose attitude is patronizing.”

- E. B. White (Author)

Audience awareness is the knowledge and cognizance a writer has of his or her audience (i.e., the reader). According to Carvalho (2002), considering one’s audience when writing is a “complex representational task, mainly when [writers] are addressing audiences [they] do not know personally” (p. 272). He claimed that writers must master basic writing skills to the point of automaticity so that they can devote cognitive energy to the more advanced idea of audience representation. This reasoning is in line with Bonk’s claim that younger children demonstrate egocentrism in their writing because of the high cognitive load of mastering writing skills (1990). Essentially, according to these authors, the more automatic writing becomes (i.e., the more expert an individual is at the mechanics of writing, such as
grammar, spelling, and command of language), the more cognitive resources one can devote towards audience awareness.

While Carvalho’s argument (2002) extended generally to narrative writing (which encompasses but extends beyond fiction writing), it is reasonable to believe that it would apply similarly to fiction writers. Thus, experienced fiction writers, for whom writing techniques such as dialogue and description have become more automatic than for novices, might spend more time thinking about their audiences, which might then translate into more time spent considering the mental states of others. This may make them more practiced, and therefore more skilled in sociocognitive reasoning, as compared to novice writers, who would theoretically be more caught up in the processes of story creation, writing mechanics, and so forth.

Do writers need to both possess and be able to demonstrate audience awareness? And does this need differ by genre? The answers to these questions are unclear. Several studies in the 1980s investigated whether narrative writing skill is associated with audience awareness and/or social cognition, however these produced conflicting results (Burleson & Rowan, 1985; Kroll, 1985; Rubin, Piché, Michlin, & Johnson, 1984). Kroll found a relationship between social cognition scores and the quality of literary/narrative writing as well as oral communication, but not persuasive writing. The outcome measure used was Crockett’s Role Category Questionnaire (RCQ), a measure of cognitive complexity/differentiation in which participants had to generate as many different traits for a liked and disliked peer as they could think of. The RCQ does not require participants to think of the mental states of others, but rather, simply traits of others. It is therefore considered a measure related to social cognition. However, because of its conceptual

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3 Refer to Table 2 for more details about this task; this task henceforth will be referred to as the RCQ.
relationship to social cognition, it is relevant to this discussion. While the RCQ does not measure social cognition directly, according to Leichty (1997), individuals who score high on the RCQ (i.e., individuals who are able to generate more interpersonal constructs about liked and disliked peers) may be the kind of people who work to make sense of the behaviour of others; it is plausible also that those individuals who work to make sense of the behaviour of others may do so by working to make sense of others’ mental states, though Leichty does not delve into this argument. According to Peskin (2011), the RCQ has been shown to be related to social perspective taking tasks—such as a task requiring children to persuade their parent to keep a puppy, a task requiring adults to solicit money or apply for a job, or a task requiring adults to describe a situation where someone’s feelings were hurt. More detail about the RCQ can be found in 6.2.2.2.4.

The relationship described by Kroll (1985) between scores on the RCQ and the literary and narrative writing quality score was described as “not very strong” (p. 301). It was, however, found to be stronger than the other types of writing included in the study, but weaker than oral communication. Kroll attributed his results to the fact that young children are most familiar with the narrative form.

Rubin et al. (1985) also claimed to find a relationship between social cognition and narrative writing in children using a variety of measures (none of which was used in the current study), but a statistical reanalysis by Burleson and Rowan (1985) concluded that the relationship was non-significant and inflated. In a second study using the RCQ with college students and a factual narrative essay task, the authors found no relationship between narrative writing skill and RCQ scores. The narrative essays they asked students to write were “self-expressive narratives…about experiences that helped them to better understand themselves or their values” (p. 40). As such, it remains unclear how the self-focused nature
of these narratives reflected upon audience awareness (i.e., if this task, in which students focused on themselves and processing their own experiences, would require students to focus on their audience in the same way that other written tasks would).

A subsequent review of the literature (Bonk, 1990) suggested that persuasive and argumentative forms of writing require the most attention to audience, followed by informational writing and narrative writing. After reviewing the various theories about social cognition and writing, Bonk proposed that social cognitive ability is “(1) useful in some way in all writing tasks; (2) a more critical skill in certain genres; (3) a skill that anticipates different reader needs and responses in diverse situations, though relegated to a subordinate role in situations with excessive cognitive demands; and (4) affected by audience determinateness” (p. 151). On the whole, Bonk highlighted how the results of studies that examined social cognition and audience awareness in writing prior to his review generally provided mixed and conflicting results.

Within fiction, different genres may also involve varying degrees of audience awareness (as discussed in Peskin, Mar, & Bischoff, 2009). For example, detective or crime stories often involve an unexpected ending; thus, it could be argued that writers have to anticipate and track their readers’ knowledge states, biases, inferences, and so forth such that they can lead them in the wrong direction. Other genres, such as comedy or horror, typically involve the reader being privy to knowledge that a protagonist may lack (e.g., a character who does not know the person they are sitting beside on an airplane is their new fiancé’s mother), which, one could argue, necessitates that the author track the differing knowledge and emotional states of both the character and the reader. Finally, stories involving shifting points of view, where the author must imagine him or herself intimately inside the heads of multiple different characters in order to narrate through the lens of each, might also put
demands on sociocognitive abilities.

There has not yet been a conclusive answer as to whether audience awareness demands vary with different types or genres of writing and different sub-genres of fiction, or how writing skill impacts audience awareness. It is also unclear whether the notion that a writer must consider the reader (i.e., have good audience awareness) to write skilfully is in fact true.

Peter Elbow (1987) argued the reverse—that focusing on one’s audience can actually impair writing skill (e.g., by making writers self-conscious). According to Elbow, it may be beneficial for an author to focus on the meaning he or she is attempting to convey as opposed to the communicative purpose of writing. “The ability to turn off audience awareness—especially when it confuses our thinking or blocks our discourse is also a ‘higher’ skill…the ability to use language in what we would call the ‘desert island’ mode…only gradually through growth and development do we learn to ‘unplug’ to any significant degree” (pp. 10-11). Elbow argued that humans develop in a social manner via interactions with others, but a higher order stage of development involves being able to reflect inwardly and quietly, to produce good discourse independent of others; to juggle the dual needs of the reader and the audience (e.g., clarity, comprehension, what communicative meaning can be derived from the text, etc.) with the needs of the writer (e.g., what he or she wants to write, how he or she wants to write it, and what personal meaning can be derived from it). Author Don DeLillo seems to echo these thoughts in the following quotation: “When my head is in the typewriter, the last thing on my mind is some imaginary reader. I don’t have an audience.”

Perry (2009) also agreed with Elbow’s argument, noting that when writers are most engaged in the writing process, thoughts about their audience are below conscious
awareness, purporting that most writers have only partial or limited awareness of their audience until the revision stage. The “Freefall” method of writing, pioneered by W.O. Mitchell, involves uninhibited writing without censorship or editing. This method seems in line with the arguments put forth by Perry and Elbow: that skilful writing may flow best when it comes naturally, without too much conscious thought or censorship. The Freefall writing method actively encourages creative writers to turn off audience awareness and let their writing simply flow from a more intuitive or subconscious place until a later stage (e.g., revision). Perry elaborated: “Even during the revision process, writers say they think of the audience only in the interests of clarity, rather than being concerned about the potentially critical judgment of others” (p. 216). This raises the question as to how much awareness a writer need have of their audience. A writer could, for example, think only of clarity (e.g., ensuring that the audience is able to track the author’s storyline as he or she wishes them to), as opposed to considering the audience’s opinions, perceptions, preferences, or judgments.

Following from discussions of clarity, Kroll’s argument that persuasive writing may be the genre for which audience awareness is most vital is interesting to consider, given the differences in the degree of clarity required between such genres as expository writing (persuasive writing) and literary writing (narrative fiction). Primarily what distinguishes literary writing from expository writing is the potential for multiple interpretations as opposed to a single interpretation (Stockwell, 2002). Literary fiction allows readers to make inferences, while genres such as persuasive writing or expository writing (e.g., a high school textbook or a legal document) require that a message be communicated unambiguously (such that the important knowledge is clearly conveyed to the reader). Thus, clarity is of utmost importance when writing expository texts; this is not the case in creative works, where texts allow for multiple interpretations, or may be deliberately misleading or
confusing.

The potential for multiple inferences in fiction makes empathic inaccuracy possible—that is, a mismatch between the author’s intent and the reader’s empathetic response. Empathic inaccuracy can persist because of a lack of feedback; the author and reader typically do not communicate (Keen, 2006). As a result, readers might never know if their response to or interpretation of fictional characters is correct. In that same vein, a writer might never know whether his or her message was interpreted as intended. Thus it may not be necessary that authors and readers make the same interpretive inferences, making it arguably less necessary that authors of fictional texts demonstrate strong audience awareness when writing.

In summary, all writers must to some degree understand and track the knowledge states of their audience. However, the degree to which audience awareness is necessary for fiction writers is debated. It may be that a skilled fiction writer needs to track the mental states of the reader in order to convey their stories, lead readers astray, convey humour or suspense, and so forth. Alternatively, it is possible that focusing too much on one’s audience could be detrimental to the writing process. Fiction writers may benefit from moving beyond a focus on the reader to a focus on the language and meaning of a text, letting the story flow from a more subconscious, uninhibited realm—and when considering audience awareness, focus only on clarity as opposed to audience perceptions. Additionally, literature is open to interpretation; it is not necessary that ideas be conveyed clearly to an audience the way that they need to be in expository texts. While writers who have strong awareness of how their communicative messages come across to their readers might perhaps demonstrate good sociocognitive skills, it is not clear to what degree fiction writers need to have awareness of their audience when writing—and if they do, if such awareness translates to better social
cognition.

3.2 – Characterization

“When writing a novel a writer should create living people; people not characters. A character is a caricature.”
- Ernest Hemingway (Author)

A second reason to suspect that fiction writers may have above average abilities to make mental state inferences is due to the fact that writing fiction involves a sociocognitive facet that non-fiction genres (such as persuasive writing) do not. Writing fiction involves “getting into the heads” of invented characters (i.e., people who are a product of the author’s imagination). Beyond audience awareness, fiction writers must also create the mental states of their characters. Sociocognitive reasoning skills may be challenged to differing degrees by certain situations, such as when a writer invents and crafts a character very different from him or herself, or by using a specific viewpoint or genre.

Fiction writers are, in essence, inventing people with different background characteristics, situational experiences, and mental states than their own. Even when writing about characters similar to themselves, most authors of fiction cannot possibly have experienced every situation that their characters have encountered. In some cases, a fictional central protagonist may differ starkly from the author. Examples of this include: Not Wanted on the Voyage, narrated by a cat (Findley, 1996); Black Beauty, narrated by a horse (Sewell, 1877); She’s Come Undone (Lamb, 1992), narrated by a female coming of age but written by a middle aged male; and the previous examples of characters whose points of view have been explored by fiction writer Barbara Gowdy (i.e., a male kidnapper and a series of elephants).

Most fictional stories involve more than a single character—typically there is at least one protagonist and several supporting characters. Regardless of viewpoint (i.e., whether the character narrates in first person or is narrated about via the third person), fiction writers
must consider the perspectives of each character and how the characters would or should act and react in given situations. Characters differ across several traits such as age, life experience, personality, knowledge, intelligence, gender, sexual orientation, socioeconomic status, political orientation, physical health, mental health, and so forth. An author must portray characters realistically, detailing reasonable and credible mental states and actions for their characters. Otherwise, their texts may read implausibly or be littered with character inconsistencies, and readers may have difficulty suspending disbelief. According to Dunbar (2005), “To make a plausible account, that construction has to dig deeply into the motivations of the characters as well as their actions: to ring true, they have to be plausible accounts of real human behaviour” (p. 12).

It may be that different genres of fiction demand more social cognitive ability from writers than others. One example may be novels or stories written with shifting points of view. It may also be that different points of view require different degrees of social cognition from the writer. For example, an individual who writes in the first person has to imagine being that character. However, in the third person, a narrator arguably tells the story from a greater distance, observing and discussing characters but not necessarily narrating from inside their minds. There does not appear to have been any empirical research to date that has explored this topic, though Barbara Gowdy’s musings about fiction and empathy explore the notion (Bush et al., 2007):

Many fine and even great books contain scarcely any empathy at all. I’m thinking of Blood Meridian, for instance, where McCarthy just moves his un-enterable characters through the magnificent nightmare of his very-distant omniscient narrator. Also a writer like David Gilmour. Gilmour never gets into the head of any character outside the main one, who always happens to be a guy very much like David Gilmour. Gilmour’s a kind of pornographer of himself in his writing, and yet the result is intelligent and compelling, though hardly an exercise in empathy.⁴

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⁴ The author of this quote refers to “empathy,” a concept related to social cognition; recall that good sociocognitive abilities are necessary, but not sufficient for empathy.
Ann Hood (1998) and Janet Burroway et al. (Burroway, Stukey-French, & Sukey-French, 2010), all fiction writers and authors of books on the craft of writing, argue that successful fiction makes readers feel the emotions of characters. Hood goes so far as to say that the very goal of writing is to incite the reader to feel and believe in emotions. Rachel Ballon, a writer, teacher, and psychotherapist, penned a “how-to” manual for writers who are attempting to convey emotions through characters’ behaviour (both verbal and non-verbal). Her chapter, “Lasting Impressions: Body Language, Dialogue, and Subtext” (Ballon, 2003), sensitizes authors to the ways they can convey underlying mental states via temperament, body language, dialogue, etc. Ballon’s choice of instructional method suggests that learning such techniques would translate to increased writing skill, and, one could argue, the methods she describes are already employed by expert/skilled fiction writers.

Using a five-point scale, Fox (1991) demonstrated that, between the ages of nine and 13, children show increasing ability to depict the inner worlds of characters in their narrative writing samples. Fox argued that this demonstrated a progressive awareness of the social world and emerging social cognition, though he did not measure performance-based social cognition and compare scores to children’s narrative writing samples. Still, Fox likened the progression seen in the narratives written by participants in his study to similar developmental progressions in understanding interpretation found in children’s interviews. It is unclear how the writing samples of adults would score on scales like the one used by Fox, if, arguably, their theory of mind is more developed than the children and adolescents used in his sample. That is, would adult participants reach the same ceiling? Fox wrote of certain participants appearing “stuck” at earlier stages of character description; results showed a
range of levels of character descriptions of mental states in the highest age group he tested. It is possible that adults, too, would show such a range of ability. However, it is not clear whether this range of ability would reflect their performance on tests of advanced social cognition.

While this line of reasoning suggests that fiction writers should have above average sociocognitive abilities, it is important to ask: is thinking about characters the same as thinking about real people? A recent study by Mar, Mason, and Litvack (2012) revealed data suggesting the two might be different. Mar et al. found that daydreaming about close friends and family was positively associated with life satisfaction, whereas daydreaming about real life individuals with whom one cannot be close (e.g., a past or potential relationship partner, a stranger, or, most importantly in this case, a fictional character) was associated with negative outcomes such as greater loneliness and less social support. Essentially, daydreaming about a fictional character seems to be linked to greater loneliness and less social support, while the outcomes of daydreaming about real individuals depends on the degree of closeness with the individual. Fiction writers who frequently daydream about their characters may be more similar to individuals who daydream about individuals with whom they are not close: lonely, and lacking in social support. Loneliness in particular has also been linked to decreased brain matter in the posterior superior temporal sulcus, a part of the brain the authors noted involved in the initial stages of social perception (i.e., part of social cognition), such as interpreting eye gaze, hand action, and body movements (Kanai, Bahrami, & Duchaine, 2012). Causality cannot be inferred based on the data from Mar et al. That is, it is not clear whether the daydreaming itself results in the loneliness and decreased social support (e.g., a fiction writer spending more time in their fantasy world versus the real world, which could result in less social interactions, more loneliness, and decreased social
support), or whether individuals who are lonely and lacking in social support may be prone to daydream (e.g., about individuals with whom they wish to be close, or about fictional characters and scenarios).

In summary, accurately portraying characters—a skill required by fiction writers—appears to involve understanding their emotions, their internal states, and their motivations, which, essentially, engages theory of mind or social cognitive skills. Some authors of writing manuals have suggested that developing a deepening understanding of characters’ inner worlds will improve one’s narrative writing skill. Texts written by children appear to show a developmental progression whereby the ability to write about characters’ inner worlds and mental states improves into early adolescence. At the same time, some data suggests that frequent daydreaming about characters could actually be associated with negative outcomes such as loneliness, which may be associated with decreased social perception. An empirical relationship has yet to be proven, specifically in adult populations.

3.3 – Understanding Incremental Mental States in Written Texts

“We want to believe that the grand gestures that seem character-forming are part of a fabric, part of a whole, and that a character can be knowable and predictable (even the unpredictable acts are predictable if we have the full picture, we like to think)—we need only look back on when that man was a child, and when he was a teenager, his first kiss, his peanut butter sandwich, his argyle socks, and we can say: Yes, he will triumph, I saw it from a long way off. But these are stories, illusions, I think, produced with hindsight. If this character fails, I imagine we might just as easily think, Yes, I saw it coming, look at those argyle socks, the peanut butter sandwich!”
- Lisa Moore (Author)

A further line of research in support of the theory that fiction writers may demonstrate above average social cognition considers incremental mental states embedded within language, texts, or stories (e.g., sentences, paragraphs, etc.). An incremental mental state is a line of reasoning where an individual must understand successive levels of mental states. For example, at a first level, a single person thinks or wants something (one mental state). At a second level, someone else has a mental state about the other person’s mental
state (e.g., “She thinks that he wants…”). These levels accumulate: “A knows that B thinks that C wants…” (three levels), “A wishes that B understood that C doesn’t know that D forgot…” (four levels), and so forth. Recall that comprehension of faux pas and irony, which involved understanding two or more mental states, were more advanced tasks, occurring later in development, than understanding or reasoning a single mental state term.

Psychologist Robin Dunbar et al. (Dunbar, 2000, 2004, 2005; Kinderman, Dunbar, & Bentall, 1998), as well as literary theorist Lisa Zunshine (2003, 2006, 2007) claim that fictional texts involve incremental mental states. Both also claim that fiction writers juggle more levels of embedded mental states on a regular basis than readers of fiction and individuals in the general public. If this is true, fiction writers may also have better sociocognitive abilities, though at this time, such reasoning remains speculative and contested. In considering whether fiction writers juggle more levels of incremental/embedded mental states, and can therefore comprehend them more easily than individuals who do not write fiction, it is important to look at the degree to which typical individuals comprehend incremental mental states.

The degree to which the general population can understand sentences containing embedded levels of mental states has been tested empirically. Kinderman et al. (1998) designed the “Imposing Memory Task,” in which participants were presented with five short vignettes. Four of these vignettes involved complex situations with multiple individuals, each with their own mental states. The fifth vignette involved a single individual and served as the control story. After each story, participants were asked a series of forced choice, true-false questions. One set of statements involved mental state elements of the stories, and the other (control questions) were memory questions that asked only about the facts of the stories but did not involve mental states. Both sets of questions increased incrementally, up to five
levels (five mental states or five facts).

Participants’ ability to answer memory/control questions correctly did not increase with the complexity of the questions. However, the ability to answer mental state questions decreased as complexity (the number of levels) increased. Participants were generally able to reason through up to approximately four levels, but error rates rose sharply after this (to around 60%); that is, at the fifth level, participants were scoring levels approximately expected by chance alone. According to Kinderman et al. (1998), there is an upper limit to the number of levels typical adults can handle, as well as differences among individuals in terms of their upper level. While adults appear to able to handle up to four levels of embedded mental states, a study of children aged ten and 11 found that these children performed slightly above chance on third-level questions, and at chance on fourth-level questions, confirming that the ability to reason through increasingly complex scenarios, with increased levels of mental states, improves with age and development (Liddle & Nettle, 2006).

In children, the more levels of embedded mental states one is able to grasp has been found to be related to teacher-rated levels of social competence—a construct related to social cognitive ability (Liddle & Nettle). The teacher-report questionnaire in this research included items such as: accepts others for who they are, is warm and caring, is sensitive to other people’s needs and desires, is good at dealing with others, and has a large social network (Liddle & Nettle). While third party ratings provide some information, they remain inherently subjective estimations of ability, as opposed to direct measures involving individual task performance. Additionally, it can be argued that some items on the questionnaire used by Liddle and Nettle (2006) are not very good direct measures of social cognition, rather they may be more generally related to social competence (e.g., has good
academic performance, doesn’t stick with tasks, etc.). However, this study provides some evidence that individuals who can comprehend more levels of embedded mental states may also demonstrate some pro-social behaviour, perhaps demonstrative of social competence.

So what about fiction writers? Dunbar (2000, 2004, 2005) hypothesized that the ability to reason through increasingly complex levels of mental states (which he refers to as “levels of intentionality”) is relevant to literature, as evidenced by the following two passages:

The fact that people [adults] seem to experience considerable difficulty with fifth-order intentional statements but not fourth-order ones may explain why writing fiction is much harder than reading it, and may thus in part explain why good writers are considerably less common than good readers. In other words, a novelist writing about relationships between three people has to ‘intend that the reader think that character A supposes that character B wants character C to believe that…’—five orders of intentionality. The reader, in contrast, has a much easier task: he or she merely has to ‘think that A supposes that B wants C to believe that…’—four orders of intentionality. Sophisticated literature (i.e., something other than pure narrative) thus places very considerable demands on both writer and reader, but the demands placed on the writer are of an order that starts to create a very significant load on most people’s cognitive abilities. (Dunbar, 2000, p. 241)

…chimpanzees will never write the tales of Shakespeare or compose the poems of Baudelaire or T.S. Eliot. The simple fact is that they do not have the levels of intentionality to be able to do it. Even if great apes could aspire to theory of mind (second-order intentionality) that would not grant them the capacity to produce these most human of all cultural phenomena. When Shakespeare wrote Twelfth Night, he intended [1] that his audience should realize [2] that the much derided Malvolio believed [3] that his mistress Olivia wanted [4] to marry him instead of his being her servant (with the levels of intentionality once again marked in numerical order). And in writing Othello, he intended [1] that his audience realize [2] that the eponymous moor believed [3] that his servant Iago was being honest when he claimed to know [4] that his beloved Desdemona loved [5] Cassio. Shakespeare’s literary efforts were a fourth- or even fifth-order task—and fifth-order tasks, as we saw in Chapter 3, are exacting and challenging even for humans of above average intelligence. (Dunbar, 2004, pp. 161-162)

Dunbar argued that authors must take into account the mental states of the reader or audience, which adds a level above and beyond what readers of fiction experience, in that readers must only juggle the mental states of characters. Dunbar also argued that regular
everyday social interactions probably do not involve more than third-level intentionality because of our involvement in the action, which reduces cognitive load. While reading and enjoying stories (books, movies, etc.) is fairly common, Dunbar calls attention to the rarity of story composition in our society (i.e., there are far more consumers of literature than there are composers of literature).

However, a reader does not have to represent his or her own mind, as Dunbar claimed. He or she can simply understand that A supposed (1) that B wants (2) C to believe (3) X; this is, in fact, only three levels. Furthermore, a writer does not have to represent his or her own mind; he or she has to represent the same three levels of mental states as the reader, as well as the additional mental state of the reader/audience (four levels). Thus, when reviewing work by Dunbar, it can be argued that each of his levels should be reduced by one. The examples he provides from Shakespeare are actually only three levels (i.e., Shakespeare had to represent the mind of the audience to intend that the audience should realize [1] that Malvolio believed [2] that Olivia wanted [3] to marry him) and four levels (i.e., Shakespeare had to represent the mind of the audience to intend that the audience should realize [1] that the moor believed [2] that Iago was being honest in claiming to know [3] that Desdemona loved [4] Cassio) respectively, not four levels and five levels as he claimed. If one examines the items on tasks used by Dunbar et al. (Kinderman et al., 1998; Stiller & Dunbar, 2007) it is clear that an additional level has been added to represent the participant’s own mind. That is, a simple A wants B mental state item is reported as being second-level, whereas it is actually only a single mental state: wants). Therefore, Dunbar’s results can be interpreted such that individuals can handle only up to three mental state terms before error rates start to decrease, with performance on fourth level items and beyond being those that participants find much more difficult, often reducing individuals to simply guessing.
Dunbar’s reasoning remains speculative, since no empirical tests to date have been undertaken to determine whether fiction writers could, in fact, handle more levels of embedded mental states than individuals who do not write creatively, even if it seems intuitive that they should be able to. Similar tasks to Dunbar’s “Imposing Memory Task” have since been developed and tested in neurotypical adult (Rutherford, 2004; Stiller & Dunbar, 2007) and child populations (Liddle & Nettle, 2006).

On the whole, the literature reviewed herein suggests that some relationship between elements of social cognition and skill in reasoning through levelled mental state questions may exist. Brian Boyd (2006) argued that “Zunshine acknowledges that fiction places varied emphases on ToM, but dwells only on examples that support her case, and ignores many kinds of fiction that do not” (p. 590). He also draws attention to the fact that Tolstoy’s famous novel, *Anna Karenina* (1878), “may involve at its most original only one, two or three levels of intentionality” (Boyd, 2006, p. 590). For example, Tolstoy’s work is highly regarded from a literary perspective and argued to be socially complex; Malcolm Bradbury (author and academic) described *Anna Karenina* as “filled with complex family lives and great social events,” and the characters within the novel as “well-rounded presences” with “inner moral depth,” while Vladimir Nabokov (author) hailed Tolstoy as “the greatest Russian writer of prose fiction,” (quotations taken from reviews printed in the opening pages of Tolstoy, 2008).

Boyd further criticized Zunshine’s claims by arguing that her work is not grounded in science and that some of her lines of reasoning suggesting multiple layers of intentionality are inflated. Because differences in interpretation can arguably cause discrepancies between the number of imbedded mental state terms in a novel, one interpretation could suggest a text is not challenging from a sociocognitive perspective, while another interpretation could
suggest that it is. For example, Boyd provided one example in which Zunshine herself drew attention to how a given segment of text could be interpreted as either levels within or outside of the zone that typical human beings are supposedly able to comfortably reason through. This is an extremely important distinction in considering whether or not writing literature engages social cognition via the juggling of multiple layered mental states. Finally, Zunshine’s levels of embedded mental states are based on interpretations of the text; they do not appear in the text with all levels in a given sentence as they do in the questions based on stories Dunbar used in his research (2000, 2004, 2005). Is it completely necessary, for example, that readers understand all possible levels of embedded mental states in a text in order to enjoy, understand, or follow the story? There is, as of yet, no conclusive answer to this question.

3.4 – Comparisons Between Fiction Writers and Other Populations

Further evidence that creative writers might be more skilled at making inferences about the mental states of others can be drawn from research on the sociocognitive skills of individuals who share characteristics with fiction writers and/or who, according to research, demonstrate notable differences in their social cognitive ability (compared to the general public). These groups include individuals with psychological and emotional disorders such as depression (Harkness et al., 2005; Lee et al., 2005), bipolar disorder (Shamay-Tsoory, Harari, Szepsenwol, & Levkovitz, 2009), and alcoholism (Maurage et al., 2011); individuals with autism spectrum disorders (Baron-Cohen et al., 1985); actors and actresses (Goldstein & Winner, 2009; Goldstein, Wu, & Winner, 2009-2010), and fiction readers (Mar, Oatley, Hirsh, de la Paz, & Peterson, 2006; Mar, Oatley, & Peterson, 2009; Oatley, Mar, & Dijkic, 2012).
3.4.1 – Psychological and Emotional Disorders

“Writers write about what obsesses them. You draw those cards. I lost my mother when I was 14. My daughter died at the age of six. I lost my faith as a Catholic. When I’m writing, the darkness is always there. I go where the pain is.”

- Anne Rice (Author)

Fiction writers have been hypothesized as being more driven by negative emotions than other successful professionals, such as scientists (Djikic, Oatley, & Peterson, 2006). Like dysphoric individuals, fiction writers must ruminate on feelings—if not their own, at least those of their characters. Pourjalali, Skrzynecky, and Kaufman (2009) have argued that, for a writer, the process of revision may be a form of rumination. When interviewed, fiction writers have retrospectively reported having solitary, introverted childhoods (Kohányi, 2005a, 2005b), and turbulent, stressful lives (Kohányi, 2005b). Recall that loneliness has been linked to decreased brain matter in a part of the brain involved in social perception (Kanai, et al., 2012). Furthermore, Barron (1966) reported that the creative writers he interviewed (novelists and poets) struggled with “criticism from family and friends, periods of intense self-doubt, financial adversity, sacrifice of important personal relationships, and even public censure or ridicule” (p. 159).

Links have been documented between fiction writing and mental illness (Andreasen, 1987; Kaufman, 2002; Waddell, 1998). Kaufman reviewed the relationship between creative writers and mental illness, arguing that “perhaps the phenomenon is one of causality: Creative writers may not necessarily be unstable; perhaps being unstable is a factor that may help produce creative output” (p. 32). Kohányi (2005a) argued that biographies and autobiographies of creative writers, as well as interviews with creative writers, demonstrate an association between creative writing and mental illness, specifically mood disorders. She, as well as Kaufman (2002), Djikic et al. (2006), and Lubart and Getz (1997), argued that mood disorders might facilitate creative writing. As evidence for this position, interviews
Kohányi conducted with creative writers and journalists (2005b) indicated that, compared to
journalists, creative writers retrospectively reported having been compelled to write by
childhood stress or trauma. Following a comparison of the emotional content of interviews
of creative writers versus physicists, Djikic et al. (2006) wrote, “It is our view that writers
used more emotion-related words when asked about their work because writers’ work is
‘suffused with these emotions, particularly negative emotions, and that these emotions indicate
unresolved issues that writers battle using their preferred weapon—the pen (or more
recently, the word processor)—to resolve them” (p. 200). Finally, as previously mentioned,
fiction writers demonstrated significantly higher scores on a measure of Personal
Distress/Vulnerability to Negative Affect (on a self-report questionnaire) when compared to
population norms (Taylor, Hodges, & Kohányi, 2002/2003). For a more thorough review of
the links between creative writing and depression/psychopathology, refer to Piirto (2009).

Not only do links exist between creative writing and depression, but between social
cognition and depression. Dysphoric individuals (those with mild-to-moderate levels of
depression measured by a self-report depression questionnaire, the Beck Depression
Inventory [BDI]) have been shown to out-perform controls on the RME (Harkness et al.,
2005).

So if depressed individuals have better sociocognitive abilities, as the study by
Harkness et al. (2005) suggests, and fiction writers are more likely to be depressed, does this
mean that fiction writers (by virtue of their depression) have better sociocognitive abilities?
At first glance, the links between dysphoric tendencies and advanced social cognition may
suggest this is true. However, a more critical examination reveals that the relationship may
not be so simple.

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5 Refer to Table 2 for more details about this task; this task henceforth will be referred to as the BDI.
First, one needs to consider depression severity, not just depression in general. In the study by Harkness et al. (2005), in which dysphoric individuals outperformed non-dysphoric individuals on the RME, the authors described “dysphoria” as mild to moderate depression. Yet in Andreasen (1987), creative writing was associated with depression in general, not only mild-to-moderate levels. Looking more closely at depression severity, Cusi, MacQueen, Spreng, and McKinnon (2011) found that having depression actually reduced perspective taking and empathic concern, as well as reduced social functioning (all on self-report rating scales). Weaker performance was correlated with a history of more frequent depressive episodes. Furthermore, Lee, Harkness, Sabbagh, and Jacobsen (2005) compared women with mild-to-moderate depression, women with severe depression, and non-depressed women on the same task on which Harkness et al. (2005) found that mildly to moderately depressed individuals outperformed non-dysphoric individuals (the RME). The severely depressed women performed significantly worse than the non-depressed group, and the mild-to-moderately depressed women performed slightly worse than the non-depressed group (statistical trends only). The finding that mild-to-moderately depressed individuals performed better than non-depressed peers (Harkness et al., 2005) was not consistent with the findings of Lee et al., in which mild-to-moderately depressed individuals actually performed slightly worse, and those with severe depression performed significantly worse than controls. There were no significant differences between the two levels of depression on the outcome variable. This finding suggests that having depression could have a negative impact on social perception, as opposed to the other way around. In response to these discrepant findings, the authors suggested that perhaps having depressive symptoms (e.g., dysphoria) is qualitatively different than meeting diagnostic criteria for depression itself. However, the same scale was used to measure depression in both studies, and the two mild-to-moderately
depressed groups had extremely similar mean scores.

Because depression severity appears to influence social cognition, it is important to examine depression severity and severity of mental illness in fiction writers. In a study by Andreasen (1987), two thirds of the writers sampled had received psychiatric treatment for their depression. Eighty percent of the writers (compared to only 30% of controls) were diagnosed as meeting criteria for an affective disorder (as opposed to simply dysphoric tendencies or symptoms). Forty-three percent (compared to 10%) were diagnosed as having a bipolar disorder; 37% (compared to 17%) were diagnosed as having a major depressive disorder; 30% (as compared to 2%) had alcoholism; and 7% (as compared to 0%) had committed suicide.

Andreasen’s study (1987) suggests it is important to look at mental illness generally as opposed to just depression, when considering the social cognition of writers. Andreasen and Powers (1975) selected 15 writers from the University of Iowa Writer’s Workshop (all of whom had published and many of whom were widely read) and compared them with a group of N=15 individuals with schizophrenia and a group of N=16 individuals with mania. In diagnostic interviews, the vast majority (10 of the 15) met criteria for an affective disorder (either bipolar or unipolar depression), six met criteria for alcoholism, and nine met criteria for cyclothymia (a milder form of bipolar disorder). On tests of creativity, the writers group scored more similarly to the individuals with mania than the individuals with schizophrenia. Patients with euthymic bipolar disorder have been shown to have impaired social understanding compared to controls on self-report measures of perspective taking and performance-based measures that assessed understanding and recognizing cognitive faux pas.

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6 Euthymia typically refers to neither manic nor depressed, indicating that the participants, while meeting criteria for bipolar disorder, were neither manic nor depressed at the time of testing.
in stories; however, no significant between-group differences were found when euthymic bipolar and control participants were compared on the RME (Shamay-Tsoory, Harari, Szepsenwol, and Levkovitz, 2009).7

Furthermore, Post (1996) demonstrated that writers have a tendency towards depression and alcoholism. Like individuals with severe depression and bipolar disorder, individuals who are alcohol dependent have demonstrated weaker performance compared to controls when perceiving mental states via pictures of eyes (Maurage et al., 2011). In this study, causal inferences could not be drawn (i.e., it was not clear whether pre-existing differences in facial perception and social cognition were present before or after the individuals became alcohol dependent).

On the whole, if writers as a group have tendencies to demonstrate psychological problems such as depression, mania, and alcoholism, which have been associated with poorer performances on tests measuring social cognition, it may be true that writers would also perform worse on these measures of social cognition. Again, however, this association has yet to be tested.

Recall that fiction writers reported being isolated and stressed as children (Day, 2002; Kohányi, 2005a, 2005b), in addition to the aforementioned links between fiction writing and internalizing problems (e.g., depression). Gleason et al. (2009) found that children and adolescents who scored better on a measure of empathic accuracy (correctly identifying the thoughts and feelings of individuals seen discussing a problem on videotape) were less likely to suffer from relationship victimization and were better adjusted (i.e., reported as having

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7 The eyes task used in the study by Shamay-Tsoory, Harari, Szepsenwol, and Levkovitz (2009) was a modified version of the RME, which was used in the current study; the version only included one distractor (i.e., one incorrect answer) in addition to the correct answer, whereas the standard RME task employs three distractors. Therefore, this task may have been easier for individuals to discriminate between correct and incorrect, which could be one explanation as to why no significant differences were found.
fewer internalizing and social problems). Does this mean that fiction writers, who reported having more internalizing and social problems, might score more poorly on measures of social cognition such as empathic accuracy? Causality and directionality cannot be determined based on these studies alone. However, it is possible that social cognition, in part, may influence the social and emotional challenges fiction writers appear to face with greater frequency than the general public.

In summary, while fiction writers have been shown to have a higher prevalence and symptom levels of certain psychological disorders, as well as life stress, the causal directions remain unclear, as does how these findings relate more specifically to social cognition. However, these studies do suggest that it is important to consider levels of depression in studies of social cognition in fiction writers, in particular because of the study by Harkness et al. (2005) that suggested mild depression may actually be linked to higher RME scores.

3.4.2 – Autism Spectrum Disorders

“Every writer is a narcissist. This does not mean that he is vain; it only means that he is hopelessly self-absorbed.”
- Leo Rosten (Author)

It has long been theorized that individuals on the spectrum of autistic disorders show weaknesses in theory of mind independent of general intelligence (Baron-Cohen et al., 1985). For instance, individuals with high functioning autism have been found to perform significantly weaker than controls on the RME (Baron-Cohen, Joliffe, Mortimore, & Robertson, 1997).

But how do these findings relate to creative writing? According to Losh and Capps (2003), several studies of narrative ability in individuals on the autism spectrum suggest that, “in autism, theory of mind is related to the ability to infer and describe characters’ internal states in story-telling as well as the ability to implement complex grammatical structures to
bind narrative events into a coherent storyline” (pp. 240-241). Losh and Capps demonstrated that for children and adolescents with high functioning autism, the ability to accurately define emotions and to identify emotions expressed on video was related to several different indexes of narrative ability, such as length, sentence structure, and evaluation, as well as the use of mental state language in narratives. They were also less likely to use causal language in their narratives. This seems to suggest that there may be some relationship between sociocognitive skills and narrative/story-telling ability in individuals on the autism spectrum. Losh and Capps argued that, “as indicated by associations between emotional knowledge and the frequency of children’s descriptions of mental states and causal explanations, emotional understanding may further facilitate narrative practices by rendering explanations of protagonists’ inner states and motivations more accessible to children” (p. 249).

Additionally, Brown and Klein (2011) found evidence that individuals with high functioning autism spectrum disorders scored more poorly than neurotypical controls on writing quality in personal narratives, including the ability to provide a rich internal world for characters to inhabit. In a discussion of the literature on narrative production (typically re-tellings) in individuals on the autism spectrum, Barnes (2012) noted that individuals on the autism spectrum might focus on details at the expense of the big picture, or at the expense of mental states. Craig and Baron-Cohen found that when they were asked to create fictional stories, children on the autism spectrum (as compared to neurotypical children and children with moderate learning disabilities) introduced significantly fewer imaginative elements (2000). Furthermore, individuals with autism spectrum disorders also show a paucity of pretend play or imagination (Barnes, Craig, & Baron-Cohen, 2000), which are related to fiction writing.

If there is a relationship between theory of mind and narrative story-telling, and
individuals on the autism spectrum show deficits in both, this relationship may also work the other way, such that individuals with superior social cognitive abilities may also demonstrate skills in narrative story-telling. However, it has also been argued that individuals on the autism spectrum can actually produce highly successful works of literature—they just might do so in different ways.

Literary theorist Dr. Julie Brown (2010) conducted a literary analysis of texts written by famous authors (e.g., Herman Melville, Hans Christian Andersen, and Lewis Carroll) held in high regard for the fiction and poetry they produced. She also gathered historical and biographic data on these writers. It has been argued that these authors could have potentially been diagnosed as being on the autism spectrum, though such diagnoses are speculative given the biographical retrospective diagnostic approach undertaken. Brown (2010) proposed several hallmarks of the writing lives of authors potentially on the spectrum: a messy/disjointed/collage typewriting process; frequent quoting of other literary works; high perseverance and dedication to the craft; a heavy fixation on “life writing,” autobiographical writing, or self-referential literary works; solitary lives; tendency to “break rules” in straying from or altering non-traditional literary forms; difficulty organizing plot and a tendency to select shorter genres; frequent repetition; highly detailed settings (evoking different sensory experiences); rich use of symbolism; themes of alienation; and liberal use of language, including creating new and novel words. Brown also addressed characterization and audience awareness in works of individuals possibly on the autism spectrum. In terms of character development, Brown posited that writers on the autism spectrum might tend to focus on descriptive or theoretical details as opposed to characters; have interesting, flashy, or superficial characters; or base characters on themselves (often including characters who demonstrate traits of autism). In terms of audience awareness, Brown argued that the works
of individuals possibly on the autism spectrum might be complex, obscure, and difficult to understand. James Joyce, she noted, took pleasure in confusing his readers, often laughing out loud to himself while writing. Despite this, Joyce’s writing has always been highly regarded. This is consistent with the previous idea that literature can be interpreted in many ways. Clarity for the reader is not a necessary feature when it comes to literary genres.

Brown’s (2010) work is fundamentally pseudoscientific—it does not compare the literature produced by authors she theorizes to be on the autism spectrum to works of individuals who do not demonstrate traits of autism. Many of the features she describes as characteristic of writers theorized to have an autism spectrum disorder could also be characteristic of authors who do not have autism. Yet her work still provides an alternative hypothesis that an individual could, in theory, be challenged in social understanding and still write successful, high quality works of literature—perhaps somewhat differently than other writers, but still skilfully nonetheless. If this is the case, it casts doubt on a clear relationship between social cognition and writing.

Additionally, because individuals who show deficits in social cognition also show deficits in writing, this does not necessarily indicate that the opposite is true (i.e., that individuals skilled in social cognition will show skills in writing fiction, or vice versa). There may be a different relationship between fiction writing and social cognition in neurotypical populations than in the relationship observed in individuals on the autism spectrum.

3.4.3 – Actors and Actresses

“I felt I *was* him for a good long while; anyway, I was walking through the world somewhere behind his eyes. I felt a fundamental need...to ground myself as deeply as I could in his world.”
- Peter Behrens (Author)

Similarities exist between fiction writers and actors and actresses (henceforth referred to as actors), a population that has been shown in scientific studies to demonstrate good
sociocognitive abilities. Both fiction writers and actors must “get inside the heads” of their characters to portray them in believable ways. According to Goldstein, Wu, and Winner (2009), actors must reflect about the mental states of characters to an intensive degree through rehearsal, repetition, and practice, to the point where they almost become another person. Actors must also use this information to portray their characters accurately (via body language, facial expression, etc.). “…because actors ‘turn into’ other people over and over, they may be mind reading experts *par excellence*” (Goldstein et al., 2009, p. 118).

Goldstein et al. found that adolescents taking acting classes outperformed controls on the RME and when they had to identify mental states of characters in a film—the Movie for the Assessment of Social Cognition, or MASC (Goldstein, Winner, & Wu, 2009-2010; Goldstein & Winner, 2012; Dziobek et al., 2006). Additionally, students taking an acting class scored marginally higher than control participants on self-reported projection into fantasy or tendency to get absorbed when reading fiction, a measure on which writers have also been shown to score higher (Taylor et al., 2003).

Taken together, this evidence seems to suggest that if actors demonstrate superior sociocognitive skills, then perhaps fiction writers do, too, given the similarities between these groups. However, as with other populations similar to fiction writers, the evidence is conflicting. While adolescent actors outperformed non-actors on a measure of identifying mental states via pictures of eyes (Goldstein, Winner, & Wu, 2009-2010; Goldstein & Winner, 2012), and teaching acting improved adolescents’ performances on a task in which individuals were asked to infer the thoughts and feelings of an encoder on videotape (Goldstein, 2010), ten months of acting classes did *not* improve elementary school students’ abilities to understand faux pas in stories, correctly identify mental states in pictures of eyes, or recognize the meanings of non-literal utterances (Goldstein & Winner, 2012). These are
all tasks that tap social cognition or theory of mind in different ways and using different modalities, including visual and written. It is also possible that the acting students who improved from pre-test to post-test on a measure on which they had to identify thoughts and feelings of an encoder had an advantage over the control group (who were studying other art forms such as music) given that the content of the conversation in the video was about favourite movies. Thus, drama students might have had more familiarity with the films in the video than control students.

In a similar study, Freeman, Sullivan, and Fulton (2003) tested the effect of eight weeks of “creative drama” instruction compared to music instruction as a social skills intervention in 237 randomly assigned third and fourth grade children. “Creative drama” was described as improvisational role-play. “Activities required participants to role play, analyze roles, work cooperatively in creative tasks, and express actions and emotions. Inherent in the activities were reasoning, analysis, creating visual representations of writings, and verbal expression of thoughts. Activities were designed to improve self-concept, self-discipline, and social skills” (p. 134). “Creative drama” is similar to creative writing in that it is improvisational (i.e., involves a generative component in which students must make up what they are going to do next, much in the same way a fiction writer must generate new ideas and character interactions).

No significant group differences were found in social skills based on teacher ratings. Social skills are one possible outcome of having good social cognitive skills. While social cognition was not directly measured in this study, some of the activities involved (e.g., role playing, analyzing roles, reasoning, analysis, and verbally expressing thoughts) could be argued to involve practice in sociocognitive reasoning, which could in turn lead to improvements in an individual’s social skills. The authors noted that the lack of positive
results could be due to the fact that many of the students were rated as having acceptable social skills at pre-test. However, students with already acceptable levels did not become superior to their control group peers (who took music instruction); rather, the groups remained the same. Therefore, it is plausible that if a relationship in which fiction writers demonstrate superior levels of social cognition exists, writing instruction may not improve social cognition skills in individuals who already demonstrate adequate abilities to infer the mental states of others, just as acting instruction did not improve the social skills of the students with adequate social skills in the Freeman (2003) study. It is also important to consider that the aforementioned studies used child and adolescent populations; it is unclear how studies using adults would differ, since children and adolescents are currently undergoing developmental changes in theory of mind.

To further examine the relationship between acting and theory of mind, it is worth noting that Goldstein et al. (2009) described how actors have repeated practice in mentalizing due to the fact that they pretend to be other people over and over. However, a study of the mentalizing ability of psychics noted that, much like actors, psychics work face-to-face and must interpret body language and cues; psychics also must try to make sense of the inner worlds of others based on what they disclose (Dziobek et al., 2005). Psychics, like actors and fiction writers, self-reported significantly higher scores on the Fantasy subscale of the IRI (which measures a tendency to project oneself into fiction), yet when their performance was tested on interpreting pictures of eyes, they did not perform any better than control participants. This data casts some doubt on whether, if actors do demonstrate improved social cognition compared to non-actors, it is the repeated practice that is behind such gains.

The face-to-face interaction inherent in the day-to-day activities of actors and
psychics also casts light on one of the fundamental differences between actors and fiction writers, which calls into question the degree to which one can draw conclusions about the sociocognitive abilities of actors based on writers or vice versa. Acting involves face-to-face contact with other people, while writing is a wholly imagined process. Actors receive visual cues such as body language, gestures, facial expressions, and so forth, whereas writers must imagine these. Acting involves interpersonal interactions, whereas writing is a solitary pursuit. Thus, writers and actors also differ in the degree to which they spend time in face-to-face contact with other individuals, which could also influence the degree to which sociocognitive skills are practiced.

Furthermore, actors are given a character to inhabit—a character that a writer has created, within a world also created by the writer. In contrast, fiction writing is a generative process—the writer creates his or her own world, characters, and interactions. Currie (1985) argued that authors of fiction are intentionally creating, while actors must conform to the script and the directions of the play. While the author may not have complete control, as suggested by the “Illusion of Independent Agency,” or IIA (Taylor et al., 2003), in which characters seem to take on lives of their own, a fiction writer still has considerably more control than an actor in terms of the characters in their story and the characters’ intentions. It remains unclear, however, to what degree writers perceived that their characters actually influence the text, though it can be argued that writers have complete control, whether conscious or not—a character cannot actually make decisions about plot, even if the author feels this way. The phenomenon of IIA will be discussed in greater depth later in section 3.5. Essentially, writers and actors have different levels of control over the plot of a story and its characters, which may influence the degree of social cognition required for each task.

In summary, there is some evidence that suggests that actors demonstrate superior
sociocognitive skills compared to controls, which may lead one to hypothesize that fiction writers should demonstrate similar skills, due to there being some similarities in their practices. However, a closer look at the literature suggests that the findings are not conclusive as to whether or not actors do, in fact, demonstrate better social cognition, or whether acting classes and role-play can enhance perspective taking and related skills. Furthermore, fundamental differences between acting and fiction writing need to be taken into account. Because of differences in creation and control over plot and characters, as well as differences in the degree of face-to-face interaction involved on the job, it is difficult to draw conclusions about the sociocognitive abilities of writers based on studies of actors and vice versa.

3.4.4 – Fiction Readers

“All good books are alike in that they are truer than if they had really happened and after you are finished reading one you will feel that all that happened to you and afterwards it all belongs to you; the good and the bad, the ecstasy, the remorse and sorrow, the people and the places and how the weather was. If you can get so that you can give that to people, then you are a writer.”
- Ernest Hemingway (Author)

There exists a burgeoning body of evidence in support of links between reading fiction and social cognition, championed by Keith Oatley, and his colleagues Raymond Mar and Maja Djikic (e.g., Oatley, 1999; Mar, 2008; Mar & Oatley, 2008; Oatley & Djikic, 2008; Oatley, Mar, & Djikic, 2012). This research has relevance to fiction writers because, like fiction readers, fiction writers must infer the mental states of characters from the information provided in the text. However, fiction writers must not only understand their characters, but also to create the actions and reactions of their characters.

Mar et al. (2006) found that high scores on a measure of exposure to fiction correlated with high scores on the RME, and high scores on a self-report measure of
narrative engagement (self-reported Fantasy subscale on the Interpersonal Reactivity Index\(^8\)), but not with scores on the Interpersonal Perception Task\(^9\) (IPT-15; Costanzo & Archer, 1993). The IPT-15 involves readers viewing video clips and answering multiple-choice fact questions based on reading body language, interpreting dialogue, and so forth. This measure will be discussed in greater detail in section 7.1.2.2.2.2. Mar et al. argued for a relationship between reading fiction and social cognition, despite not finding relationships between fiction reading and all social cognition measures. These findings are interesting, given that reading is typically a solitary activity, and one could argue that spending a great deal of time engaged in a solitary activity might divert one from time spent having live social interactions. It may be that fiction writers, who also spend time in solitary pursuits (likely reducing their level of interaction with live human beings), still accrue social cognitive benefits because of their engagement with characters and because of audience awareness.

Oatley (1999) proposed the simulation hypothesis of literature—that literature provides a mental model or simulation that allows one to “know what another might be wanting, thinking, and feeling” (Mar and Oatley, 2008, p. 175). According to Oatley, even in the absence of live interactions, reading literature simulates sociocognitive reasoning. In support of this hypothesis, it has been found that when reading narrative cues, children take on the perspective of the central protagonist; thus, it seems that perspective taking is an inevitable consequence of narrative comprehension (Ziegler, Mitchell, and Currie, 2005). Gabriel and Young (2011) demonstrated how readers of fiction tend to take on the identity of characters they read about in what they term the “narrative collective-assimilation hypothesis.” In their study, fiction readers who read popular fantasy fiction about vampires

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\(^{8}\) Refer to Table 2 for more details about this task; this task henceforth will be referred to as the IRI.

\(^{9}\) Refer to Table 2 for more details about this task; this task henceforth will be referred to as the IPT-15.
were more likely to identify with traits of vampires, and the same held true for wizards. The authors argue that reading fiction fulfils a need to belong via collective identity. Furthermore, it has been demonstrated that reading narratives about certain activities can activate the same parts of the brain that are active when people actually engage in these activities—for example, simply reading about someone picking up an object can stimulate proprioceptive areas of the brain associated with grasping (Speer, Reynolds, Swallow, & Zacks, 2009). In summary, several studies support an association between social cognition and reading fiction.

According to Mar and Oatley (2008), literature poses a more simplified version of real life in that stories incorporate only important factors and details relevant to the main idea or plot (whereas, in real life scenarios, individuals must discern for themselves what information is relevant). Therefore, drawing conclusions when reading fiction is easier than drawing conclusions in real life—irrelevant information is filtered out. It could reasonably be argued that writing literature may be more difficult (from a sociocognitive perspective) than reading literature because an author must first conceptualize and then select what information is relevant to include. Oatley and Mar (2007) argue that “Culture, and specifically writers within culture, have then worked up, as it were, a theory of character which gives our mental models far more depth, and far more generalizability, than can typically occur in a session of conversational gossip” (p. 188). Essentially, if reading literature activates social cognition, and writing literature is more complex, then one can extrapolate that writing literature would also activate social cognition, perhaps even to a greater degree.

However, while Mar and Oatley (2008) posited that reading fiction is simpler than social reasoning in real-life situations, Feagin (1988) argued that perceiving the intents and emotions of fictional characters while reading is more complex than real-world situations,
since literary factors such as sentence length, repetition, vocabulary, and diction also play a role in interpretation. Adding to Feagin’s point, it can also be noted that in real-world situations, individuals are often privy to aural and visual information (e.g., tone of voice, body language, facial expressions, etc.) that one does not have access to when reading fiction. This might also make drawing conclusions about mental states more complex in fiction than in real life.

Authors vary in the extent to which they provide the reader with information about characters and interpretations. For example, an author may overtly state feelings in a text (e.g., “Molly grimaced in irritation”), while another author may provide evidence for feelings, such as somatic symptoms, and leave the reader to draw his or her own conclusions (e.g., “Jacob crossed his arms and scowled”). Fiction writing instructional manuals (e.g., Burroway, 2010) typically recommend against explicitly stating interpretations—a principle known as “Show, Don’t Tell” (i.e., that it is better to provide observable indicators of emotion). This allows the reader to draw conclusions and make inferences for himself or herself instead of being told what conclusions to draw. Thus, it is possible that, depending on the work of fiction, some texts may be more difficult to interpret because the author has employed more “showing” and less “telling,” whereas others, which provide explicit details, may be simpler to understand from a sociocognitive perspective. Empirical evidence for the show, don’t tell phenomena can be found in Kotovych, Dixon, Bortolussi, and Holden (2011), who found that readers were able to appreciate the thoughts and actions of characters in a text when links were made more implicitly rather than spelled out explicitly. There are similarities between social reasoning in real-life situations, reading fiction, and writing fiction, but the relative difficulty of cognitive tasks in these differing situations and across different texts is not well understood.
While there are similarities between reading and writing fiction, there are also important differences between these two activities that need to be considered when examining the social cognitive abilities of these two groups. When writing a fictional narrative, one could argue that the author can decide what a character would or should do next and write this into the text, while a reader does not have the same degree of control; a reader must make inferences about what the character might do without being able to influence it. This is similar to the aforementioned difference between writers and actors. Readers of fiction are consumers of literature, and therefore are thrust into a world constructed by someone else and must analyze and reason their way through it (as Oatley’s Simulation Model posits). However, the writer is the creator of the fictional world, and therefore has more control and decision making ability than the reader, who must simply follow the story or forfeit. It is possible, then, that individuals would require more sociocognitive skill when reading fiction as opposed to writing fiction.

In further support of this hypothesis, it is possible for writers to base their work on events that have already happened (e.g., stories and situations that they have read about in the newspaper, that have happened to friends or family, or that have even happened to themselves). One example of this is the Man Booker Prize shortlisted novel Room by Emma Donoghue (2010), which the author acknowledges was triggered by newspaper accounts of the real-life story of a woman held in captivity. According to author Barbara Gowdy (in Bush et al., 2007), “Everything in our books is born of our minds, so there’s no escaping the fact that our characters are ourselves…ourselves as we imagine we’d be were we someone else.”

An author can draw on real-life experiences, situations, or cases that occur in the media, and so forth; the author may have the benefit of knowing how the story already
turned out in real life, or can project themselves or elements of themselves into the story, and can use these facts to help them establish motivation, plot, etc. However, the reader is not privy to this degree of forethought, unless events are sufficiently publicized and recognizable, or in which case the author actually calls attention to the infrequent situation on which the novel was based or inspired by. Additionally, the writer (but not the reader) is privy to examples from his or her own life. For example, Donoghue (2010) was able to use her experiences as a mother to a four-year-old son when crafting a five-year-old male protagonist, whereas many readers of Room might lack such close familiarity with children of this age group when making inferences about character motivation or making predictions about character behaviour.

There are arguments to support the finding that reading fiction is associated with advanced social cognition. Due to the similarities between reading fiction and writing fiction, it may seem intuitive that, should fiction reading be associated with social cognitive ability, so should fiction writing. However, there are important differences between the two practices (notably the degree of control over the events of the story and the degree of previous knowledge), which create uncertainty as to whether fiction writers would indeed exhibit more advanced social cognition compared to the general public much in the way readers of fiction seem to. As a final note, it is important to consider that individuals who write fiction are also likely to read more fiction than the general public. Thus, it is difficult to tease apart these two potential contributors to higher levels of social cognition.

3.5 – Empirical Evidence in Support of a Relationship Between Social Cognition and Fiction Writing

There is also empirical evidence that supports the idea that fiction writers may show
enhanced abilities on sociocognitive tasks. First, the results of studies that asked fiction writers to self-report their social cognition or related constructs will be discussed, followed by a closer examination of how these results may relate to studies that have used performance-based measures in typical populations. The thesis will also explore how studies of children (e.g., examining the relationship between narrative development, perspective taking, and theory of mind) can provide some empirical evidence in support of a relationship between social cognition and fiction writing. Finally, the previously discussed literature on genre and audience awareness/social cognition will be reviewed as it pertains to this question.

Drevdahl and Cattell (1958) drew participants from lists of writers who had published extensively within the 10 years prior to the study. All participants were administered a personality inventory testing 16 different personality factors (Cattell’s 16 PF test) for which population norms were available and to which the results from the writers in the study were compared. The results supported the authors’ claim that that writers in general reported higher levels of emotional sensitivity than the general public. However, within that group, they noted that science fiction writers self-reported being less emotionally sensitive than the general public; the authors surmised at the time that this finding is due to science fiction writers’ focus on alternate realities instead of real life situations. These results need to be understood within context; they are based on the self-reported perception of one’s actual abilities as opposed to actual tests, and emotional sensitivity is not the same as social cognition. However, the results do suggest a possible relationship between emotional sensitivity, which appears to be related to social cognition, and fiction writing, perhaps with variability based on genre.

In a similar self-report study previously described, Taylor et al. (2003) administered
the IRI (which, in general, measures social and interpersonal reactivity) to 50 individuals between the ages of 20 and 73 who self-identified as fiction writers and reported engaging in the practice of writing for a minimum of five years. The participant authors reported a wide range of skill levels, with some authors having had several novels published and others having never been paid for their work. The IRI has four subscales: the Fantasy subscale, which measures the tendency to become highly engaged in fictional situations such as books, movies, and daydreams; the Perspective Taking subscale, which measures the ability or tendency to shift perspectives or to take the perspective of someone else; the Empathic Concern subscale, which measures the degree to which an individual experiences feelings of compassion, concern, and so forth for someone else; and the Personal Distress subscale, which measures to what degree an individual experiences feelings of distress (e.g., fear, apprehension, discomfort) when witnessing others having negative experiences. The perspective taking subscale measures a construct that is the most consistent with the definition of social cognition in this study. More about the IRI can be found under section 7.1.2.2.1. Statistical analyses revealed that the fiction writers scored significantly higher than population norms for both males and females for the measure, particularly on the Fantasy and Perspective Taking subscales. Both of these self-report measures together provide some evidence that fiction writers in general self-report higher levels of constructs related to social cognition (i.e., emotional sensitivity, interpersonal reactivity, etc.).

While the two self-report studies (Drevdahl & Cattell, 1985; Taylor et al. 2003) alone may make it difficult to draw conclusions about how authors would actually perform on performance-based sociocognitive tests, taking the work by Taylor et al. in conjunction with other studies provides stronger evidence. For example, in his doctoral dissertation, Mar (2007) found statistically significant correlations between the Fantasy subscale of the IRI (on
which fiction writers scored higher than population norms) and scores on the IPT-15, as well as positive associations or trends noted with the RME, though he did not test writers directly. Rather, Mar tested 94 individuals from the University of Toronto community aged 17 to 54. It is unclear based on Mar’s results whether the relationship between the IRI Fantasy scores and IPT-15 scores would also be true within a sample of fiction writers.

A more recent study (Mar, Oatley, & Peterson, 2009) found statistically significant associations between the Fantasy measure of the IRI and scores on the RME in 252 English-speaking individuals aged 17 to 38 \(M = 18.2\). This suggests that writers who, in the study by Taylor et al. (2003) showed higher scores on the IRI, could plausibly perform better on the IPT-15 and the RME. However, Mar (2007) noted that studies have shown inconsistencies in the degree to which various measures of social cognition are related, despite claiming to measure similar constructs.

One can also find evidence for a relationship between narrative writing and sociocognitive skills via studies of children. First, one can look at the empirical relationship between theory of mind and narrative storytelling in children reported by Comay (2008), who asked 66 children between the ages of four and seven to dictate two original stories. Comay also tested the theory of mind of these children using a variety of tasks, including some more advanced than the simple false-belief tasks such as second-order false belief tasks. A second-order false belief task requires children to understand an incorrect belief held by one character about the belief of another (i.e., Suzy believes that Andrew thinks that the apple is in the basket, but Andrew knows that it is in the refrigerator). Comay’s results demonstrated a developmental progression in narrative ability—children’s stories improved from simple action sequences to stories with complex plots that showed evidence of both character and audience perspectives. Theory of mind abilities were found to significantly and
independently predict narrative perspective taking after variables such as age, working memory, and language ability were accounted for. Comay’s results provide empirical evidence for a relationship between perspective taking in children’s narratives and theory of mind. However, Comay tested young children who were in the process of developing both theory of mind and narrative writing abilities, as opposed to adults. Furthermore, Comay, examined indicators of perspective taking within a narrative as opposed to more broadly examining quality. Finally, Comay studied typical children as opposed to selecting specific groups (i.e., specifically selecting for individuals who showed advanced narrative skills or an intense interest in producing narratives).

Moving into an age group slightly older than that studied by Comay (2008), recall Fox’s descriptive study of the increasing inclusion of character’s inner worlds in children’s fictional narratives between the ages of nine and 13, which he argued demonstrated a progressive awareness of the social world and emerging social cognition (1991). Fox, however, did not measure theory of mind or performance-based social cognition and compared scores to children’s narrative writing samples.

Empirical associations have been documented between performance on theory of mind tasks in young children and rich fantasy lives. Better performances on theory of mind tests have been observed in children with imaginary friends (Taylor & Carlson, 1997, 2004). Children with imaginary friends have been found to demonstrate significantly better narrative and story-telling ability—both in terms of re-telling a story that was read to them and telling a story of a life event—compared to peers without imaginary friends (Trionfi & Reese, 2009). As adults, the fiction writers in the study by Taylor et al. (2003) retrospectively reported having more childhood imaginary friends than rates in published studies, with these imaginary friends also being comparatively more detailed and unique.
Perhaps the adult version of an imaginary friend could be something like a fiction writer’s character. The previously described Illusion of Independent Agency, or IIA (Taylor et al., 2003) is when fiction writers experience their characters as having independent thoughts, words, and/or actions. In the study by Taylor et al., the vast majority (92%) of fiction writers interviewed reported having experienced IIA, and those who were published or had been paid for their work (i.e., who were arguably more experienced) were more detailed and frequent in their reports of IIA. Additionally, the writers as a group reported a greater percentage of childhood imaginary companions than population norms. Taylor et al. reported IIA as being similar to the finding that young children experience their imaginary companions as being independent from themselves. One textual example of IIA is Betty Jane Hegerat’s novel *The Boy* (2011), in which Hegerat includes “conversations” she had with a fictional character, Louise, as exemplified by the following quote about “arguing” with Louise over how the story was going to end: “I wanted the reins in my own hands. Louise had seized control like no other character I’d ever encountered, but I was determined that the ending to her story was going to be mine” (p. 153). IIA has also been documented in interviews of writers (collected by Oatley and Djikic, 2008), who commented that “new thoughts occurred while they were writing…discoveries, for instance, of characters behaving in ways they had not anticipated” (p. 17). Doyle (1998) also provides interview content that speaks to IIA as being part of a writer’s “fictionworld” (p. 32).

However, when interviewed by Herbert Gold for *The Paris Review*, and asked whether he had ever experienced IIA, author Vladimir Nabokov referred to IIA as a “trite little whimsy about characters getting out of hand,” calling it “old as the quills,” and describing his characters as “galley slaves,” arguing that he, the author, is in charge (Gold, 1967). As previously mentioned, it remains unclear to what degree writers perceive their characters as
actually influencing the text, however, it appears from the studies described herein that a
great number of writers do, in fact, experience this phenomenon.

Finally, some empirical evidence can be drawn from the aforementioned studies on
genre and audience awareness/social cognition, even though the results were conflicting.
Recall that Kroll (1985) found a relationship between RCQ scores and the quality of
literary/narrative writing, as did Rubin et al. (1985), though the results of the latter study
were statistically inflated (Burleson & Rowan, 1985). While the empirical evidence above
suggests there is in fact a relationship between fiction writing and cognitive complexity,
which is related to social cognition, other evidence creates a more complicated picture.

3.6 – Generalizability to Real Life Scenarios

“[Writing is] not a healthy way to make a living, to sit in a room by yourself making up
conversations.”
- Will Ferguson (winner of the 2012 Scotiabank Giller Prize)

It is also worth exploring the idea that, even if fiction writers are able to create
authentic characters with complex inner worlds, this ability may not generalize to real world
social interactions, given that writing is largely a solitary pursuit. If one spends long hours in
a solitary pursuit such as writing, they may be spending less hours in face-to-face, real-life
interaction, where they can practice and apply social reasoning and social interaction skills.
Additionally, writing is a wholly imagined process—a process that takes place within the
mind of the author. Therefore, imagining the complex inner worlds of characters and
understanding their motivations and experiences might not necessarily translate to more
social-perceptual types of sociocognitive processes, such as reading facial expressions or
body language, or translate to live moment-by-moment interactions with a partner or
partners. Myers and Hodges (2009) noted that “during real-world interactions, one has an
objective standard (i.e., the actual target person) to compare against one’s mental simulation
and can determine how correct it is, while with fiction writing there is no objective standard against which to determine the accuracy of the mental simulation” (p. 293).

When considering generalizability of the social cognition aspects of writing to the social cognition tasks of real life situations, it is important to recall the distinction between having skills or tools, and using or applying them (Keysar et al., 2003). It is also important to recall the finding that no relationship existed between children’s performance on a theory of mind story interpretation task and children’s internal state terms when providing narratives or describing friends (Meins et al., 2006), which suggests some independence between the presence of social cognition skills and their use or application. It may be that fiction writers are able to apply their sociocognitive skills or “tools” in one context (their fictional stories), but not necessarily in every day social situations. Whether they truly have more superior tools or more reliable ability to use these tools remains unknown. In this vein, when Day (2002) interviewed four writers, all reported being socially isolated and feeling “odd” when compared to their peers, though this sense of being an outsider, they claimed, helped them to become more observant. Additionally, Love and Stosny (2007) wrote that:

Even men who are highly skilled at writing, like poets and novelists, are not good at applying their language skill in their marriages. They tend to be narcissistic in their use of emotional vocabulary and unable to relate it to people close to them. In other words, they can use language to connect to themselves and to people in the abstract but not to those close to them. (p. 59)

It is possible that social cognition is more domain or context-specific—that individuals can demonstrate skills in some areas of their lives but not others, due to factors such as motivation, working memory, emotional stress, personal involvement, and so forth. On the whole, it remains to be clarified to what extent writers show superiority in social

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10 This line of reasoning appeared in a relationship self-help manual; however, the original study/data from which this conclusion was drawn was unable to be located/identified.
cognition, and to what extent it translates to their real-world experiences.

3.7 – Exploring Causality and Directionality

As described, there is some indirect support for the association between fiction writing and social cognition, though the relationship has yet to be directly tested. If such a relationship does exist, several other questions arise regarding causal direction. Is it that the act of writing fiction, which involves spending time considering the knowledge of the audience (audience awareness) and the mental states of characters (characterization), actually fosters sociocognitive ability? Or, conversely, is it that individuals who are naturally inclined with more sociocognitive aptitude are more likely to choose fiction writing as a career? Each of these possibilities will be discussed in the following sections.

3.7.1 – Does the Act of Writing Fiction Foster Social Cognition?

“If you do not have an alert and curious interest in character and dramatic situation, if you have no visual imagination and are unable to distinguish between honest emotional reactions and sentimental approaches to life, you will never write a competent short story.”
- Edward J. O’Brien (Author)

Would teaching individuals to write fiction and having individuals engage in repeated practice improve their sociocognitive ability? And if so, is there a relationship between sociocognitive ability and writing skill (with either individuals with more advanced sociocognitive reasoning abilities being able to produce higher quality fiction, or vice versa)? In this section, indirect evidence that teaching fiction writing could, theoretically, improve performance on social cognitive tasks will be outlined. These findings are indirect because they come from studies of reading fiction, writing and role-playing about a psychology client, or of teaching acting, each of which approximate, but are also fundamentally dissimilar from the practice of writing fiction.

Mar (2007) examined the association between reading fiction and better performance on a measure of “social reasoning” and the causal direction of this association (i.e., whether
fiction readers are drawn to read fiction because they possess social reasoning abilities, or whether reading fiction actually improves social reasoning abilities). He sampled 303 individuals between the ages of 17 and 36 enrolled in an introductory psychology class at the University of Toronto. Participants were randomly assigned to read either a selected short work of fiction or a selected short work of non-fiction. Participants then completed an Analytical Reasoning test (drawn from items on the LSAT) and a Social Reasoning test created by Mar for the purposes of the study. Mar’s social reasoning task involved a series of written vignettes with multiple-choice answers that required participants to make an interpretation about the characters in the text. It was scored based on general consensus (e.g., the response or responses chosen by the majority of participants). Those assigned to read fiction were found to perform better on measures of social reasoning than those assigned to read non-fiction, even with such brief exposure—participants assigned to read fictional read only a single story on a single occasion. This provides evidence in favour of fictional exposure being causal in inducing better sociocognitive reasoning.

Similar results were found in two additional studies (Dijkic, Oatley, Zoeterman, & Peterson, 2009a, 2009b), in which 166 university undergraduates were administered a personality inventory and an emotions checklist before and after reading either a work of fiction (experimental group) or a work of non-fiction that contained the same information as the fictional story (control group). Those who read the fictional text demonstrated changes in personality even though personality traits are argued to be temporally stable. Participants who read the fictional text also evidenced significantly greater emotion change than those who read the control text, which was found to mediate the trait change (i.e., the change in personality traits as measured by personality testing). In the latter study, participants evidenced more emotion change when they were classified as having avoidant attachments.
(patterns of relating to primary caregivers and/or relationship partners in avoidant ways) suggesting fiction has the potential to reach and affect even those potentially closed off to emotions. Analyses revealed that the results were not due to differences in interest level of the texts, and were not the effects of mood induction. Again, changes were observed following having only read one short story—a single and brief exposure to fiction. The idea that fiction can impact outcomes related to social cognition through simulation has been called the Social-Improvement Hypothesis (Mar & Oatley, 2008; Mar, Djikic, & Oatley, 2008; Zunshine, 2006).

Further evidence about the potential causality/directionality of these phenomena can be drawn from Poorman (2002). Poorman documented the results of an exercise in which psychology students (either advanced undergraduate students or graduate students) were required to write a brief biography of a hypothetical client and then role-play this character interacting with others. Thirty-six of these students completed the IRI before and after the exercise. Writing the biography and role-playing the character were found to promote significantly decreased empathic concern, but significantly increased personal distress following the activity. The authors argue that these two significant changes meant that the participants in the study felt “a loss of experiencing sympathy and compassion for others in distress and a gain in feeling another’s distress as their own and making less distinction between themselves and another person in distress” (p. 34). When interviewed about the exercise, several students reported that the exercise helped them feel what their character would likely have been feeling. Overall, the authors argue that the results suggest that the exercise decreased emotional distance between the student and their character. Again, these results suggest a possible causal relationship, whereby changes in sociocognitive abilities (though self-reported) could be induced via an exercise in which individuals spent time
imagining the thoughts and feelings of another person (a process similar to character development and imagining characters interacting during fiction writing). It is unclear to what extent the written component and the acting component each contributed to the overall results, or whether the results simply arose from the overall cognitive task of putting oneself in the shoes of another person and imagining their experiences (whether written or demonstrated).

Using a very different procedure, Costabile and Klein (2008) required 49 psychology undergraduates to view videotaped interactions and then to either “a) memorize the sentences, b) form an impression of the individuals described in the sentences, c) create a story using the sentences, or simply d) read the sentences” (p. 423). Participants were then asked to explain the behaviours described in the sentences, and responses were coded for the inclusion of inferences. Those who were given instructions to write a narrative made more inferences than those who simply read the text, as well as those asked to form impressions of the people in the sentences. These data seem to suggest that narrative writing encourages making inferences about people’s behaviour over and above trying to understand what kind of person they are.

In a subsequent study by the same authors (Study 2; Costabile & Klein, 2008), 72 psychology undergraduates were given sentences to read, and told either to a) memorize the sentences, b) create a story using the sentences, c) communicate the sentences to a partner, d) create a story from the sentences and communicate the story to a partner or e) simply read the sentences. The results indicated that inferences generated by those who only wrote a narrative, or who wrote a narrative and then told it to someone else, were not significantly different. However, those asked to generate a narrative did better than those simply asked to relay the information to someone else (not in narrative form). The authors found that
participants given narrative instructions were more likely to complete a word stem task (in which they had to generate the first word that came to mind) with a word that could be a hypothesized prediction of the outcome of the events in the sentences. This provides some evidence that narrative may induce inferential thinking, or thinking about plausible outcomes or what would happen next in a story. Costabile and Klein (2008) suggested that, “when directed to construct a narrative of a sequence of novel events, people are motivated to fill gaps in the sequence to explain how and why the observed events occurred” (p. 428). However, this differs from generating fictional narratives, in which one is not trying to make sense of why events are occurring using narrative form, but rather generating their own events and characters. Additionally, Costabile and Klein did not measure whether the ability to make social inferences generalized to novel situations (e.g., social interactions a person may encounter day to day). They only tested the ability to make inferences or predictions about the events described in the original sentences. Taken together, these studies suggest that there may be something unique about generating narratives that facilitates making inferences—perhaps inferences related to mental states and/or social interactions.

A study by Goldstein (2010), in which children were provided with acting classes, also sheds light on the question of causality (given the conceptual similarities between writing fiction and acting). Fundamentally, in both processes, individuals must “get inside the heads” of the characters they portray. Children and adolescents who participated in acting classes showed improved performance on a measure of social cognition that Goldstein designed, in which a video of a woman in conversation was played, but stopped at various points. Participants were asked to infer the thoughts or feelings of the woman each time. Correct answers were based on the answers provided by the woman in the video, who was asked to watch the video back and stop the video each time she remembered what she
had been thinking or feeling. Pre- and post-tests of students in the acting class when compared to a control class revealed that participation in the acting class only fostered improvements in the ability to correctly identify the thoughts and feelings of the woman in the video. It remains to be seen whether this would be the case for individuals who participated in writing classes. It is conceivable that writing instruction may have a similar effect. However, there are a number of concerns with the video method Goldstein used, which will be discussed in section 7.1.2.2.5. Essentially, methodological concerns limit the conclusions that can be drawn from studies employing this measure.

While the tasks used by Mar (2007), Djikic, Oatley, Zoeterman, & Peterson, (2009a, 2009b), Poorman (2002) Costabile and Klein (2008), and Goldstein (2010) differ substantially, each of the studies seems to provide evidence in favour of a causal relationship wherein having individuals engage in practices that share similarities to fiction writing (e.g., reading fiction, writing biographical case studies, role playing, writing narratives, acting, etc.) may result in improvements in socio-cognitive abilities—in some cases, even following very brief exposures. However, each exercise only approximated the act of writing fiction, and was not designed to directly test whether fiction writing itself induces changes in variables related to social cognition.

According to Taylor et al., “fiction writers are particularly interesting because they are fantasy-oriented to begin with and they develop additional imaginative skills on the job” (2003, p.378). More broadly, “narrative practices may both draw on and foster emotional knowledge” (Losh & Capps, 2003, p. 249). Causality may run both ways—fiction writers may choose to write as a hobby or profession because of pre-existing tendencies, but the activities of writing fiction may also foster further development of imaginative skills. Similarly, Dziobek et al. (2005) argued that, “superior social cognition may arise from a
combination of inborn talent and ongoing practice. A concurrence of both likely can be expected in areas of professional specialization” (pp. 240-241). They noted that little is known about populations who demonstrate superior sociocognitive abilities, as opposed to populations that demonstrate impaired theory of mind. In her study of empathy, Keen (2006) noted that “fiction writers as a group may be more empathetic than the general population [and] the activity of fiction writing may cultivate novelists’ role-taking skills and make them more habitually empathetic” (p. 221). Ultimately, it is unclear whether fiction writers choose the job in part because they have better social cognitive skills (a self-selection bias), whether writing fiction advances social cognitive skills, or, as Taylor et al. (2003) and Dziobek et al. argue, both play a role.

3.7.2 – Pilot Study

To begin to investigate the question of causality, a pilot study (2010) was conducted to examine whether having individuals randomly assigned to either an experimental intervention (generating a novel character) or a control task (generating a novel product) could result in between-group differences on measures of social cognition, in much the way that Mar (2007) found differences between those who read fiction versus those who read non-fiction after only a single exposure. Participants were N=31 adults (19 females and 12 males) with a mean age of 26 years (range 18-49). Their level of education ranged from completion of high school to the completion of a master’s degree; this was considered a highly educated sample, with most participants having completed a bachelor’s degree or more. All participants were fluent in English, though 35.5% of the participants reported that English was not their first language. All participants completed demographics questionnaires that probed variables such as age, gender, writing history, writing habits, and ESL status. Participants were then administered the Author Recognition Test (Stanovich & West,
a test of exposure to literature (i.e., a measure of how well read someone is based on how many authors they can identify from a list of authors interspersed with fake name foils).

Participants were randomly assigned to either the “Character” group (experimental group) or the “Product” group (control group). Participants in the “Character” group were first given instructions to spend 10 minutes creating a character (e.g., brainstorming and jotting down information about a fictional character) and then another 10 minutes imagining their character interacting with other characters following an emotional event. In the “Product” group, participants were given instructions to spend 10 minutes creating a product (e.g., brainstorming and jotting down information about the product) and then 10 minutes imagining the product in comparison to other products at a showcase. The experimental “Character” condition was designed to replicate the process that fiction writers go through when inventing characters and imagining them interacting with other characters, whereas the control group involved a similar generative/imaginative component, but with an inanimate object, effectively removing mental states from the activity.

Next, all participants responded to questions about variables such as perceived task difficulty, engagement, interest, and current emotional level (e.g., happy, sad, anxious, etc.) on Likert scales. They then completed the Movie for the Assessment of Social Cognition multiple-choice version (MASC-MC; Dziobek et al., 2006; Fleck et al., 2006). The MASC-MC is a scripted 15-minute movie involving four characters (portrayed by actors) getting together at a dinner party. Participants must answer multiple-choice questions at various points during the film. The original version of the film was in German; however, a version dubbed into English was used in this pilot study. Questions on the MASC-MC probe respondents’ inferences about actors’ mental states (thoughts, emotions, intentions, etc.).

Refer to Table 2 for more details about this task; this task henceforth will be referred to as the ART.
The movie is varied in terms of language, gestures, and facial expressions, and includes false belief scenarios, faux pas, metaphor, and sarcasm, thus depicting a broad range of mental states.

Psychotherapists have been found to score higher on the MASC compared to controls (Hassenstab, Dziobek, Rogers, Wolf, & Convit, 2007), as have actors (Goldstein & Winner, 2009; Goldstein, Wu, & Winner, 2009-2010). Individuals with Asperger’s Syndrome have been shown to perform lower overall (Dziobek et al., 2006) and individuals with bipolar disorder perform lower in terms of cognitive mentalizing—questions that probe what characters are thinking as opposed to feeling (Montag et al., 2010). The MASC has also been used to study participant manipulations, such as performance following a stress induction (Smeets, Dziobek, & Wolf, 2009). The MASC has also been used in adolescent populations (Komer, Chuleva, & Cluasen, 2009).

After presentation of the MASC, all participants were asked to repeat the second part of the intervention—that is, to spend 10 minutes either imagining their characters interacting with other characters, or to imagine their products being showcased alongside other products. However, participants were told to imagine their character interacting with a different set of characters, or their product being showcased alongside different products from the first intervention. Participants then completed the RME (the Reading the Mind in the Eyes) test; recall that the RME requires participants to view black and white pictures of the eye region of a face and select from four multiple-choice options which word best describes what the person in the photo is thinking or feeling. Finally, participants completed the RCQ (Role Category Questionnaire); recall that the RCQ required participants to write down as many traits about both a known liked and a known disliked peer (with five minutes allotted for each peer). Given the small sample size, effect sizes were calculated in addition
to the statistical tests ($p < .05$ significance). Cohen’s $d$ effect sizes above .5 (moderate effect size) were considered meaningful and were reported.

No between-group differences were found on any of the following variables: gender, age, level of education, ESL status, performance on the ART (i.e., literary exposure), the Likert scale variables (difficulty, enjoyment, engagement, alertness, happiness, sadness, anger, and anxiety). None of the outcome variables correlated with any of the control variables (e.g., age, education level, ART score, etc.). This finding is in contrast with the results reported by Mar (2006), in that Mar found a relationship between ART scores and scores on the RME. Both age and education were significantly correlated with ART scores, suggesting that older individuals and individuals with higher levels of educational attainment tended to be more well read or have more literary exposure.

No statistically significant differences were found between groups on the MASC-MC. Interestingly, however, a trend in the data suggested that participants in the control group performed somewhat better on the MASC-MC than the intervention group, $p = .081$, $d = .649$. Furthermore, t-tests indicated that the control (Product) group performed significantly better ($p < .05, d = .710$) than published population norms for the MASC-MC (34.5). This was not true for the intervention (Character) group (that is, no significant differences were found between scores on the MASC-MC for the “Character” group compared to population norms). No significant between-group differences were found for scores on the RME, and the measured effect size did not meet the a priori threshold for being meaningful ($d = .317$). Both of these statistics suggest that the intervention did not result in any significant or meaningful differences on the RME measure.

Scores on the MASC-MC and the RME were also compared based on pre-existing participant characteristics. That is, individuals who reported writing fiction as a hobby ($N=6$)
were compared to those who did not (N=25), and individuals who reported writing creatively in any format (e.g., poetry, song lyrics, etc.) as a hobby (N=17) were compared to those who did not (N=14), regardless of which study group they participated in. This comparison allowed for comparison of groups based on pre-existing characteristics. It should be noted that there were no established criteria for fiction writers (i.e., in terms of hours of practice, publication, etc.); inclusion in the pre-existing fiction writer category was based on self-report alone. There were no significant differences for these groups on either the MASC-MC or the RME, and no significant differences for either individuals who self-identified as writers or individuals who reported that they did not write creatively compared to population norms on the MASC-MC.

The data suggested that there are no differences in sociocognitive skill as measured by the RME and MASC-MC between individuals who did or did not write creatively in general, and fiction specifically. However, when considering the intervention, the control group performed significantly better than population norms on the MASC-MC; this was not the case for the intervention group. It is hypothesized that there may have been an activation of audience awareness in the “Product” group category, since participants were asked to imagine themselves having to market and sell their product, and having their product compete with other products. They may have been thinking more about what people would like or dislike. Interestingly, while participants in the “Character” group spent 30 minutes actively thinking about people interacting and how different characters would behave in response to emotionally provoking situations, this did not appear to have any effect on their performance on either measure of social cognition.

Both the MASC-MC and the RME are direct measures of social cognition. While not a direct measure of social cognition, scores on the RCQ were also examined, given the
RCQ’s relatedness to social cognition and associations with tasks measuring social cognition. There were no statistically significant differences, but the means of individuals who were randomized to the experimental condition were higher for both the RCQ Liked Peer and RCQ Disliked Peer, and on the Disliked Peer version, the effect size was moderate (Cohen’s $d = .543$). This suggests that individuals who engage in a process similar to fiction writing may be better able to think about people in cognitively complex or differentiated ways (especially known individuals that they dislike). The difference may also have been due to a practice effect—the experimental intervention required participants to brainstorm and think about imaginary characters, thus it is quite similar to the RCQ task, while the control task (thinking of a product) is not nearly as similar.

The groups did not differ significantly on any of the demographic variables (i.e., age, level of education, and gender) or scores on the ART (i.e., a proxy of how well read they were). Additionally, no statistically significant between-group differences were found on the MASC-MC and RME, and the effect sizes for both of these measures were below threshold (Cohen’s $d = .255$ and Cohen’s $d = .482$ respectively). While the RME effect size approached threshold, it should be noted that the mean of the control group was actually higher than the mean of the experimental group.

RCQ scores were also compared on the pre-existing participant characteristic variables (i.e., writes fiction vs. does not write fiction/writes creatively in general vs. doesn’t write creatively in general). When comparing those who wrote fiction to those who did not, there were no statistically significant between-group differences on the RCQ Liked or Disliked Peer. However, trends were evident such that, for both versions of the RCQ, individuals who wrote fiction in some form in their lives outperformed those who did not. The effect size for the Liked Peer RCQ was above threshold (Cohen’s $d = .634$), as was a
Total RCQ score calculated by summing the individual scores for the Liked and Disliked Peer (Cohen’s d = .605).

When scores were compared for those individuals who reported writing creatively in some format compared to those who did not, again, no between-group differences were found on the MASC-MC or the RME, and effect sizes did not meet the a priori threshold for meaningfulness. However, there was a moderate effect size in the right direction for the Total RCQ score (Cohen’s d = .509), and the effect size for the Disliked Peer was very close to threshold. The statistical analyses may have been limited by power (i.e., sample size), especially for the comparison between individuals who self-identified as fiction writers (N=6) and those who did not write fiction, in that the pilot study did not specifically select for fiction writers. The results of the RCQ comparisons were also reported in Peskin (2011).

In summary, the results of this pilot study provide some evidence that there may be no superiority for fiction writers or for individuals who engage in fiction writing simulations on tests of social cognition, despite the fact that many theorists and scholars argue that fiction writers should be better. It is also plausible that the intervention used in this pilot study was not a long enough simulation for these participants, and that benefits would accrue for true fiction writers, who spend significantly more time thinking about their characters and audience.

However, the results of all three between-group comparisons (experimental group vs. control group; fiction writers vs. individuals who did not write fiction; creative writers in any genre vs. individuals who did not write creatively) showed some evidence of trends on the RCQ. Thus, while not showing any advantages on social cognition per se, individuals who write fiction, write creatively in general, or complete tasks requiring them to think like a fiction writer may be more able to think about others in more cognitively complex or
differentiated ways. Regardless, the results in general suggested no differences on direct measures of social cognition on tasks requiring participants to reason or make inferences about the mental states of others.

3.7.3 – Is Fiction Writing Skill Related to Sociocognitive Skill?

“Most good writers are good psychologists.”
- Rachel Ballon

While the pilot study did not provide evidence for sociocognitive differences between writers and those who do not write, or individuals asked to think like fiction writers compared to a control group, the evidence is conflicting, and there is a great deal of theoretical (if not empirical support) for the idea that fiction writers may be more adept at sociocognitive reasoning. Beyond the simple question of between-group differences is the question of how fiction writing skill or ability, which varies between writers, factors into the equation. That is, is there a relationship between how skillful an individual is in their craft and their sociocognitive reasoning? If the practice of writing enhances sociocognitive abilities, does stronger writing ability translate to stronger sociocognitive skills? Do stronger writers also show better sociocognitive ability? Do individuals with better sociocognitive skills write higher quality fictional narratives? Do individuals with better sociocognitive skills demonstrate their sociocognitive skills via their writing (through characterization, point of view, language, content, and so forth)? So far, these questions remain untested, and the directionality of any possible relationship remains unclear.

Recall again the conflicting findings from Kroll (1985), Rubin et al. (1985), and Burleson and Rowan (1985). Kroll found a relationship between RCQ scores and the quality of literary/narrative writing, and Rubin et al. claimed to find a relationship between social cognition and narrative writing in children using a variety of measures (none of which were used in the current study). However, their results were later statistically challenged. Burleson
and Rowan found no relationship between self-expressive narrative writing skill and RCQ scores.

A study of the writing of 40 fifth grade students (Dray, Selman, & Schultz, 2009), found associations between the social-awareness related content in both persuasive writing and narrative writing each with scores on the Relationship Questionnaire, a validated self-report measure which presents participants common social situations and dilemmas involving peers and adults. This is not a measure of social cognition, but rather a related measure, one that assesses “the capacity to identify and negotiate intergroup relationships” (p. 126). This could, arguably, be a behavioural outcome of strong social cognitive abilities.

The coding scheme for the social-awareness related content was as follows: “(1) perspective-taking (the capacity to understand and coordinate other points of view with one’s own), (2) social understanding (the knowledge the student’s writing demonstrated about the nature of both interpersonal and intergroup processes), and (3) relational management, (strategies identified by a child as necessary to make and maintain relationships, including intergroup relations)” (p. 119). More specifically:

Narrative social awareness was defined as the understanding the student demonstrated about social relationships, such as evidence of characters’ internal states, strategies for solving social problems, and audience understanding. The audience’s perspective was captured if the student created a plot with a satisfactory conclusion and demonstrated audience awareness by allowing the reader to make inferences. (p. 119)

Dray et al. (2009) found strong associations between the social awareness and scores on both persuasive and narrative writing, suggesting that children who scored high on the study measures of social awareness might also have displayed better overall writing skill. When entered into a regression model, the authors found that 84% of the variation among the students’ writing quality scores in a regression model could be explained by social
awareness in combination with the following variables: narrative form, bilingual status, and reading score, along with an interaction between reading and social awareness. Reading ability was a moderating variable; even poor readers who showed high social awareness were able to write stories equal to or better in quality than their peers who were stronger readers.

The findings presented here are relevant to the current study; children’s social awareness seems to be related to both the overall quality of their stories, and the amount of social-awareness content represented in their stories. If those who have better social awareness/social cognition also demonstrate it in their writing, one could argue that this ability would allow them to be more skilled writers—constructing more believable characters and plot lines.

Interestingly, social awareness was found to be a strong predictor of writing ability even for poor readers, suggesting social awareness/social cognition is an important factor in narrative writing, above and beyond literacy or linguistic ability. However, the samples in the study by Dray et al. (2009) were produced following prompts designed specifically to elicit children’s understandings of relationships, and therefore have limited generalizability to spontaneous narratives. Students were specifically asked to continue a story and told that “answering the following questions may help you organize your story: What happened? How did everyone think and feel about the events? How did it all turn out” (p. 119)?

Additional evidence as to the relationship between narrative writing quality and sociocognitive abilities comes from examining studies of writing in populations hypothesized to show deficits in theory of mind—notably, individuals on the autism spectrum. A study by Brown and Klein (2011) revealed that participants with high functioning autism spectrum disorders were judged as writing poorer quality personal narratives (non-fiction) as compared to controls, and scored poorer on the Social Attribution Task (a measure of social
cognition). Scores on the Social Attribution Task were related to writing quality. The results supported the conclusion that individuals with high functioning autism spectrum disorder appeared to struggle both with conveying the mental states of characters, as well as with audience awareness/tracking reader knowledge in personal narrative or non-fiction texts. It is not known whether the opposite would also be true (i.e., higher social cognition would result in stronger narratives), or whether the same relationship would hold in neurotypical populations.

Recall the previously described studies by Comay (2008) and Fox (1991): Comay showed that children’s stories improved from simple action sequences to stories with complex plots that showed evidence of both character and audience perspectives, while Fox (1991) outlined a developmental progression such that students showed increasing ability to depict the inner worlds of characters in their narrative writing samples. Additionally, a study by McKeough and Genereux (2003) demonstrated that, as children age and develop cognitively, more social psychological content manifests in their writing. Children typically show a progression from physical description of character actions to more intentional, and finally, more interpretive descriptions. The results described by McKeough and Genereux (2003) suggest that this growth in social psychological content continues even during late adolescence.

From this data, and from the studies discussed in this section, it is not clear whether improvements in writing are associated some way with improvements in social cognition. In summary, there is some evidence in support of a relationship between writing skill and sociocognitive abilities, though the findings remain unclear, with many studies indirectly examining the relationship.
3.7.3.1 – The road to fiction writing expertise: Talent, practice, or instruction?

In discussing the relationship between fiction writing skill and social cognition, it is important to investigate what constitutes “expertise” in fiction writing. One would assume a positive relationship between hours spent writing and writing skill. According to studies of what constitutes “expertise,” the road to expertise in a given domain is gradual and depends on time spent in deliberate practice (Ericsson, 2006; Ericsson, Krampe, & Tesch-Römer, 1993). Essentially, the more one practices in a goal-oriented manner, the better one is able to hone his or her skill or craft. Individuals typically do not achieve expertise without approximately 10 years of deliberate practice in a given domain. From this, it can be reasoned that the more hours one spends focused on creating fictional narratives, thinking about their audience, and creating plausible, realistic characters, the more practice they get with thinking about and tracking the mental states of others. One could then argue that spending more time in deliberate writing practice not only makes one a better writer, but also could make one better at social cognitive tasks—if practicing writing involves exercising one’s sociocognitive reasoning as well. Ericsson’s model of expertise focuses on the acquisition of skill through deliberate practice and de-emphasizes talent.

However, it is important to consider the role of talent, as other theorists disagree with Ericsson. Amabile (2001) proposed a Componential Model of the development of expertise in creative writing, using interviews with writer John Irving as examples. This model proposes that expertise in creative writing involves a combination of domain relevant skills (competencies, talents, etc.), creativity relevant skills (personality characteristics, cognitive styles, work habits, etc.), and task motivation (most notably intrinsic motivation). Amabile argued that predisposing factors, such as genetic traits, as well as repeated practice,
are important factors in developing expertise as a writer. Thus, the relationship between hours spent in practice and skill development is more complex than linear.

In considering the complex relationship between time spent writing and overall writing skill, Kaufman and Gentile (2002) found that age at first publication was unrelated to productivity in terms of total number of works of fiction, and it was also unrelated to award achievement (the Pulitzer Prize and the Nobel Peace Prize). Similarly, Kaufman and Kaufman (2007) found variability between age at first publication and age between first publication and best publication. The youngest author in their study was only 20 years old at first publication. Experts agreed that, for 17% of the 215 writers in the study, their first work was also their best work. Therefore, there is substantial variability in how long it takes a writer to achieve publication, how long it takes them to peak at their craft, and how productive or successful they will be. Vakil (2008) argued that it is very difficult to teach creative writing in the same way that one may teach other skills (simply by instruction alone) because being a good writer requires talent, or what Vakil calls a “mysterious but essential source” (p. 157). Many writers practice repeatedly and never publish, while others might meet certain milestones earlier in their careers such as publication, awards, or critical acclaim.

Kaufman and Kaufman (2007) argued that “it is quite possible that writers might require less time for expertise acquisition than other domains…. Creative writing may depend more on emotional insight and the ability to combine words in a way that expresses the story to the audience than it does on drawing on a context-specific expertise base” (p. 122). It is possible that individuals who are successful with less practice have more innate sociocognitive ability, and that, as Taylor et al. (2003) and Dziobek et al. argued, both pre-existing sociocognitive ability as well as repeated practice, are at play. Ultimately, however, this line of reasoning remains speculative, given the complex relationship between practice
and expertise within the field of creative writing and the more broadly undetermined relationship between fiction writing and sociocognitive ability. If fiction writing is found to foster sociocognitive abilities, it remains unclear whether the repeated practice (hours spent writing) or actual instruction aimed at improving writing skill is the factor that would account for most of the changes. Could writing fiction alone improve social cognition? Or could creative writing classes, aimed at improving creative writing skill, indirectly improve sociocognitive skill?

In considering whether creative writing instruction could have an effect on sociocognitive reasoning, it is important to note that creative writing instruction varies considerably, and there currently exists a lack of instructional models (Langer, 1998). Lessons or manuals in creative writing could target sociocognitive reasoning directly (such as the aforementioned textbook written by Ballon, 2003), while others may focus more on the mechanics of writing (e.g., how to play with language).

In the critique method often used in creative writing courses, students submit writing samples, which are then critiqued by their classmates who provide feedback on how the piece was received. This style of instruction could be argued to provide direct feedback on audience awareness (i.e., where the readers were confused, where they formed a different impression than the author intended, etc.) in addition to more line-edit/grammatical feedback. In support of the critique method of creative writing, receiving feedback on one’s communicative message has been shown to impact audience awareness. Grossman, Peskin, and San Jan (in press) found that providing visual feedback about the quality of the instructions children and adolescents with Asperger’s Syndrome wrote to someone else so that they could replicate the same kind of “Gruffee” (an unconventional fantasy figure) helped these individuals not only improve their descriptive abilities to the task at hand, but
their knowledge also generalized to a novel task over six weeks post-intervention. This finding suggests that feedback that calls attention to the way audiences perceive the message of a written instruction (e.g., ambiguities) can assist writers in becoming more aware of their audience and shaping their writing accordingly.

To summarize, it is still unclear how to best define “expertise” in the domain of creative writing. Does a fiction writer develop expertise through repeated, deliberate practice, as in other domains? Or, does fiction writing instead require talent, perhaps to a larger degree than other domains? From a review of the literature, it is clear that different theorists hold different opinions, but there is no definitive answer. Finally, the review of the literature also calls into question whether creative writing instruction can yield improvements in social cognition, and if so, what elements of instruction can lead to such growths? Possible components may include deliberate instruction in developing the psychological inner worlds of characters, as well as methods that help enhance audience awareness through feedback on how their communicative messages are received by readers (i.e., methods involving critiquing).

3.8 – Textual Determinants

Can one find evidence of an author’s sociocognitive abilities within their writing samples? Recall that Kotovych et al. (2011) found that readers were able to appreciate the thoughts and actions of characters in a text when links were made more implicitly rather than spelled out explicitly. Kotovych et al. referred to this as “Character Identification/Transparency” (henceforth referred to simply as transparency). Perhaps the transparency of characters in a given text may reflect underlying sociocognitive skills of the author, which are then revealed in how he or she crafts characters. Kotovych et al. did not, however, test the sociocognitive abilities of the writers in their study, or compare their
abilities to the level of character transparency in their stories.

Meins et al. (2006) found no relationship between internal state language used by children narrating a wordless story (pictures provided) or describing friends, and performance on the measure of social cognition they employed, which involved interpreting stories containing “pretence, joke, lie, white lie, figure of speech, double bluff, irony and persuasion” (p. 185). However, Brown and Klein (2011) reported a relationship between the way characters’ internal mental states were crafted and social cognitive abilities in individuals on the autism spectrum. Recall that Brown and Klein demonstrated how individuals on the autism spectrum—a population known to have difficulties with theory of mind or perspective taking—struggled with conveying the mental states of characters, as well as with audience awareness/tracking reader knowledge in personal narrative or non-fiction texts. The discrepancy between the results of Meins et al. and Brown and Klein may be due to the way the mental state terms were included in the texts. The authors suggested that simply including mental state terms in a narrative is a lower order theory of mind skill, and that the individuals with high functioning autism spectrum disorders in their study struggled with balancing action and consciousness, an index of creating complex inner worlds for their characters.

In fact, creative writing instruction often recommends against the inclusion of emotion words (e.g., “He felt anxious”) such as the simple mental state terms in the Meins et al. (2006) study because of the show, don’t tell principle previously mentioned (i.e., that it is better to provide observable indicators of anxiety—increased heartbeat, feeling faint, difficulty breathing, racing thoughts, etc.) and let the reader infer and experience the character’s emotions (Burroway, 2010). Writer John I’Heureux (as cited in Burroway), instructed writers to “get control of emotion by avoiding the mention of emotion.” Thus,
the number of affect terms in a narrative is actually not a good indicator of the quality; individuals who leave out the affect term may score lower on a raw count, but may still be describing or showing emotions, potentially in ways that lead to stronger stories. Simply including mental state terms in writing may not be a good indicator of sociocognitive ability—perhaps because creating complex inner worlds for characters is more complicated, and because it is actually more effective to reveal emotions and mental states through showing rather than telling or stating emotion words.

Also relevant to the topic of textual determinants is the aforementioned study by Fox (1991). Fox demonstrated that, between the ages of nine and 13, children show increasing ability to depict the inner worlds of characters as well as expressive behaviour and inferences about others in their narrative writing samples. Fox used a five-point scale of increasing sophistication in referencing the mental states and expressive behaviours of characters. Excerpts from Fox’s five-point scale, showing some of the early levels compared to some of the later levels, are included below:

Inner world of characters. Level 1: Either no inner world is represented at all or a single character has an inner world only represented in terms of items from a restricted set of simple terms such as ‘see’, ‘know’, ‘want’, ‘he hungry’, etc. Level 2: The protagonist has an expanded inner world, mainly in terms of the representation of cognition, but with some simple labelling of affective states….Level 5: A character reflects on self in generalized terms, involving some form of evaluation or judgement with explicit criteria. Personal ideals, goals or principles may be made explicit. (p. 287)

Expressive behaviour and inferences about others. Level 1: No such expressive behaviour or inferences are mentioned. Level 2: Direct expression of simple inner states of surprise, excitement or fear (e.g. laughing, crying, shouting…); and/or use of the verbs ‘run’ or close associates to imply underlying intention….Level 5: One character projects or empathizes with another character’s thoughts and feelings about changing relationships, values or general circumstances. (p. 287)

One limitation of Fox’s study is that it was only descriptive. Fox did not measure performance on any measures of social cognition, thus while his five-point scales for the
inner world of characters or expressive behaviour and inferences about others could potentially be used to measure textual determinants, it remains unclear whether the mental state description in students’ narratives actually reflected differences in their sociocognitive abilities. That is, would students whose work was coded as reaching higher levels according to Fox’s criteria score higher on measures of advanced social cognition?

In summary, it may be possible to identify textual determinants of social cognition within fiction writing samples by authors with varying sociocognitive skills, using techniques like those employed by Kotovych (2011) or scales such as the one employed by Fox (1991). Examining textual determinants empirically will be of great use in teasing out the relationship between social cognition and fiction writing.
Chapter 4: Study Purpose and Rationale

4.1 – Potential Implications and Importance

While theorists have hypothesized that fiction writers may be more skilled at making inferences about the mental states of others, and there is indirect empirical evidence that supports their hypotheses, the association has yet to be directly tested. Furthermore, should an association be found, directions of causality and issues of generalizability are unclear.

If sociocognitive benefits are found to follow from fiction writing instruction (i.e., if fiction writing practice is found to enhance sociocognitive ability), greater emphasis for creative writing in school curricula would be warranted. The extent to which students are actively engaged in writing their own creative texts varies widely. It has been suggested that, at least in American high school English curricula, there is a strong bias towards essays as the format for assignments, with this bias increasing in senior years (Pirie, 1997). According to Pirie, this sets up the strange contradiction of holding published literature in high regard, but rarely allowing students the opportunity to be more than just interpreters of texts, essentially trivializing students’ own creative writing.

The reasoning processes involved in understanding and interpreting literature are somewhat at odds with existing teaching pedagogy, which emphasizes rational thought and convergent thinking. The value of imagination within the educational system has too often been peripheral, likely due to its association with fantasy, or its contrast with logical thought (Brill, 2004). The education system has also been said to view science and mathematics, as well as “conventionally efficient literacy” (p. xii), as the proper work of education, while artistic expression is considered to be frivolous (Egan, 2004).

Research suggests that creative writing and imagination should not be marginalized within the education system (Austen, 2005; Essex, 1996). Several benefits of creative writing
have been suggested, including that it fosters improvements in understanding literary
criticism and develops critical reading skills in post-secondary students (Austen).
Additionally, there are many advantages associated with the ability to reason about the
beliefs, desires, intentions, and motivations of others, including social skills, empathy,
communication skills and decision making. Should creative writing be shown to foster
sociocognitive ability, its instruction could be used both to stimulate sociocognitive growth
in typical children, and as a mode of intervention for those who struggle with social
cognition.

4.2 – Objectives

The purpose of the study was two-fold: first, to investigate the beliefs held by the
general public about the social cognition of fiction writers; and second, to investigate
whether there is a significant relationship between social cognition and fiction writing. A
close examination of the scientific and theoretical literature in this area suggests that the
topic is potentially more complex than one might assume, with conflicting research evidence
and theoretical stances suggesting both that there would undoubtedly be a relationship
between the fiction writing and social cognition, and that there is not likely to be a
relationship at all.

Despite the mixed evidence in this area, no study in the literature reviewed has
actually compared the sociocognitive abilities of fiction writers to individuals who do not
write creatively using a variety of sociocognitive tasks, including both self-report and
performance-based measures. The previous studies reviewed that actually tested social
cognition or similar variables in fiction writers themselves evidenced limitations such as
using only self-report questionnaire measures (Drewdahl & Cattell, 1958; Taylor et al., 2003),
even though self-report measures have been shown to have little relationship to actual
sociocognitive ability (Ickes, 2003; Ames & Kammrath, 2004). Therefore, studies in which fiction writers report higher interpersonal/social reactivity (Taylor et al.) or emotional sensitivity (Drevdahl and Cattell) may involve an issue of self-report. It is unclear whether fiction writers actually possess greater perspective taking abilities, or simply perceive themselves to demonstrate them. Furthermore, the study by Drevdahl and Cattell (1958) reported mixed results (in that some genre writers actually showed decreased emotional sensitivity). The studies by Kroll (1985), Rubin et al. (1985), and Burleson and Rowan (1985) also provided conflicting evidence.

The current study aimed to address the limitations of previous studies by a) specifically sampling fiction writers, b) directly comparing fiction writers to individuals who do not write creatively, c) employing both self-report and performance-based measures to assess social cognitive ability, d) exploring potential confounding variables that could potentially account for or moderate a relationship between social cognition and fiction writing, and e) examining writing samples produced by writers and individuals who do not write creatively for possible textual determinants of social cognition.
Chapter 5: Research Questions and Hypotheses

The aim of the current study was to investigate potential sociocognitive benefits of fiction writing by addressing the following research questions:

Part 1:

1. Does the general public hold the belief that fiction writers have above average social cognition?
   a. Do public perceptions differ based on whether individuals self-identify as fiction writers?

Part 2:

2. Are there any differences in self-reported social/interpersonal reactivity (the IRI Fantasy, Empathic Concern, Perspective Taking, and Personal Distress subscales) between established fiction writers, intermediate fiction writers, and individuals who do not write fiction?

3. Are there any differences in performance on tests of social cognition (i.e., the RME, IPT-15, and LEMS Task) between established fiction writers, intermediate fiction writers, and individuals who do not write fiction?

4. Are there any differences in performance on the RCQ—a test of cognitive complexity/differentiation—between established fiction writers, intermediate fiction writers, and individuals who do not write fiction?
   a. Are established writers more likely to use traits of both positive and negative valence than intermediate writers when describing liked and disliked peers?
      Do both groups of writers show a greater tendency to use traits of both
positive and negative valence when describing peers on the RCQ compared to control group participants?

5. Is there a relationship between the number of hours spent writing fiction and self-reported social/interpersonal reactivity (as measured by the IRI Fantasy, Empathic Concern, Perspective Taking, and Personal Distress subscales), sociocognitive ability (i.e., as measured using the RME, IPT-15, LEMS), or cognitive complexity/differentiation (i.e., as measured using the RCQ)?

6. Is there a relationship between fiction writing quality (as measured by the quality scores on a writing sample) and self-reported social/interpersonal reactivity (as measured by the IRI Fantasy, Empathic Concern, Perspective Taking, and Personal Distress subscales), sociocognitive ability (i.e., as measured using the RME, IPT-15, LEMS), or cognitive complexity/differentiation (i.e., as measured using the RCQ)?

7. Is there a correlation between hours spent writing fiction and fiction writing quality (as measured by the quality scores on a writing sample)?

8. Are there any textual determinants of sociocognitive ability in an individual’s writing?

   a. Is there any relationship between the degree of character transparency evident in a writing sample produced by an individual and self-reported social/interpersonal reactivity (as measured by the IRI Fantasy, Empathic Concern, Perspective Taking, and Personal Distress subscales), sociocognitive ability (i.e., as measured using the RME, IPT-15, LEMS), or cognitive complexity/differentiation (i.e., as measured using the RCQ)?

   b. Is there any relationship between the point of view chosen on a writing sample produced by an individual and self-reported social/interpersonal reactivity (as measured by the IRI Fantasy, Empathic Concern, Perspective
Taking, and Personal Distress subscales), sociocognitive ability (i.e., as measured using the RME, IPT-15, LEMS), or cognitive complexity/differentiation (i.e., as measured using the RCQ)?

First, it was hypothesized that the general public would endorse the belief that fiction writers do demonstrate above average levels of social cognition. Furthermore, it was hypothesized that individuals who engaged in fiction writing would endorse this belief at higher levels than individuals who did not.

In terms of self-reported social/interpersonal reactivity, it was hypothesized that established fiction writers and intermediate fiction writers would self-report significantly higher mean scores on all four subscales of the IRI compared to individuals who do not write creatively, with the greatest difference being on the Fantasy subscale, consistent with previous work by Taylor et al. (2003). It was hypothesized that established fiction writers would self-report significantly higher mean scores than intermediate fiction writers.

In terms of actual performance on tests of social cognition and related abilities, it was hypothesized that established fiction writers and intermediate fiction writers would outperform control participants on all measures of social cognition, and among fiction writers, established fiction writers would perform significantly better than intermediate fiction writers. Looking more in-depth at the RCQ, it was hypothesized that when compared to intermediate writers, established fiction writers would show a greater tendency to use traits of both valences (positive and negative) when describing liked and disliked peers. It was further hypothesized that both groups of writers would show a greater tendency to use both positive and negative traits when describing peers on the RCQ.

Furthermore, it was hypothesized that the results would show significant relationships between hours spent writing fiction and fiction writing skill (i.e., subjective
judgments, ratings of writing quality), as well as significant relationships between hours spent writing fiction and performance on all of the sociocognitive outcome measures (both self-report and performance), and between fiction writing skill and performance on all of the sociocognitive outcome measures (both self-report and performance).

Finally, it was hypothesized that the results would reveal a significant relationship between outcome scores on all of the sociocognitive outcome measures (self-report and performance) and the following textual determinants in the writing samples obtained from participants:

a. Character Transparency: It was hypothesized that there would be a relationship between transparency scores and all of the sociocognitive outcome measures (self-report and performance); that is, individuals whose writing samples were judged by expert raters as effectively presenting the thoughts and feelings of characters and enabling readers to get inside the heads of characters would self-report and demonstrate better sociocognitive abilities.

b. Point of View: It was hypothesized that there would be a relationship between the directness of the point of view chosen for the writing sample and sociocognitive ability (on all of the sociocognitive outcome measures, both self-report and performance), such that the more direct the point of view chosen by the participant (with first person being the most direct, followed by second and third person, followed by objective or inconsistent points of view), the better their sociocognitive abilities.
Chapter 6: Part 1: Public Perceptions of the Sociocognitive Abilities of Fiction Writers Compared to the General Public

6.1 – Methods

6.1.1 – Participants

A total of 117 individuals responded to an online survey (described in 6.2.2). Of those, 17 were excluded for either not completing the survey, or for responding the same to every question. Data from the remaining 100 participants was used in the study. The sample was largely female (N=78). Of those who completed the study, 33 responded that they either were currently, or had previously been involved in fiction writing.

6.1.2 – Procedure

Participants were asked to complete an online survey in which they were presented with a list of careers (in random order) and asked to rate their perception of the general level of “social understanding” of individuals who work in this field. The list of careers was developed based on the careers of the participants who took part in Part two of the study, as both were on going at the same time. The term “social understanding” was used to be more reader friendly and more easily understood by the participants responding to the survey; however, the definition provided is equivalent to the definition of social cognition used in the previous study. The instructions can be found in Appendix A.

Rather than ask only about fiction writers, the career “fiction writer/novelist” was imbedded within a list of other careers. This was done so that participants would believe that the study intended to assess their beliefs about a wide variety of careers and would not over-think any individual item or assume that the item was a trick question (i.e., because the questions asked about fiction writers, perhaps their gut instinct was incorrect).

Additionally, including the full list of subject areas in which the participants in the
previous study were employed allowed for a comparison between fiction writers and individuals employed in other fields. The full list of careers in addition to fiction writers was as follows: nurse, doctor, scientist (e.g., someone who works in a lab, such as a biologist or chemist), lawyer, teacher, manual labourer (e.g., someone who works in the trades), accountant, athlete, artist/designer, engineer, actor/actress, computer analyst/information technology specialist (e.g., someone who specializes in, works with, or fixes computers), marketing/communications specialist (e.g., someone who specializes in designing material to sell products or to market services to customers), musician, philosopher, customer service agent, banker/financial planner, military personnel, social sciences researcher (e.g., someone who designs or carries out studies about people and how they behave, such as psychological or sociological studies), non-fiction writer (e.g., someone who writes non-fiction or factual texts, such as textbooks, manuals, essays, etc.), and psychologist. Non-fiction writers were also included to see whether participants would endorse fiction writers as having more advanced social understanding than non-fiction writers, or rate all writers similarly, regardless of genre.

After they had provided their perceptions of the social understanding of individuals in each career, participants were shown the same list and whether they were currently, or had ever been involved in that career for work or as a hobby. Involvement in any career was based on self-report alone. There were no requirements that an individual be established or successful in a given career, and no requirements in terms of involvement or time investment in a given career. That is, an individual who played piano as a hobby could endorse the category “musician” the same as an individual who had a University degree in music or one who was currently paid to perform. Similarly, an individual who wrote fiction occasionally as a hobby could endorse the category “fiction writer/novelist” the same as an
individual who was actively taking classes in fiction writing or one who was well established in their career and had published several novels.

The survey was presented online using SurveyMonkey (www.surveymonkey.com), an online survey tool allowing for wide dissemination. Participants were also asked to report their gender. The snowball sampling method was used; invitations were sent via the primary researcher’s own network of individuals but who had no knowledge of the thesis research or the hypotheses. These participants were then asked to invite individuals known to them who also had no knowledge of the study topic or hypotheses to participate in the online survey.

6.2 – Results

Out of the total 100 participants who responded to the survey that assessed public perceptions, only 6% (N=6) rated fiction writers as having either much worse social understanding than the general public (1%, N=1) or somewhat worse social understanding than the general public (5%, N=5). Approximately one third (32%, N=32) rated fiction writers as having the same level of social understanding as the general public. The majority (62%, N=62) rated writers as having either somewhat better social cognition than the general public (44%, N=44) or much better social cognition than the general public (18%, N=18).

A one-sample t-test was conducted to compare the mean rating on the scale of social understanding across of all the participants for the career “fiction writer/novelist” to the test value of 3.00 (the Likert scale anchor point representing “the same level of social understanding compared to the general public”). The t-test was significant, $t(99) = 8.58, p < .001$. That is, the mean rating across all participants ($M = 3.73, SD = 0.85$) was significantly higher than the test-value, suggesting that the respondents, on average, believed fiction writers to demonstrate significantly better social understanding compared to the test value, which represented an average level of sociocognitive ability.
A repeated-measures ANOVA was conducted to compare the mean ratings of each of the 22 subject areas/careers, including fiction writers, to see how the sociocognitive abilities of fiction writers were rated in comparison to the other careers. Mauchly’s test indicated that the assumption of sphericity had been violated, $\chi^2(230) = 685.53, p = .001$, therefore, degrees of freedom were corrected using the Greenhouse-Geisser procedure. The repeated measures ANOVA revealed a significant main effect, $F(10.29, 1018.39) = 58.54, p < .001$.

Post-hoc Bonferroni t-tests were conducted comparing the mean rating for fiction writers to the other 21 careers. According to the t-tests, fiction writers were rated as having significantly better social cognition compared to the following careers: customer service agents, scientists, manual labourers, accountants, athletes, engineers, computer/IT specialists, musicians, bankers/financial planners, and military personnel. Fiction writers were rated as having significantly worse social cognition compared to psychologists and social science researchers. Fiction writers were not rated as significantly better or worse than the following careers: nurses, doctors, lawyers, teachers, actors, marketing specialists, philosophers, and non-fiction writers.

When all 22 careers were rank ordered, fiction writers were rated as having better social cognition than 16 careers, but worse than only five. Table 1 shows the mean rating and standard deviation for each career, followed by the closest Likert Scale anchor, followed by the level of significance when compared via t-test to the mean rating for fiction writers. The careers listed in the table are sorted from highest mean rating to lowest.

An independent samples t-test was used to investigate how individuals who self-identified as fiction writers rated the social understanding of fiction writers compared to those who did not self-identify. Those who self-identified as fiction writers rated fiction
writers as a career as having more social understanding \((M = 4.00, SD = 0.968)\) than those who did not self-identify as fiction writers \((M = 3.60, SD = 0.760), t(98) = -2.273, p < .05.\)

To determine whether this result was, perhaps, due to those who self-identify as fiction writers having a bias in that they tend to rate all careers as having higher levels of social cognition (i.e., a tendency to rate higher across the board), the mean ratings for each career were compared on the following variable: those who self-identify as fiction writers and those who do not. Because of the large number of statistical tests conducted in this dissertation, the means were examined descriptively. Those who self-identified as fiction writers rated 12 of the 22 careers lower than those who did not, and 10 of the 22 careers higher than those who did not. This suggests that the finding that those who self-identify as fiction writers tend to rate their own sociocognitive abilities as higher than those who do not is not the result of a rating bias (as the two groups were roughly equal). Of those careers that individuals who self-identified as fiction writers rated higher, fiction writing was the second largest mean difference \((0.403)\), second only to marketing specialists \((0.422)\).

In summary, a survey was conducted to determine whether the general public holds the belief that fiction writers demonstrate above average or superior social cognition compared to the general public, including 21 specific careers that were included for comparison purposes. The majority of respondents \((62\%)\) reported that they believed fiction writers have above average social cognition (compared to average or below average social cognition). Fiction writing was ranked as the sixth highest career in terms of social cognition for those careers included in the study, and statistical tests revealed that the rating for fiction writers was significantly higher than the test-value for an average level of social cognition. Participants who wrote fiction themselves also tended to rate the social cognition of fiction writers higher than those who did not, suggesting that individuals who write fiction may hold
the belief that fiction writers have above average social understanding more strongly than individuals who do not write fiction. On the whole, the data provided evidence that much of the general public believes fiction writers to demonstrate above average sociocognitive abilities.

7.1 – Methods

7.1.1 – Participants

Participants were recruited by using a variety of methods, including posters, email advertisements, direct email requests to institutions that taught creative writing, direct email requests to published fiction writers, and so forth. Given that the primary researcher is also a published writer, recruitment of fiction writers also involved sampling from a known network of writers; recruitment for the control group (i.e., those who were not involved in fiction writing at all) involved asking individuals from a known network of non-writers or individuals within the networks of those known to the primary researcher. In all cases, any participant who was known or was a close associate of the primary researcher was only eligible for the study if they had no previous knowledge of the study’s aims or hypotheses. The snowball sampling method was also used—individuals who participated in the study were asked to recommend individuals they thought would also be willing to participate. However, participants were instructed not to discuss the study’s aims, hypotheses, or materials with any potential participants.

The decision of how to categorize participants for the empirical test of whether fiction writers demonstrated above average sociocognitive abilities compared to the general public was based on a review of the literature of what defines an “expert” in the field of creative writing. Recall Amabile’s (2001) Componential Model, which proposed that expertise in creative writing involves a combination of domain relevant skills (competencies, talents, etc.), creativity relevant skills (personality characteristics, cognitive styles, work habits, etc.), and task motivation (intrinsic motivation). In their study of modern fiction writers, Kaufman and Kaufman (2007) noted that literary judgment could be, at best,
subjective, if not arbitrary. They noted that literary prizes, which could be used as a standard, are often awarded based on more than just merit (e.g., politics). In defining the “best work” of authors included in their study, Kaufman and Kaufman (2007) relied on expert judgments, though they still noted the inherent subjectivity involved. Due to the variability in the time it took the authors in the study by Kaufman and Kaufman to achieve their “best” work, and the fact that Amabile (2001) highlighted the importance of factors above and beyond time spent in practice, it would have been incomplete to define expertise by using only hours spent writing. Ultimately, participants were recruited according to three pre-established groups: established writers, intermediate writers, and a group of individuals who did not write creatively, who will henceforth be referred to as the control group.

Established writers were defined as individuals who had published fiction (i.e., short story or novel) in manuscript (i.e., book) format via an independent publishing house (i.e., not self-published). Individuals met these criteria if they had independently authored and had published at least one book-length manuscript of fiction (i.e., a novel or a complete collection of short stories).

Intermediate writers were defined as individuals currently enrolled in a fiction writing class (university, college, or continuing education classes were all considered eligible) in which they had to write fiction as a component, or had published fiction in one of the following formats: short fiction (e.g., in a journal or magazine), or an excerpt of a larger piece in an anthology or co-authored short story collection, or a complete manuscript published via self-publishing or e-publishing/online publishing channels. For both groups of writers, genre within fiction was not specified—as long as the individual wrote fiction, it did not matter if their chosen genre was literary fiction, young adult fiction, speculative fiction (e.g., science fiction, fantasy, etc.), or any other genre.
The decision to classify those who had published a complete manuscript of fiction via an independent publishing house as established writers and those who had published in other formats (e.g., magazines, journals, self-publishing, etc.) as intermediate writers was based, in part, on the classification system of the American Directory of Writers and Poets, as described in the criteria listed on the American Directory of Writers and Poets website (http://www.pw.org/directory/criteria) and in Piirto (2009). This classification system assigns points to publications. An individual must receive 12 points for inclusion; publication of a complete manuscript receives automatic inclusion (i.e., it is worth 12 points in and of itself). However, other forms of publication are worth fewer points (e.g., chapbooks, publications in journals, anthologies, or electronic publications). According to the criteria listed on the American Directory of Writers and Poets website, any text for which the author paid some or all of the publishing costs is excluded.

The criteria for the current study allowed for publications that were self-published or e-published, as well as writers who were taking courses but had not yet published, because each of these contexts indicates intent or pursuit of a writing career in some format, though without having yet achieved publication of a complete manuscript. Additionally, Ericsson et al. (1993) described working with a teacher, trainer, or mentor as part of the pathway towards expertise, thus writing students were included whether they had published in any format or not.

Established writers met criteria for both deliberate practice and achievement (i.e., having published a manuscript); intermediate writers were engaged in some form of deliberate practice, but had not yet reached the achievement of having a published manuscript; finally, the control group had neither deliberate practice nor achievement. Using achievement as a marker of expertise corresponds with Kaufman and Kaufman’s (2007) use
of expert judgment as a marker. Publication via an independent publishing house required that participants in the established writers category had passed this threshold.

Subcategorizing the fiction writers in the current study was similar to the method used by Ericsson (1993) in which he subcategorized violinists according to expertise, ultimately grouping participants into the categories of best violinists, good violinists, and music teachers.

Participants in the control group were defined as individuals who, at the time of testing, did not currently engage in deliberate practice of creative writing in any format (i.e., fiction, poetry, lyrics, screenplays, or creative non-fiction), and had engaged in an average of less than three hours of fiction writing (rounded up from one decimal point) per year of their literate life.

Two additional broad exclusion criteria were also established. Participants in all groups were required to be fluent in English, though they were not required to have English as their first language. Additionally, individuals actively involved in the mental health profession in a counselling role (e.g., psychologists, social workers, counsellors, etc.) were excluded due to the likelihood that these individuals would exhibit strong social cognitive skills for reasons other than the study’s hypotheses. No other careers were excluded.

In addition to this categorical way of grouping participants, each participant also provided an estimated number of hours they had spent writing in their lifetime, as well as a fiction writing sample from which a score of writing quality could be derived, thus providing two continuous variables indicating the level of expertise of participants, which are further detailed in section 7.1.2.1.

Having experts assess a writing sample from each participant in the study also addressed the fact that not all publishable manuscripts ultimately are published. Using
publication as the threshold to categorize writers is inherently complicated by the fact that, aside from having work that is of publishable quality, published writers must also have prepared and submitted manuscripts. It is plausible that some writers have not yet reached the threshold of publication because they have not submitted their work, rather than their work not being of publishable quality. Using an index of writing quality based on expert judgment allowed for more fine-grained comparisons of the writers in the study in addition to their group assignments.

A total of 65 participants were tested. Participants resided and were tested in either Alberta (Calgary, Edmonton, and surrounding areas) or Toronto, Ontario. Data from five participants were ultimately removed because the individuals did not meet study criteria. Specifically, three participants had scores on the Similarities (verbal IQ proxy measure) that fell in the below average range (i.e., standard score of seven, which is equivalent to the 16th percentile). A fourth participant, recruited for the control group, was disqualified for reporting more than three hours per year of literate life of fiction writing (the maximum allowed). A final participant, also recruited for the control group, was disqualified both for scoring in the below average range on the Similarities subtest and for reporting more than the maximum hours per year of literate life writing fiction allowed. Data from the remaining 60 participants were included in the study, 20 in each of the three groups (established writers, intermediate writers, and control group participants).

The established writers group was composed of 16 females (80%) and four males (20%), all of who reported that English was their first language. The intermediate and control groups were composed of 15 females (75%) and five males (25%) each. Thus, there was a relatively equal gender distribution in each of the three groups. In the intermediate group, two participants (10%) reported that English was their second language, while this
was true for three participants (15%) in the control group. No participants reported English as a second language in the established writers group. However, all participants were fluent in English at the time of testing.

7.1.2 – Measures

7.1.2.1 – Demographic information. General demographic information was collected on participants’ age, gender, first language, level of education, occupation, training, creative writing history, and the kinds of writing currently engaged in for both employment and/or school and as a hobby. These data were collected via a self-report questionnaire developed specifically for the study. Participants also reported an estimated lifetime number of hours spent engaged in writing creative fiction on the questionnaire. The estimate was specific to fiction writing (e.g., short story, novel) and did not include poetry, lyrics, screenplays, or creative non-fiction. The demographics questionnaire and lifetime estimate instructions can be found in Appendix B.

7.1.2.2 – Test measures. The selection of the outcome measures (i.e., measures of social cognition) was not straightforward. Apperly (2012) noted that no single task or battery of tasks exists that has been deemed the best measure of theory of mind for any age group. Furthermore, social cognition is complex and heterogeneous, and poor, or even no correlations have been found among tasks that measure it (Ickes, 1997; Mar et al., 2006). Because of this, the current study employed a battery of outcome variables, each with different strengths and weaknesses. A variety of measures was chosen that was thought to tap different aspects of social cognition (e.g., the ability to read body language, to make inferences about individuals in interaction with one another, to tease apart questions about the intentionality of characters in a story, to perceive emotion in static pictures, etc.) to get a
well-rounded assessment of the sociocognitive skills of the participants. All measures used in Part Two of the study are described in Table 2.

7.1.2.2 – Self-report measure: The Interpersonal Reactivity Index. The Interpersonal Reactivity Index (IRI; Davis, 1980, 1983) was included as a self-report measure to balance the large number of performance-based measures used in the study. The IRI is composed of 28 questionnaire items. Individuals read each item and indicate on a five-point Likert scale the degree to which they feel that the item describes them, with two defined end-points representing “does not describe me well” and “describes me very well.”

The IRI has four subscales (seven items each), developed through factor analysis and revision. The Fantasy subscale (FS) measures the tendency to “imaginatively transpose oneself into fictional situations” (Davis, 1980, p. 11). Fictional situations include books, movies, and daydreams. The Perspective Taking subscale (PT) measures the tendency to shift perspectives or to take the perspective of a real life individual (in contrast to the FS scale). The Empathic Concern subscale (EC) measures the degree to which an individual experiences feelings of compassion, concern, and so forth for someone else. Finally, the Personal Distress subscale (PD) measures to what degree an individual experiences feelings of distress (e.g., fear, apprehension, discomfort) when witnessing others having negative experiences. While the PT subscale measures a construct that is the most consistent with the definition of social cognition in this thesis, all items measure a tendency to try to take the perspective of others, not whether or not an individual feels he or she is accurate in doing so. Therefore, the Perspective Taking subscale, along with the other subscales, falls under a broader definition of “social/interpersonal reactivity,” a construct related to social cognition. The IRI was included in the test battery because of its previous use in studies of fiction writers (Taylor et al., 2003).
The IRI has been shown to have adequate test-retest reliability in both genders. Females have been found to score higher than males on all four subscales. The four scales are relatively independent, and the authors argue that they measure four different constructs.

In a previous study, fiction writers scored higher than population norms on all four subscales, especially the Fantasy subscale (Taylor et al., 2003), so the IRI was considered appropriate for the current study population. It is important to note again, however, that individuals' self-reported social cognitive or empathetic abilities do not often correlate with actual performance on social cognitive tasks (Ickes, 2003; Ames & Kammrath, 2004). The instructions for the IRI and some sample questions can be found in Appendix C.

**7.1.2.2.2 – Performance-based measures.** Of the performance-based measures included below, three (The Reading the Mind in the Eyes Test, the Interpersonal Perception Task, and the Levels of Embedded Mental States Task) are direct measures of social cognition. The Role Category Questionnaire was included as a supplementary measure because it measures constructs related to social cognition, but does not measure social cognition directly. Each of these measures will be discussed in sequence.

**7.1.2.2.2.1 – The Reading the Mind in the Eyes Test.** The Reading the Mind in the Eyes Test: Revised Version (RME; Baron-Cohen et al., 1997; Baron-Cohen et al., 2001; Harkness, Sabbagh, Jacobson, Chowdrey, & Chen, 2005) requires participants to view a series of 36 black and white photographs depicting only the eye region of the subject’s face. This task is designed to assess an individual’s social perception (the ability to identify the mental state but not make inferences about it based on context, as the task presents the eyes in isolation, devoid of situational context). Four words accompany each picture. Participants are instructed to select which of the four words best describes what the person in the photograph is thinking or feeling. The target words are complex cognitive mental state terms.
(e.g., fantasizing, preoccupied, anticipating, etc.), not simply emotion terms (Baron-Cohen et al., 1997), requiring participants to make an attribution about the intention or belief of the person behind the eyes (Baron-Cohen et al., 2001). Incorrect responses represent items that are similar to the correct mental states, so the level of difficulty of the task is quite high.

The revised version of the RME was used because improvements had been made to correct previously noted psychometric problems (Baron-Cohen et al., 2001). One improvement to the previous version of the RME relevant to the current study was the inclusion of a glossary of the target words used in the RME, to eliminate vocabulary knowledge as a factor affecting performance. This was especially vital in the current study, given the aforementioned finding that writers have superior vocabularies to non-writers (Andreasen, 1987). This glossary was included with the RME in the present study and participants were told they could look at it if they needed to confirm the definition of a word.

According to the test authors, the RME “was conceived of as a test of how well the participant can put themselves into the mind of the other person and ‘tune in’ to their mental state” (Baron-Cohen et al., 2001, p. 241). The RME task is said to be free from executive functioning or central coherence confounds (Baron-Cohen et al., 1997). In Baron-Cohen et al.’s study, the results on the RME were found to mirror the pattern of results on the Happé Strange Stories task (Happé, 1994), an existing advanced theory of mind task (Baron-Cohen et al., 1997). Harkness et al. (2005) determined that observed differences in performance on the RME are not due to general deficits in facial perception, perceptual discrimination, or social perception using various control tasks; Baron-Cohen et al. (2001) claimed that performance on this task is independent of general intelligence or IQ. A score of 13 out of a total of 36 items is said to be above chance according to Binomial Tests.
(Baron-Cohen et al., 2001), and healthy adults are reported to perform at about 70% accuracy (Harkness et al.). According to Baron-Cohen et al. (1997), the task is less complicated than real-life social situations due to its static nature, a flaw noted by Baron-Cohen et al. (2001) even on the revised version. Because individuals with high functioning autism or Asperger’s syndrome are found to perform significantly more poorly on this task, though they are not impaired at simply identifying the gender belonging to each set of eyes (a control task), Baron-Cohen et al. (2001) claimed that this test is a valid and useful test in distinguishing individuals with social impairment from those with typical skills. The instructions, sample vocabulary items, and a sample question from the RME can be found in Appendix D.

7.1.2.2.2 – The Interpersonal Perception Task. The Interpersonal Perception Task (IPT-15; Costanzo & Archer, 1993) is a video containing 15 unscripted interactions between two or more individuals. The interactions represent five common types of social interaction (Costanzo & Archer, 1989). The instructions, along with sample questions from each of the five types of social interaction can be found in Appendix E. After observing each interaction, participants are asked to respond to a multiple-choice question with only one objectively true answer. Participants were then required to infer the answer from the interaction and from non-verbal clues; the correct answer is never explicitly stated in any of the segments. The following description was taken from Costanzo and Archer, and refers to an earlier version of the IPT (which was 30 scenes long in contrast with the current shortened version the IPT-15):

The design of the IPT is best conveyed by describing some of the 30 scenes. The first scene, for example, shows two adults (a male and a female) having a conversation with two seven-year-old children. The question corresponding to this scene is ‘Who is the child of the two adults?’ In another IPT scene, two women discuss a game of racquetball they have just finished playing; viewers are asked to decide which woman won the game. A third scene shows a man first telling his true
life story, and then, after a pause, telling a completely fabricated version of his life story. The question posed to viewers is ‘Which is the lie and which is the truth?’ (p. 229)

The scenes in the film are unscripted; therefore, the answer to each is objectively verifiable (e.g., one of the women playing racquetball did, in fact, win the game). The only scripted scenes in the film were scenes in which the individuals on camera were instructed to lie; in those instances they were fabricating stories, but only for the lie portion of those clips (the true portions being true to their lives).

According to Costanzo and Archer (1989), females outperformed males on the original version of the IPT. In addition, individuals whose peers rated them as more interpersonally sensitive and as having better social skills also scored higher. A thesis by Lindwall (2008) that attempted to replicate the peer ratings difference found that the internal consistency of the IPT-15 was much weaker than previously described (r=.14), and that there were no correlations with informant ratings, which contradicted the original validity study (though different informant ratings were used). A more recent study (Miczo, Segrin, & Allspach, 2001) found a correlation between self-perception (self-report) of social cognition and gender.

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12 It is not clear whether a female bias on a task is an accurate way to validate it, as the female bias in social cognition is contentious. Neuropsychiatrist Louann Brizendine (2006) states the female bias as fact in her book, The Female Brain, arguing that “the female brain is gifted at quickly assessing the thoughts, beliefs, and intentions of others, based on the smallest hints….Men don’t have the same ability to read faces and tone of voice for emotional nuance….Girls are years ahead of boys in their ability to judge how they might avoid hurting someone else’s feelings or how a character in a story might be feeling” (pp. 120-123). However, Brizendine’s work has been criticized as not entirely backed in science (Bazelon, 2010), and recent studies employing the IPT-15 have not replicated the gender difference in terms of accuracy (Mar et al., 2006), with gender-congruence of the way the task is introduced to participants influencing performance (Horgan & Smith, 2006; Koenig & Eagly, 2005). Ickes et al. (2000), and Klein & Hodges (2001) have argued that the gender bias is not actually true in social cognition, and similar to Horgan and Smith, that it is motivational or gender-congruence differences that account for the gender bias (though these studies used Ickes’s Empathic Accuracy paradigms, not the IPT-15). Koenig and Eagly found that presenting the IPT-15 as a task on which females typically do better resulted in decreased performance for males on the IPT-15, but in the absence of this, no gender differences were found. Thomas and Fletcher (2003) on the other hand, consistently found a female superiority effect, even when they factored into their analyses the gender of the target, however, their study did not mention whether gender-congruence was a factor; these authors used the Empathic Accuracy Paradigm, not the IPT-15.
competency and IPT-15 performance (though this finding has not been replicated and previous studies have found otherwise). Costanzo and Archer (1989) describe the value in using the IPT and the unique information it offers:

The IPT is different from most stimuli developed to study judgment processes in other important respects: 1) all scenes contain spontaneous behavior and unscripted conversation; 2) every scene presents a full communications repertoire, with information presented naturalistically in all channels; 3) a total of 54 different encoders (28 females and 26 males ranging in age from 18 months old to 67 years old) appear in the videotape; 4) behavior is shown in ‘real time’ rather than using artificially brief or protracted exposure periods. Because natural streams of behavior are used, clues to the correct answer may be found in many communications channels simultaneously—gestures, words, touch, eye contact, posture, vocal paralanguage, facial expression and body movement.” (pp. 230-231)

Psychometric properties of the IPT-30 have been published (Costanzo & Archer, 1989), and test-retest reliability has been found to be .70. This statistic is reportedly higher on the IPT-15 (.73). However internal consistency on the IPT-15 (.38) is reported to be lower than that of the IPT-30 (.52), arguably because there are fewer scenes. For example, the authors note that this could be a reflection of the “diversity of the IPT scenes, and the fact that the IPT has relatively few items—the ‘effective reliability’ is influenced by the overall length of an instrument” (p. 238). Phi coefficients revealed small correlations between each of the five content areas. The authors concluded that, “the pattern of phi coefficients clearly indicates that the five content areas should not be interpreted or scored as separate ‘subscales’” (p. 238). Hall (2001) argued that many measures of interpersonal sensitivity also have low internal consistency (suggesting low internal consistency may be a hallmark of the difficult task of measuring social cognition). Hall noted a reliability-length trade-off (i.e., asking fewer questions decreases internal consistency, while asking more takes considerable time and tires participants). Hall also argued that the reduction in internal consistency may be because of multiple factors that go into making interpersonal judgments
(echoing the sentiments of the authors in the above quote), suggesting that representing several different skills actually adds validity to a measure, versus having several measures of essentially the same thing. “In other words, the weak intercorrelations may not be exclusively a reflection of random error” (Hall, 2001, p. 155). Hall argued that, “the fact that test-retest reliability is respectable even for measures with weak internal consistency…clearly indicates that these tests are measuring something. Considering their internal consistency, however, it may be more appropriate to conclude that these tests each measure a diverse collection of skills rather than only one skill” (p. 155). It may simply be that the complex nature of that which is being measured makes it difficult to achieve internal consistency.

Despite some psychometric weaknesses, the IPT-15 has several strengths not noted in other measures of social cognition, such as number and range of encoders, verifiable answers, naturalistic and unscripted interactions, empirical basis, and sampling of everyday life situations. It has continued to be used in research, and no new versions had been developed by the time that testing for the current study began. The IPT-15 has been found to correlate with self-reported narrative engagement on the IRI (as measured by the Fantasy subscale), but not with exposure to fiction on the ART (the measure on which individuals had to identify authors they recognized from a list of names; Mar et al., 2006).

7.1.2.2.3 – The Levels of Embedded Mental States Task. The Levels of Embedded Mental States Task (LEMS Task; developed by Theanna Bischoff and Dr. Joan Peskin, based on Kinderman et al., 1998; Rutherford, 2004; and Stiller & Dunbar, 2007; as well as more recent tasks provided by Dr. Robin Dunbar and Dr. James Stiller) was created for the purposes of the study based on pre-existing versions of tasks such as the “Imposing Memory Task” (Kinderman et al., 1998), though extensive modification to the task was undertaken based on results of pilot testing. The LEMS task requires participants to read two short
stories twice each. To facilitate this, the stories appear twice on the page, with a reminder to read the story again before moving on to the questions. Participants are instructed to focus on the details in the story and told that they will not be allowed to refer back to the story to answer the questions. For each story, there are two of each of the following levels of embedded mental states: third, fourth, and fifth.\textsuperscript{13}

The order of the questions as they appear on the LEMS was selected randomly; subsequent items do not increase in difficulty. In the current study, the order of the stories was counterbalanced; whether participants read story A “Sam” or story B “Emma” first depended on random assignment. Each question on the LEMS was matched with a control question containing the same number of “facts” as mental states in the test item. There are 12 questions for each story. In all cases, the matching control question is either equivalent to or higher in word count than the test item, to eliminate the potential for the test items being more difficult due to length.

The full list of mental states in the stories and questions is as follows: believed/did not believe, concerned, confused, curious, intended/did not intend, knew/did not know, realized/did not realize, understood/did not understand, expected, figured, misled, suspected, thought, and wondered. Desire/wanting was excluded, as desire has been identified as the earliest and most primary and easily understood mental state in development (Wellman & Woolley, 1990). Some questions contained more than one negative mental state (e.g., did not know, did not believe) but not immediately in sequence.

\textsuperscript{13} The sixth level was dropped during pilot testing, given that what Dunbar called “sixth level” was actually fifth level, if one does not include an individual representing his or her own mind, which was decided against. Therefore, the levels used were equivalent in difficulty to those in the aforementioned studies. Additionally, second level items were used in the pilot testing, but to make the task less cumbersome/lengthy, second level items were easily passed for both control and test questions.
due to the inherent difficulty added in solving these kinds of questions (i.e., double negatives).

The stories were pilot tested and revised several times. The pattern of responses from individuals in the typical population during pilot testing (i.e., individuals who did not write fiction) mirrored the pattern expected by Dunbar et al. That is, test questions up to the third level tended to be answered at high levels of accuracy, but fourth and fifth level questions were more difficult. This decline in performance was far less noticeable for control questions, in keeping with the results described by Dunbar et al.

Participants in pilot tests were also required to rate the difficulty level of each question. Overall, participants perceived control questions to be similarly easy regardless of level of facts, and test questions up to level three to be generally easy; however, a sharp increase in difficulty level was noted for the fourth and fifth level items.

For scoring in the current study, participants received an overall percentage correct score for each level and type of question (i.e., Third Level Control, Third Level Mental States, Fourth Level Control, Fourth Level Mental States, Fifth Level Control, Fifth Level Mental States) calculated by dividing the total of correct answers from the number of questions of each category. An overall total number of test items correct was also calculated. The categories were collapsed across stories. Instructions for the LEMS task, an excerpt from the “Sam” story, and examples of a level five test item and a level five control item can be found in Appendix F.

7.1.2.2.4 – The Role Category Questionnaire. Crockett’s Role Category Questionnaire (RCQ; Burleson & Caplan, 1998; Burleson & Waltman, 1988; Leichty, 1997; O’Keefe, Shepherd, & Streeter, 1982; Sypher & Sypher, 1988) was included as a supplementary measure, even though it does not measure social cognition as defined for this study. The
RCQ does not require participants to make inferences or deductions about the mental states of others; rather, the RCQ measures cognitive complexity/differentiation and has been used in communication research. It is intended to tap the ability to generate different attributes of known individuals, or fluency in conceptualizing interpersonal constructs (O'Keefe et al., 1982). The version of the RCQ used in the current study was “the ‘two-peer’ version, in which participants were prompted to write impressions of two persons they know well, one whom they like and one whom they dislike. The RCQ measure of construct-based differentiation is obtained by counting the number of constructs across the two impressions” (O'Keefe et al., 1982, p. 333). Participants were instructed to describe the person of their choosing using personality traits (e.g., habits, mannerisms, ways of treating others, etc.) as opposed to physical characteristics. For pragmatic reasons, the timed version of the RCQ was used; participants were allowed five minutes to write impressions of the liked peer and five minutes to write impressions of the disliked peer.

While the RCQ does not measure social cognition directly, according to Leichty (1997), “an impression of a person is often differentiated because a perceiver has attempted to work out an understanding of a person that resolves seeming inconsistencies in behaviour” (p. 4). In other words, individuals who are more differentiated may be the kind of people who work to make sense of the behaviour of others. Though Leichty does not make reference to those who are more differentiated as working to make sense of the mental states of others (e.g., beliefs, desires, intentions, etc.), this may also be the case. According to Burleson and Waltman (1988), “Because all social perception processes are viewed as occurring through the application of interpersonal constructs, persons with more complex systems of interpersonal constructs (i.e., higher levels of interpersonal cognitive complexity)
should exhibit more advanced social perception skills than persons with less complex interpersonal construct systems” (p. 4).

Also, as Burleson and Waltman (1988) noted, there are links between interpersonal construct system development (assessed with the RCQ) and measures of social perspective taking ability. Hale and Delia (1976) found that scores on the RCQ and social perspective taking ability (on a measure known as the Social Perspectives Task) were significantly correlated. Additionally, Burleson and Caplan (1998) discussed evidence for associations between cognitive complexity as assessed with the RCQ and various social cognitive abilities, arguing that individuals who are more cognitively complex are better at identifying emotional states in others, and better able to make inferences about others’ dispositions. Until the present study, no studies had examined the relationship between the RCQ and other social cognitive measures (e.g., the IPT-15).

Scores on the RCQ have been found previously to be statistically, but weakly associated with narrative writing quality in children (Kroll, 1985). The authors of that study argued that children who were able to generate more traits on the RCQ “should have the capacity to form rich anticipations of readers’ responses [which], in turn, provide an impetus for including more of the kinds of story features that evoke responses from one’s readers…inventive names for characters, amusing dialogue, a suspenseful plot, a happy resolution, and so forth” (pp. 303-304). However, scores on the RCQ have also been found to be unrelated to narrative essay writing (which shares some similarities with narrative fiction) among college students (Burleson & Rowan, 1985).

There is strong evidence for the RCQ’s predictive, convergent, discriminant, and general construct validity (Sypher & Sypher, 1988). While it could be argued that writers would show an advantage given that the RCQ is, in essence, a written, language-based task,
scores on the RCQ have been determined to be unrelated to verbal ability, intelligence, verbal fluency, vocabulary, and writing speed (O’Keefe et al.). The RCQ is a free response task on which respondents can construct their own impressions as opposed to responding to fixed-choice scales (Sypher & Sypher, 1988).

In the present study, the RCQ was scored according to the manual by counting the total number of discrete personality traits or descriptions generated within the time limit. Three scores were reported: one for each of the Liked Peer and Disliked Peer, and a total score (the sum of the two). Additionally, each RCQ response (Liked Peer and Disliked Peer separately) was also given a score indicating whether the Liked Peer response contained only positive traits and the Disliked Peer response contained only negative traits, or whether participants indicated at least one negative trait in the Liked Peer response and/or at least one positive trait in the Disliked Peer response. Protocols were scored as being either “homogenous” (traits of only one valence) or “heterogeneous” (including at least one trait of the opposite valence). Traits of neutral valence were scored as such; if all traits were either negative or neutral, the protocol was scored as being “homogeneous,” and likewise, if all traits were either positive or neutral, the protocol was scored as being “heterogeneous.”

Two research assistants undertook coding the RCQ protocols. First, each research assistant coded the protocols of nine participants independently using the RCQ manual. Then, the primary researcher met with both research assistants to discuss discrepancies in their approaches (e.g., where their scores differed). The two research assistants were then given an additional 10 protocols to code and were instructed to move forward and code the remaining protocols only once they had reached a predetermined threshold of consistent reliability in rating (i.e., that no more than one tenth of the protocols differed by more than three points on either the Liked Peer or Disliked Peer total score, so long as the three points
represented instances where one coder had given credit for an item where another had not and the remaining traits were agreed upon and given credit or not given credit by both raters). After all protocols were scored, the two research assistants met and resolved discrepancies for any protocol for which their scores differed by more than two points. For those protocols where scores differed by two points or less, the average score was reported. In all cases, the two research assistants decided homogeneity or heterogeneity of the content of the protocols based on mutual consensus.

The RCQ was included as part of the battery of tests, but it is important to note that this measure did not require participants to perceive, interpret, or reason about mental states. Therefore, it should be considered as a measure that assesses cognitive complexity, which is related to social cognition, but does not directly measure social cognition. Instructions for the RCQ can be found in Appendix G.

7.1.2.2.2.5 – Additional Excluded Measure of Social Cognition. Ten participants were administered an additional measure, an Empathic Accuracy Paradigm (developed by Goldstein, 2010), which was later removed. This measure was based on the Empathic Accuracy Paradigm (Standard Stimulus Paradigm version) developed by William Ickes (described in Ickes, 2001) and used in several studies, such as Marangoni et al. (1995). Similar paradigms have been used by Klein and Hodges (2001), Roeyers et al. (2001), Ponnet et al. (2004), and Hall and Schmid Mast (2007).

Marangoni, Garcia, Ickes, and Teng (1995) have used videotapes of three individuals undergoing psychotherapy. The psychotherapy clients (all female) were asked to identify their thoughts and feelings directly following the session by watching replays of their videos. The videos are to be shown to individuals who must make predictions about the mental states as directly reported by the three women in the videos. The various uses of these
videos have been described by Ickes (2003). However, this measure has not been made available for use in other studies, is limited to only three encoders, and has some methodological problems (i.e., one woman’s mental states are harder to predict).

Additionally, the situation does not map well to scenarios experienced by individuals in everyday life; generally, inferences about what others are thinking or feeling are made online in interactions, as opposed to from long dialogues provided in a more unilateral description, as would be typical of psychotherapy. The study by Marangoni et al. did, however, provide evidence for cross-target stability (in terms of correlations), suggesting that those who performed well for one target generally performed well on the other targets.

Thomas and Fletcher (2003) also found evidence of cross-target stability, especially when individuals were judging multiple strangers, though moderate to substantial cross-target stability was also found when the level of acquaintanceship was varied (i.e., their partner, a friend, or a stranger). According to Thomas and Fletcher, “These analyses show the existence of individual differences in mind-reading performance, but they do not elucidate the underlying processes involved.” In general, this suggests that these paradigms can (to a degree) identify good perceivers versus poor perceivers. Hall and Schmid Mast (2007) also created a standardized Empathic Accuracy Paradigm with nine encoders, but did not make the video available for use in other studies. Tasks by Ponnet, Roeyers, Buysse, De Clercq, and Van Der Heyden (2004), and Roeyers, Buysse, Ponnet, and Pichal (2001) were recorded in Dutch; nuances of the verbal and non-verbal behaviour would be lost if translated. Additionally, a measure developed by Kelleher (1998) used eight encoders; however, the video was developed as part of an unpublished master’s thesis and it appears that it has not been used since. Several other theses have employed the standard stimulus paradigm, however, these have all used the same video from Marangoni (see Ickes et al.,
Finally, the two videos developed by Klein and Hodges (2001) are very brief in duration and only contain four thoughts each; therefore they were not sufficient for use in the current study. Ultimately, the Goldstein (2010) measure was selected. This measure asks directly about mental states of a single encoder based on the Hall and Schmid Mast study (2007), and had been validated. Both the paradigm and design of Goldstein’s measure are most similar to that by Hall and Schmid Mast.

For the Empathic Accuracy measure developed by Goldstein, two individuals (a professional actress and her husband, who is also an actor) were videotaped having a conversation. Despite both working in the acting industry, the conversation was spontaneous and real (i.e., they were not acting at the time of the recording). The couple was asked to spend 15 minutes generating a list of the five best movies of the last 30 years. Immediately after filming, the wife was then asked to watch their interaction and stop it every time she remembered having an exact thought or feeling. These moments were then screened and cut such that the final video has 15 segments of 10-30 seconds each. Individuals who watched this video during task validation were required to write out what they thought the wife was thinking or feeling in each of these moments, and each answer was scored for degree of similarity to the thought or feeling reported by the wife herself. Two coders were used to validate, and a third was used to resolve any differences. This measure has been used in individuals aged 13 to 15 (Goldstein, 2010), but participants did not reach ceiling and performed rather weakly at Time 1, suggesting that it is appropriate for use with adults. The video was shown to participants, who were then asked to record what they thought the female in the video was thinking or feeling.

In the current study, because of the very low accuracy in adolescents reported by Goldstein (2010), the answer for the first clip was provided, and the first two clips were
shown twice to increase familiarity with the task. Unlike the IPT-15, Goldstein’s Empathic Accuracy Paradigm uses real-time interaction and asks directly about mental states (as opposed to true/false states). Additionally, accuracy was verified by the encoder herself (i.e., the wife). According to the author, this measure assesses one’s ability to infer mental states online (i.e., “moment-to-moment” and in interaction, assessing dynamic cues), thus making it highly ecologically valid and naturalistic.

One downside to this measure is that only a single encoder is used (an adult female) and therefore it is somewhat limited in generalizability. However, in the present study, the range of encoders in the IPT-15 offset this weakness. As previously described in the literature review, this task was used with adolescents before and after taking intensive acting classes. Those who took the classes improved more than those who took music or visual arts (Goldstein, 2010). In the present study, Goldstein’s Empathic Accuracy Paradigm (2010) was administered just prior to the administration of the final study measure, the RCQ, before being removed from the test battery.

The Goldstein (2010) measure was ultimately removed from the study for several reasons. First, the participants to whom it was administered reported that it was confusing, fatiguing, and frustrating. Additionally, the scoring manual provided by the authors required participants’ answers to match with the answer provided by the encoder (i.e., the actress participants watched on video). However, after reviewing the responses of the participants who completed this task, it was felt that the encoder often provided a single response for a clip in which (it can be argued) she demonstrated a variety of different thoughts or feelings (as expressed via several different facial expressions, changes in tone of voice, etc.). Yet, according to the scoring criteria, only participants who generated an answer that matched the single answer provided by the encoder/actress would receive points, regardless of whether
arguments could be made for the fact that there were other emotions expressed during the clip that the encoder/actress did not comment on while viewing herself. In preliminary analyses, participants who were more prolific in their responses (i.e., who generated more answers for each video clip) scored higher according to the criteria outlined by Goldstein. It could be argued that they identified the correct answer by chance (i.e., by simply listing as many possibilities as they could think of), since it is impossible to verify whether their other answers were correct or incorrect based on the criteria outlined by Goldstein alone.

Finally, concerns were raised due to the fact that the task relied on the actress to be highly self-reflective (i.e., to be able to accurately identify and list her own thoughts and feelings from a video). Given that she often only labelled a single thought or feeling, despite the range being noted by participants, the actress’ self-reflexivity, at least as it is reflected in this task, remains questionable. Due to the combination of these factors, Goldstein’s (2010) measure was removed from the study and not administered to the remainder of the participants (N=50). Statistical analyses, which will be described in section 7.1.3, revealed that those participants who completed the Goldstein Empathic Accuracy paradigm performed no differently than participants who did not complete the measure on the RCQ (the only measure that followed the Goldstein Empathic Accuracy paradigm). Therefore, the removal of this measure did not impact the study results in any meaningful way.

7.1.2.3 – Potential Confounding Variables.

7.1.2.3.1 – The Author Recognition Test. The Author Recognition Test (Stanovich & West, 1989) was used to assess literary interest and exposure. It assessed the participant’s previous exposure to print and likely level of literary socialization. The version included in the study was the version used by Mar (2007), which lists 86 authors’ names (45 real names, 41 foils). One slight modification was made between the version of the ART used by Mar in
2007 and the version used in the current study—author Susan Sontag was removed from the final scoring given that she had been originally included in the Non-Fiction category and scored as such. However, given that Sontag wrote in both genres, it was felt that she could not fit cleanly in either category, and, therefore, was excluded.

Participants were asked to indicate which names they were sure were the names of authors, and to avoid guessing. This test was included for two reasons: (1) to see whether previous findings relating to reading fiction and social cognition could be replicated, and (2) to ensure that any significant differences on measures of social cognition by fiction writers was not due to their fiction reading alone. According to Mar (2007), the ART is an indirect measure of how well read someone is, because participants only need to check the names of authors they recognize (as opposed to names of authors of books they have actually read); it more accurately measures literary exposure, though it has been found to correlate with self-reported vocabulary and reading frequency (Lee, Krashen, & Tse, 1997).

7.1.2.3.2 – The Beck Depression Inventory. Given the mixed findings for dysphoric (Harkness et al., 2005) and depressed (Lee et al.) individuals on the RME, as well as the suggested association between creative pursuits and mental illness as previously described, it was necessary to determine whether depressive symptoms moderated any relationship between creative writing and the outcome variables used in the study. This was especially important given that the groups were based on pre-existing characteristics (e.g., whether or not they engaged in writing as a hobby or career).

The revised version, the BDI-II (Beck, Steer, & Brown, 1996), was used in the current study. It assesses depressive symptoms in the two weeks prior to administration. Self-administered, it takes approximately five to 10 minutes to complete. Scores can be
analyzed as continuous variables or using standard cut-offs (i.e., distinguishing depressed from non-depressed, etc.).

The BDI-II contains 21 groups of statements, each with four levels of severity. The questions probe the following depressive symptoms: sadness, pessimism, past failure, loss of pleasure, guilty feelings, punishment feelings, self-dislike, self-criticism, suicidal thoughts or wishes, crying, agitation, loss of interest, indecisiveness, worthlessness, loss of energy, changes in sleeping, irritability, changes in appetite, concentration difficulty, tiredness or fatigue, and loss of interest in sex, congruent with the DSM-IV 1994 edition (American Psychiatric Association, 1994) diagnostic criteria for depression. According to Dozois, Dobson, and Ahnberg (1998), the BDI-II has demonstrated high internal consistency in college student and outpatient populations, adequate content and factorial validity, and diagnostic discrimination, as well as moderate (but adequate) test-retest reliability.

7.1.2.3.3 – Verbal intelligence. It was also necessary to include a measure of verbal IQ to ensure that any group differences on measures of social cognition were not related to pre-existing group differences in terms of linguistic ability or verbal intelligence. This was important due to the fact that verbal IQ has been identified as one possible predictor for the accuracy of making inferences about the mental states of strangers (Thomas & Fletcher, 2003). It is plausible that individuals who write (either professionally or as a hobby) could have higher verbal intelligence, on average, than those who do not.

The Similarities subtest was chosen as a proxy for verbal intelligence for three reasons. First, in a study comparing writers and individuals who did not write creatively (Andreasen, 1987) on several measures of the Wechsler Adult Intelligence Scale (WAISIV; Wechsler, 2008):

…writers scored significantly higher on the vocabulary subtest of the WAIS, but this would be expected given the fact that their life work involves a preoccupation with
words. The most interesting data...are the many nonsignificant differences. Both the writers and the control subjects were intellectually talented, with full scale IQs usually over 120. Except for their differential excellence in vocabulary, the writers performed equally well on all the WAIS subtests. They did not seem to have a preferential giftedness in verbal intelligence, although they did have a nonsignificant decrement in verbal minus performance IQ. In general, they performed equally well in all aspects of intelligence assessment. (pp. 1291-1292)

The Similarities subtest involves the participant having to identify how two words are conceptually similar. The difficulty level increases with each item; items are presented verbally. Standardized instructions can be found in the WAISIV manual (Wechsler, 2008).

While the skills tapped by the Vocabulary and Information subtests can be learned and practiced, the Similarities subtest measures abstract verbal reasoning, and relies less on individuals' ability to retrieve learned information from long-term storage (Lichtenberger & Kaufman, 2009). Finally, Similarities has a shorter administration time than Vocabulary; because the testing sessions were quite lengthy and participant fatigue was a concern, the shorter, more efficient verbal subtest was preferred over administering all three subtests that typically form the Verbal Intelligence Quotient (standard battery). Participants were disqualified from the study if they scored in the below average range (a standard score of seven or lower). A standard score of at least eight (25th percentile) or higher was required.

7.1.2.4 – Fiction writing sample. Three days before the testing session, participants were provided with instructions to compose a complete short story or scene (i.e., having a defined beginning, middle, and end) approximately one to two pages in length. This short story writing sample was obtained to provide a proxy measure of writing quality or skill such that participants could be compared not only on group category (i.e., Established Writers, Intermediate Writers, or Control) but also based on the continuous variable of expert rated quality. Participants were told upon scheduling their study testing time that they would receive the prompt three days before the scheduled date (via email), but were allowed to take
however much time they felt necessary during those three days to complete the writing task.\textsuperscript{14}

Efforts were made to decrease the risk of plagiarism by requiring participants to select from one of three topic prompts and explicitly instructing them to ensure that their story was entirely their own work (See Appendix H for instructions and sample authors). Instructions also specified that the writing sample was to be entirely new (i.e., participants were not to use portions, characters, or ideas from work they had already completed). The three prompts were as follows: 1) write a story that is set in a church, with the nearby roads closed due to bad weather; 2) write a story that includes the following two characters: a man about to get married and a woman with a severe allergy; and 3) write a story about a family with one member who adamantly believes they are psychic. A single participant asked whether it was permissible to write a story combining elements from more than one prompt, and was told this was allowed.

Determining a method by which to evaluate the writing samples was challenging. People are hesitant to judge creative products, perhaps because of the personal and emotive nature of creative writing (Butt, 2003; Rodriguez, 2008). Several attempts at assessing creative writing have been made; however, each has notable flaws.

Anderson (1957) and Sager (1973) went so far as to develop a series of scales (ultimately named the Sager Writing Scale) on which children’s stories could be scored. This scale was developed based on consultation with experts and was demonstrated to have good reliability. However, there are several problems with the Sager Writing Scale—namely that it oversimplifies creative writing, and a number of published, well-renowned works would

\textsuperscript{14} One participant completed the short story task following participation in the study, due to the fact that this individual failed to open the email prompt and complete the task prior to attending the testing session. However, the participant still completed the task within the time limit, and was not debriefed about the study hypotheses until after submitting the story.
score very low, which limits its validity. For example, the Sager Writing Scale emphasizes variety in word choice, whereas Ernest Hemingway’s writing is characterized by short declarative sentences and a lack of adjectives. Additionally, the Sager Writing Scale emphasizes traditional linear narratives, with authors scoring points for stories happening in temporal sequence; stories would lose points if they were purposefully told out of sequence or included flashbacks or prolepsis. The Sager Writing Scale was intended to represent the kind of writing typically produced by children, which can often be more traditional and formulaic; it overlooks the work of advanced children or more senior students, who may explore more creative aspects of narrative.

Perhaps due to the inherent difficulty in establishing a rubric on which fiction can be assessed (Vakil, 2008), and the fact that good fiction often breaks the “rules” (Stegner, 2002), other researchers employed holistic scales when evaluating writing as part of their studies. Rubin et al. (1984) and Burleson and Rowan (1985) used holistic ratings to measure narrative writing skill, though the written products were narrative essays, not short stories. Kaufman, Gentile, and Baer (2005) employed Amabile’s Consensual Assessment Technique (1982, 1996) by asking experts and gifted novices to holistically rate a series of short stories written by middle school students on a six-point scale for creativity. All raters used their subjective judgments (i.e., no guidelines for scoring were given). Using this holistic rating scale, inter-rater reliability was .77 across all raters. However, raters assessed stories based only on “creativity,” which is not necessarily the same construct as writing quality, though it is certainly a component.

Other writing scales, such as the Carlson Originality Scale (Carlson, 1968) and the Prose Quantification Scales (Redfield, Holt, & Martray, 1987), have also focused almost exclusively on creativity at the expense of other features of writing. Moslemi (1975) asked
raters to rank various elements of creative narratives, including the creativity (Originality and Uniqueness of Style scales), but also including idea production and language usage. Still, this scale gave a great deal of emphasis to the creativity involved in the ultimate product, likely due to the fact that Moslemi’s study examined changes in creativity among different artistic products, and was looking more at creativity than writing quality per se. Moslemi had raters rank each component on a five-point scale (zero = very low, one = moderately low, two = average, three = moderately high, four = very high).

A review of the literature suggests that there is little consistency or consensus in how best to measure creative writing, if it is measurable at all. The need for a valid method for the assessment of advanced creative writing samples remains for use in studies in which writing quality is one of the variables. There appears to be some consensus in the literature that agreement, typically expert agreement, is important in establishing the quality of a creative product.

In search of a way to “quantify” the quality of fiction, a literature review was conducted to review existing assessment techniques for creative writing, including the Sager Writing Scale (Anderson, 1957; Sager, 1973), the Consensual Assessment Technique (Amabile, 1982, 1996), Holistic Measures (Burleson & Rowan, 1985; Rubin et al., 1984), the Carlson Originality Scale (Carlson, 1968), the Prose Quantification Scale (Redfield et al., 1984), a measure used by Cynde Gregory (1994), and the aforementioned measure used by Moslemi (1975). Additionally, a variety of sources were consulted, including manuals and curriculum schemas for teaching creative writing in child, adolescent, and adult populations; asking subject area experts (published creative writers, creative writing students, cognitive scientists, creative writing teachers, and a high school English teacher) for their opinion on how to define the quality of creative writing; and multiple “how to” books on creative
writing (Ballon, 2003; Bauer, 2000; Boulter, 2007; Burroway et al., 2010; Hodgins, 1993; Hood, 1988; Editors of Writer’s Digest Books, 2010).

Based on these varying sources and the lack of any sufficient existing criteria (as previously discussed), it was determined that the writing samples provided by participants would be scored based on expert consensus. Three expert raters were recruited with the following backgrounds: (1) published poet/journalist, literary magazine editor, creative writing instructor and book reviewer; (2) master’s degree in publishing, marketing and production coordinator and copy editor for a Canadian publishing house, freelance editor, book reviewer; and (3) award winning published novelist and poet, creative writing instructor. Thus, all had ample training in writing and judging writing.

Each rater was asked to rank the stories using a general holistic Likert Scale measuring the overall quality, with instructions to attempt to assess quality objectively, regardless of personal preferences (i.e., independent of whether the text was something they themselves might prefer to read due to factors such as genre or style). Each rater then ranked each story on a Likert scale assessing Identification/Transparency (i.e., the degree to which readers were able to understand, track, appreciate, and/or identify with the internal mental states of the characters and imagine themselves inside characters’ heads), based on Kotovych et al. (2011). A total score out of 30 was calculated by summing the three ratings assigned to each participant’s writing sample for each of these two questions (i.e., Quality and Transparency).

Finally, each rater was asked to identify the point of view used by the author of the story. Kotovych et al. (2011) argued that readers are more able to identify with the thoughts and feelings of characters when there is a close association between the narrator and the character. In a first person narrative, the narrator and the character are one and the same; in
a third person narrative, the narrator can be presented as closer to the character through stylistic devices such as limited omniscience and free-indirect speech. The point of view measurement was used to explore whether any relationship existed between the chosen point of view of participants when composing their short story for the writing sample and their performance on the performance-based measures of social cognition.

In cases where there was not unanimous agreement among the raters as to a story’s point of view, the assigned point of view was given if at least two raters agreed. If all three raters disagreed, the story was coded as having inconsistent point of view. Stories were then assigned codes according to the following criteria:

A code of one was assigned if the point of view was first person, in which the narrator refers to him or herself as “I.” A code of two was assigned if the point of view was second person, in which the narrator refers to him or herself as “you,” or third person, in which the narrator is referred to by name and there is some degree of omniscience, meaning the narrator is privy to the thoughts and feelings of one or more characters. A code of three was assigned if the point of view was either objective, in which a third person narrator is used but is not privy to the thoughts and feelings of any character, or if the point of view was inconsistent, in that it changed at some point during the story.

7.1.2.5 – Social cognition and motivation. Performance on measures of social cognition can be subject to differences in motivation. For example, females were found to outperform males only when they believed an empathic accuracy task was measuring empathy, because empathy is a stereotypically “female” trait (i.e., gender congruent); essentially, females outperformed males, but only when the task was framed in a gender congruent way (Klein & Hodges, 2001). This gender-congruence effect has also been shown with the IPT-15 (Horgan & Smith, 2006; Koenig & Eagly, 2005). Ickes et al. (2000), as well
as Klein and Hodges (2001) have argued that a true gender bias (i.e., females outperforming males) is not actually present in social cognition, and similar to Horgan and Smith, and Koenig and Eagly, that it is motivational or gender-congruence differences that account for the differences in performance.

Motivation was important to consider in the present study because it was possible that motivation for study participation might differ between writers (i.e., those in the published writers and student writers groups) and the control group, with writers having more motivation to participate given their interest in the subject matter. Furthermore, by virtue of having been specifically solicited for participation in a study, writers may have inferred that the tasks could be “writer-congruent,” which, in turn, may have increased their motivation to perform well. Additionally, while all participants were only told that the study was examining “differences between writers and non-writers,” it was felt that it was still plausible for writers to sense that they might perform better on the tasks included, because of the fact that they often think about characters interacting. Study hypotheses, while withheld, could hypothetically have been guessed at, given the face validity of the measures included and the similarities among them. Finally, some of the measures, especially the LEMS measure, are particularly “writer-congruent” (i.e., reading a story and answering questions about characters). Therefore, it was determined that it was not possible to attribute differences between writers and control participants to the group if these motivational differences were not controlled for.

To control for motivational differences, Klein and Hodges (2001) provided a monetary incentive to participants to improve their performance. They paid participants contingent on their performance; though the monetary value they could earn was very small (up to $8), both groups became highly motivated and the gender difference caused by
gender-congruency of the task was no longer evident. Therefore, in the current study, participants were told that at the end of the study, researchers would sum all the scores for the outcome variables, and the five highest scoring participants would receive a movie and snacks package. A sheet with visual images and descriptions of the movie prize was taken to the testing sessions and was therefore visually salient for participants. Additionally, participants were told that they would receive general feedback on their performance on the test measures.\textsuperscript{15} The two motivators were introduced following the control questions (i.e., before the administration of any measures of social cognition). Participants were told that they would receive feedback about their scores via email one to two weeks following the session. A combination of motivators (the movie and snack package as well as performance feedback) would help offset the possibility that different motivators might appeal to different participants.

\textbf{7.1.3 – Procedure}

Participants were tested either individually or in small groups of no more than three participants. Participants were tested by the primary researcher or by a trained research assistant. The research assistant was trained by reading literature relevant to the study’s procedure and standardized administration of each of the measures, observing the primary researcher administer the full battery to a practice participant and two real participants, and

\textsuperscript{15} Initially, the prize was set as the top three participants’ winning movie passes; however, the first three participants tested did not seem highly interested in the prize, and one commented on the prize delay (i.e., that it would not be delivered until testing was complete) suggesting it was not sufficiently motivating. Two of these participants asked questions about their performance and wanted feedback. Because this was felt to be more motivating to participants than the delayed movie passes, it was added as a motivator, and the likelihood of winning a movie pass was also increased by rewarding the top five scoring participants as opposed to the top three. Of the first three participants, one was in the published writer’s group, and therefore controlling for motivation was not a concern (given that this participant fell into the group which was likely to be more intrinsically motivated, anyway). The remaining two participants reported being highly motivated and interested in the study. Therefore, it was felt that it was appropriate to still include all these participants in the final data set.
then administering the full battery to another participant while being observed by the primary researcher. Feedback about the research assistant’s performance was provided by the primary researcher. Additionally, the research assistant practiced administration of the Similarities subtest of the WAIS-IV on sample participants, with feedback on scoring provided by the primary researcher, until sufficient adherence to the scoring manual had been reached.

The location of testing was selected based on the preference of the participant; some were tested at the University of Toronto Ontario Institute for Studies in Education (OISE/UT), while others were tested in community locations, such as their homes, workplaces, or coffee shops. Individuals tested in public places were provided with earphones to block out external noise during the presentation of the IPT-15.

The measures were administered in the following order: Demographics Questionnaire, control measures (in the order in which they were described above), followed by test measures (in the order in which they were described above). None of the measures, aside from the RCQ, were timed; however participants were encouraged to work quickly and to go with their “gut instinct” or take their best guess when stumped. Participants were allowed to take breaks if they requested them.

As previously mentioned, 10 participants completed the Goldstein (2010) measure before it was removed from the test battery; those participants completed the Goldstein measure just prior to the administration of the RCQ. A series of independent samples t-tests comparing those who completed the Empathic Accuracy paradigm (N=10) revealed no significant between-group differences on the RCQ; thus, the fact that 10 participants completed this measure and the remaining participants did not had no meaningful effect on the ultimate results.
A final variation in the order of the testing was the administration of the verbal IQ measure (the Similarities subtest). For the majority of participants, the Similarities subtest was administered in the sequence provided. However, in cases where participants were tested in small groups, it was necessary to separate participants such that participants could not hear the questions in advance or each other’s answers. Because verbal IQ is arguably stable, and therefore not likely to be influenced by the task order, this task was administered when convenient in groups (e.g., sometimes one participant was told to come 15 minutes in advance of the testing, while the other stayed afterwards; other times, after completion of all the tasks, participants were administered the VIQ in sequence while the others had a coffee break).

7.2 – Results

7.2.1 – Descriptive Statistics

Before presenting the results of the empirical comparisons between the three groups sampled in the current study, descriptive statistics regarding the demographic and potential confounding variables measured in the study will be detailed. These variables are as follows: educational achievement, area of training/knowledge, age, verbal IQ, depression, author recognition, and hours spent writing fiction.

7.2.1.1 – Educational achievement. All three samples were highly educated. Table 3 represents the educational achievements of the participants in each of the three groups.

A Pearson’s chi-square test was conducted to determine whether there were significant differences in the level of education across the three participant groups (established writers, intermediate writers, and control group participants). For the purposes of this analysis, educational achievement was collapsed into broader categories so that there would be a sufficient number of participants for analysis in each group. Educational
achievement level 1 was defined as either having graduated high school, completed some college/technical school, or achieved a college/technical degree or certificate. Educational achievement level 2 was defined as having completed either some university or having achieved a bachelor’s degree. Educational achievement level 3 was defined as having completed some graduate school or having achieved a graduate (i.e., master’s or doctoral) degree. The new distributions appear in Table 4.

According to the results of the chi-squared test, there were no significant differences between the proportions of participants in each of the three education levels in each of the three participant groups, $\chi^2(4) = 3.37, p > .05$. Because there were no statistically significant differences in the proportions of participants at each educational level in each of the three participant groups, no further statistical tests were conducted on the level of education variable. In summary, the three groups were not statistically different in terms of their level of educational achievement, and all can be described as highly educated.

7.2.1.2 – Areas of training/knowledge. Information was also collected about the fields in which each participant current worked, practiced, or had been trained in. While some participants reported “psychology” as an area in which they were trained, the maximum level of training in psychology/counselling reported by any participant included in the study was a bachelor’s degree or a course in crisis intervention (or similar). All met previously established criteria in which none were currently employed in a professional counselling profession (e.g., psychologist, counsellor, social worker, etc.) at the time of participation or at any time in the past.

In addition to writing fiction, participants in the established writers group also reported the following areas of expertise/training: English literature, business, computers, administration, accounting, sports/athletics, drama, music, philosophy, languages (other than
English), teaching, journalism, psychology, publishing, childcare, and sociology. In addition to writing, participants in the intermediate group also reported the following areas of expertise/training: English literature, history/cultural studies, drama, anthropology, sciences, languages (other than English), music, trades/manual labour, education/teaching, sports/athletics/coaching, administration, computers, accounting, technical writing, engineering, finance, law, and military. A single participant in the intermediate writers group reported having completed online courses by Paul Ekman in reading facial expressions. Because this participant was not an outlier on any outcome variables—particularly the RME or IPT-15, which involve reading facial expressions—and because previously established criteria restricted only those in active counselling professions, data from this participant was included.

Participants in the control group reported the following areas of expertise/training: nursing, business, science, statistics, law, psychology, alternative medicine, engineering, communications/marketing, event management, administration, photography/design, teaching, music, customer service/hospitality, medicine, research, anthropology, trades/manual labour, education, sports/athletics/coaching/physical education, customer service/human resources, travel, history, mathematics, finance, geology, accounting, and speech pathology. Thus, a wide range of fields was represented across all three groups.

7.2.1.3 – Age. Boxplots of the data revealed that age was relatively normally distributed within each group and there were no outliers on this variable for any of the groups. Age was also relatively normally distributed across all groups, and there were no outliers.

A one-way ANOVA was conducted to determine whether the established, intermediate, and control group participants differed significantly in terms of their age.
Analyses revealed a significant age difference between the three participant groups, $F(2,57) = 10.23, p < .001$. Post-hoc analyses using Bonferroni t-tests revealed that the established writers ($M = 49.10, SD = 10.51$) were significantly older than the intermediate writers ($M = 33.40, SD = 9.61$), $p < .001$. However, the mean age of the control group ($M = 41.25, SD = 12.60$), which fell somewhere in the middle, was not significantly different from either of the two groups of writers, $p > .05$.

Because the established writers were significantly older than the intermediate writers, correlations were calculated to determine whether there was any relationship between age and any of the outcomes variables. Age was not significantly correlated with any of the performance-based measures. That is, age was not significantly correlated with RME total score, IPT-15 total score, total correct for each of the LEMS test levels (three, four, or five), total correct of all the LEMS test levels combined, the RCQ Liked Peer total score, the RCQ Disliked Peer total score, and the RCQ Total score (Liked and Disliked Peer scores summed), $p > .05$. Analyses did, however, reveal a significant negative correlation between age and self-reported fictional engagement on the Fantasy subscale of the IRI, $r = -.260, p < .05$, but none of the other subscales of the IRI. Table 5 represents the correlations between age and the outcome variables.

In summary, the established writers in the study were significantly older than the intermediate writers. Despite this difference, however, age was not significantly correlated with any of the performance-based outcome variables, and only significantly correlated with self-reported narrative engagement on the IRI (the Fantasy subscale). Due to the lack of a relationship between age and any of the outcome variables that directly test sociocognitive performance (RME, IPT-15, and the LEMS), and the lack of a relationship between age and cognitive complexity/differentiation (RCQ scores), it was determined that age was not a
variable that would have impacted any potential outcome differences between the three
groups (established writers, intermediate writers, and the control group).

7.2.1.4 – Verbal IQ. Boxplots of the data revealed that verbal IQ was relatively
normally distributed within each group and there were no outliers on this variable for any of
the groups. Verbal IQ was also relatively normally distributed across all groups, and there
were no outliers. A one-way ANOVA was conducted to determine whether the expert,
intermediate, and control group participants differed significantly in terms of their verbal IQ.
Analyses revealed no significant between-group differences in terms of standard scores on
the Similarities subtest of the WAIS-IV, $F(2,57) = 2.98, p > .05$. Therefore, there were no
statistically significant differences between the established writers ($M = 13.55, SD = 1.76,$
range $= 10$-$17$), intermediate writers ($M = 13.25, SD = 2.05, range = 10$-$17$) and control
group participants ($M = 12.10, SD = 2.13, range = 9$-$16$) in terms of estimated verbal
intelligence.

When the mean scores are described in terms of percentiles, the established writers
scored, on average, between the 84th and 91st percentiles, and ranged from the 50th to the
99th percentile; intermediate writers scored, on average, between the 84th and 91st
percentiles, and had the same range as the established writers (the 50th to the 99th
percentile). Control group participants scored, on average, between the 75th and 84th
percentiles, and ranged from the 37th to the 98th percentile.

On the whole, then, all three groups were, on average, highly verbally intelligent, and
all participants scored, at minimum, in the average range, with the average range on the
WAIS-IV being between the 25th and 74th percentiles. There were no statistically significant
differences between the three participant groups in terms of verbal intelligence, and thus, it
was determined that verbal IQ was not a variable that would have impacted any potential
differences between the three groups (established writers, intermediate writers, and the control group).

7.2.1.5 – Depression. Boxplots of the data revealed that scores on the BDI-II were relatively normally distributed within each group and there was a single high score outlier for the intermediate group only. BDI-II scores were also relatively normally distributed across all groups; when examined across all participants, there were two high-scoring outliers.

A one-way ANOVA was conducted to determine whether the established writers, intermediate writers, and control group participants differed significantly in terms of their self-reported level of depression. Analyses revealed a significant between-group difference in terms of BDI-II scores, $F(2,57) = 6.70, p < .01$. Post-hoc analyses using Bonferroni t-tests revealed that the intermediate writers ($M = 9.20, SD = 6.26, \text{range} = 0-23$) reported significantly higher levels of depression than the control group ($M = 3.65, SD = 3.00, \text{range} = 0-9$). The single high-scoring outlier in the intermediate group may have influenced this. There were no statistically significant differences between the established writers ($M = 5.75, SD = 4.70, \text{range} = 0-16$) and control group participants, nor were there significant differences between the two groups of writers, $p > .05$.

Due to the significant difference in level of depression reported by the intermediate writers and control group participants, a series of Pearson bivariate correlations were calculated to determine whether there was any relationship between level of depression and any of the outcomes variables. Level of depression was not significantly correlated with any of the performance-based outcome measures (RME, IPT-15, LEMS, or RCQ), $p > .05$.

Level of depression as measured using the BDI-II was, however, correlated with self-reported narrative engagement on the Fantasy subscale of the IRI, $r = .254, p = .05$, but no other subscales of the IRI.
In summary, on average, the intermediate writers sampled were significantly more depressed than the control group participants. However, due to the lack of a relationship between level of depression (BDI-II score) and any of the outcome variables that directly test sociocognitive performance (RME, IPT-15, and the LEMS), and the lack of a relationship between BDI-II scores and cognitive complexity/differentiation (RCQ scores), it was determined that level of depression was not a variable that would have impacted any potential differences between the three groups (established writers, intermediate writers, and the control group). Additionally, due to the lack of association between level of depression and the outcome variables, the single outlier was not likely to have had any bearing on the outcomes. **Table 6** represents the correlations between BDI-II scores and the outcome variables.

### 7.2.1.6 – Author recognition.

Boxplots revealed that both ART Fiction and ART Non-Fiction were relatively normally distributed within each group. There were no outliers on the ART-NF for any of the groups; there was a single low score outlier on the ART-F in the established writers group. Boxplots also revealed that ART-F and ART-NF were relatively normally distributed across all groups and there were no outliers.

A series of one-way ANOVA tests were conducted to determine whether the established, intermediate, and control group participants differed significantly on the Author Recognition Test, a proxy measure of how well read individuals were. Analyses revealed significant between-group differences when the three groups were compared for both ART-F score, $F(2,57) = 36.86, p < .001$, and ART-NF score; $F(2,57) = 11.97, p < .001$. The Levene’s statistic was significant for both of these ANOVAs; therefore, post-hoc tests were conducted using the Games-Howell procedure.

Post-hoc analyses on the ART-F scores revealed that both the established writers ($M$
established writers (M = 14.50, SD = 5.08) recognized significantly more names of authors of non-fiction than the control group participants (M = 6.45, SD = 4.02), p < .001, and the intermediate writers (M = 11.60, SD = 6.43) recognized significantly more names of authors of non-fiction than the control group participants, p < .05. Post-hoc tests revealed no statistically significant differences between the means for the two groups of writers when their scores on the ART for both Fiction and Non-Fiction were compared, p > .05. The results suggested that both groups of writers, as one might expect, were able to recognize more author names, and therefore, had more literary exposure in both fiction and non-fiction genres compared to the control group. However, the two writer groups did not differ significantly in terms of the number of names of fiction or non-fiction writers they recognized.

Due to the fact that both groups of writers recognized significantly more names of authors (both in both fiction and non-fiction genres) than the control group participants, and established fiction writers recognized significantly more names of non-fiction writers than intermediate writers, Pearson bivariate correlations were calculated to determine whether there was any relationship between scores on the ART and any of the outcomes variables. While ART-F scores and ART-NF scores were highly correlated with each other, r = .822, p < .001, neither was significantly correlated with any of the performance-based outcome measures (RME, IPT-15, LEMS, or RCQ), p > .05. Both ART-F and ART-NF scores were, however, correlated with the both the Fantasy and Personal Distress subtests of the IRI (ART-F and IRI-FS, r = .268, p < .05. ART-F and IRI-PD, r = .349, p < .01. ART-
NF and IRI-FS, \( r = .272, p < .05 \), and ART-NF and IRI-PD, \( r = .331, p = .01 \). ART scores were not correlated with the Empathic Concern or Perspective Taking subscales of the IRI.

Due to the lack of a relationship between ART scores and any of the outcome variables that directly test sociocognitive performance (RME, IPT-15, and the LEMS), and the lack of a relationship between age and cognitive differentiation/complexity (RCQ scores), it was determined that ART scores was would have impacted any potential differences between the three groups (established writers, intermediate writers, and the control group). Furthermore, due to the lack of a relationship between ART scores and any performance based outcome variables, the single low-scoring outlier on the ART-F variable was not likely to have had any bearing on the results. Table 7 represents the correlations between both variables of the ART and the outcome variables.

7.2.1.7 – Hours spent writing fiction. Hours spent writing fiction was examined overall (i.e., the total number of hours spent across the participant’s lifespan) and as average hours per year of literate life (calculated based on hours per year, divided by age minus six). \(^{16}\) Both variables were normally distributed for each of the two groups of writers and the two groups collapsed; across all groups, there was a single outlier on total lifetime hours and a single outlier on hours per year of literate life (the same participant, at the high end). There were three outliers (at the high end) for the intermediate group for total lifetime hours and two outliers (at the high end) for the intermediate group on hours per year of literate life (two of which were the same participants as the total lifetime hours outliers).

\(^{16}\) This variable was calculated to represent an estimate of the total number of hours each participant spent writing per year of life; six was set as the minimum age because it represents an age of school entry and an age at which individuals would conceivably be able to write their own stories. Due to some participants (especially those in the control group) reporting a total lifetime estimate instead of a breakdown per year of life, it was not possible to only count those hours for participants from the age of six onward in all cases. Thus, six years was subtracted from participants’ ages and participants total lifetime hours was divided by this number.
A one-way ANOVA was conducted to determine whether the established writers, intermediate writers, and control group participants differed significantly in terms of their reported hours spent writing fiction. As one might have expected, analyses revealed a significant difference between the three groups when comparing for total number of hours spent writing fiction in their lifetime, $F(2,57) = 39.60, p < .001$. The Levene’s Test was significant, $p < .001$; post-hoc analyses using the Games-Howell procedure revealed statistically significant differences between all three groups.

Established writers ($M = 19,893.90, SD = 12112.64$) wrote significantly more than intermediate writers ($M = 4,784.00, SD = 4,039.91$), $p = .001$, and intermediate writers wrote significantly more than the control group participants ($M = 28.30, SD = 23.96$), $p < .001$. There was also a much larger range and standard deviation for each of the two groups of writers compared to the control group, with established writers reporting between 2,080 hours and 42,016 hours, and intermediate writers reporting between 468 and 17,680 hours, but control group participants reporting between zero and 93 hours. The range reveals overlap between the two groups of writers, with some participants in the intermediate group reporting more total hours than some participants in the established writers group. However, the highest total number of hours spent writing fiction in the control group (93) was well below the lowest total number of hours spent writing fiction in the intermediate writers group (468).

Analyses also revealed a significant difference between the three groups when compared for hours spent writing fiction per year of literate life, $F(2,57) = 32.84, p < .001$. Again, the Levene’s test was significant, $p < .001$; post-hoc analyses using the Games-Howell procedure revealed statistically significant differences between each of the three groups.

Established writers ($M = 466.18, SD = 282.75$) reported writing significantly more
per year of their literate life than the intermediate writers ($M = 184.58, SD = 142.77, p = .001$), who wrote significantly more per year of their literate life than the control group participants ($M = 0.90, SD = 0.76, p < .001$). In the established writers group, participants reported as low as 41.60 hours and as high as 1,235.76 hours. In the intermediate group, participants reported as low as 14.63 hours and as high as 589.33 hours. However, as expected, there was a much smaller range for the control group participants, who reported between zero and 2.53 hours. Again, note the significant overlap between the two ranges of participants in the two groups of writers, with some participants in the intermediate group reporting more hours per year of literate life than some participants in the established writers group. There was no overlap between scores in control participant and intermediate writer groups.

Pearson bivariate correlations were computed to determine the relationship between the outcome variables measuring social cognition and the two variables measuring hours (i.e., lifetime hours, and hours per year of literate life), but these will be reported in section 7.2.3.

In summary, and as expected, established writers reported writing significantly more fiction over their total lifespan and per year of literate life than intermediate writers, who wrote significantly more over the lifespan and per year of literate life than the control group participants. These results provide additional validity for the categorization of writers into two groups (established and intermediate), in that established writers showed a more intensive practice (more hours per year of literate life) than intermediate writers.

7.2.2 – Outcome Variables by Group

The results of the current study indicated that there were no significant positive correlations between any of the following outcome variables: RME, IPT-15, LEMS Total
Score and RCQ Total Score; RME and RCQ Total Score were significantly negatively correlated, \( r = -.300, p < .05 \). None of the individual subscale scores on the IRI correlated with any of the performance-based measures (i.e., RME, IPT-15, LEMS Total Score, and RCQ Total Score).

When each level of the LEMS task was examined separately, and both RCQ Liked and Disliked Peer were examined separately, there was a significant negative correlation between scores on the RME and the RCQ Disliked Peer, \( r = -.339, p < .01 \) and a significant negative correlation between scores on test level three of the LEMS task and the IPT-15, \( r = -.338, p < .01 \), as well as a significant positive correlation between scores on test level five of the LEMS task and the RCQ Disliked Peer, \( r = .266, p < .05 \). Correlations were only examined between measures, not within measures (i.e., correlations are not reported between subscales of the IRI, levels of the LEMS, or between the Liked Peer and Disliked Peer RCQ).

The fact that there was no coherent pattern of correlations between any of the measures using the total scores for the LEMS and RCQ, and the only significant correlation was negative, is consistent with the aforementioned idea that social cognition is complex and heterogeneous, and consistent with the findings that poor or even no correlations have been found among tasks that measure it (Ickes, 1997; Mar et al., 2006). The negative correlations and the weak positive correlation that were identified with statistical analyses when each level of the LEMS and RCQ were included also support this conclusion. The results of the group comparisons for each of the outcome variables will be discussed below.

7.2.2.1 – Self-report: investigating between-group differences on the Interpersonal Reactivity Index. Boxplots revealed that scores on all four subscales of the IRI were relatively normally distributed across groups. Only a single low-scoring outlier was
identified on the Perspective Taking scale. A series of one-way ANOVAs were conducted to determine whether the established writers, intermediate writers, and control group participants differed significantly on each of the four subscales of the IRI. Analyses revealed a significant between-group difference on the Fantasy subscale, \( F(2,57) = 6.95, p < .01 \), but none of the other subscales. Refer to Table 8 for the results of the ANOVA.

Post-hoc analyses using Bonferroni t-tests on the Fantasy subscale scores revealed that the established writers reported significantly higher levels of narrative engagement than the control group participants, \( p < .05 \). Similarly, the intermediate writers reported significantly higher levels of narrative engagement than the control group participants, \( p < .01 \). There were no statistically significant differences between the two groups of writers on the Fantasy subscale, \( p > .05 \), even though the mean score for intermediate writers was slightly higher. Recall the significant negative correlation between age and self-reported fictional engagement on the Fantasy subscale of the IRI; such a finding may have been due to the fact that the mean for the youngest age group (the intermediate writers) had the highest mean on the Fantasy subscale.

Because in previous analyses the Fantasy subscale was found to significantly correlate with age, level of depression, and ART scores (both Fiction and Non-Fiction), an ANCOVA was calculated to see whether the between-group difference was still significant when accounting for these possible confounding variables. The ANCOVA was still significant, \( F(6, 53) = 3.83, p < .01 \), indicating that there were still between-group differences, even accounting for participants’ age, level of depression, and ART scores. Given that an ANOVA revealed no significant between-group differences on the Personal Distress (PD) subscale, no further tests were calculated using this variable, even though scores on PD were previously shown to correlate significantly with both Fiction and Non-Fiction scores on the
Because population norms exist for the IRI, the means for each of the three groups were compared to the population norms (Davis, 1980) for each of the four subscales to determine whether the population in the current study differed in any meaningful way from the population the test was normed on. Population norms were published by gender; thus, the analyses were calculated separately for the males and females in the study.

A series of one-sample t-tests using the population norms (Davis, 1980) as test-values revealed that, on the Fantasy subscale, males in the intermediate group self-reported significantly higher scores than the test-value. Males in the established and control groups did not differ significantly from population norms. Additionally, there were no significant differences between males in any of the three groups compared to population norms for any of the remaining subscales (Empathic Concern, Perspective Taking, and Personal Distress), \( p > .05 \). It should be noted, however, that there were only four male writers in the established group and five in each of the intermediate and control groups; thus, these results need to be considered with this in mind. Table 9 presents the statistical comparisons between the population norms and the males in each of the three groups (established writers, intermediate writers, and control group participants).

On the Fantasy subscale, females in the established writers group reported significantly higher scores compared to population norms, as did females in the intermediate writers group. There were no significant differences between the participants in the study control group and population norms on the Fantasy subscale. On the Empathic Concern subscale, there were no significant differences reported for any of the three groups. On the Perspective Taking subscale, the established writers reported significantly higher scores compared to the test-value, but there were no significant differences between the scores
reported by participants in either of the intermediate or control groups when compared to the test-value. Finally, on the Personal Distress subscale, scores reported by both groups of writers were not significantly different from the test-value, however, the control group reported significantly less personal distress compared to the test-value. Table 10 presents the statistical comparisons between the population norms and the females in each of the three groups (established writers, intermediate writers, and control group participants).

The results suggest that the control group sampled in the current study did not differ in any significant way from the population used to norm the IRI, except that females in the control group of the current study reported experiencing significantly less personal distress than population norms would suggest.

To summarize the results of the statistical analyses conducted on the IRI, the following conclusions can be drawn. In general, established and intermediate writers self-reported higher levels of narrative engagement (higher scores on the Fantasy subscale) compared to control group participants. The main-effect between-groups difference on the Fantasy subscale was still significant, even when controlling for potential confounding variables that were previously shown to correlate significantly with the Fantasy subscale (ART-F and NF scores, level of depression, and age). There were no significant between-group differences on any of the other subscales. Notably, there were no between-group differences reported on the Perspective Taking subscale, indicating that established and intermediate writers did not self-report a greater perceived tendency to try to adopt the perspective of another person compared to control participants.

When compared to population norms, both male and female established writers in the current study reported higher levels of narrative engagement on the Fantasy subscale, and female established writers also reported higher levels of perspective taking. Female
control participants reported lower levels of personal distress.

7.2.2.2 – Performance-based measures. How do fiction writers of varying levels and individuals who do not write fiction compare in terms of their sociocognitive abilities on performance-based tasks of social cognition (i.e., RME, IPT-15, LEMS) and related measures (e.g., the RCQ)? To answer this question, a series of one-way ANOVAs were conducted to compare the three groups across each of the performance-based outcome measures used in the study.

7.2.2.2.1 – The Reading the Mind in the Eyes. Boxplots revealed that RME scores were relatively normally distributed within each participant group and across participant groups. When each group was examined separately, there were two low-scoring outliers—one in the established writers’ group, and one in the control group. When the groups were examined together, only a single low-scoring outlier was identified.

A series of one-way ANOVAs revealed no significant between-group differences on the RME, F(2,57) = 0.139, p > .05. Essentially, neither established writers (M = 28.20, SD = 3.27) nor intermediate writers (M = 28.25, SD = 3.09) outperformed control group participants (M = 28.75, SD = 4.42) on this measure of social perception/cognition, and established writers did not perform any better than intermediate writers. Of all the groups, the average for the control group was the highest, though the differences were non-significant. The means for each group were not in the hypothesized direction (i.e., established writers scoring higher than intermediate writers and intermediate writers scoring higher than control group participants).

7.2.2.2.2 – The Interpersonal Perception Task. Boxplots revealed that the IPT-15 data was reasonably normally distributed both within each group and across groups. There were no outliers.
A series of one-way ANOVAs revealed no significant between-group differences on the IPT-15, $F(2,57) = 0.668, p > .05$. Neither established writers ($M = 10.75, SD = 1.33$) nor intermediate writers ($M = 10.10, SD = 2.47$) outperformed control group participants ($M = 10.45, SD = 1.28$) on this measure of social cognition (i.e., reading body language, analyzing interpersonal relationships and interactions, etc.), and established writers did not perform any better than intermediate writers. The means for each group were not in the hypothesized direction.

**7.2.2.2.3 – The Levels of Embedded Mental States Task.** Boxplots revealed that the LEMS total score data was relatively normally distributed within each group. A single high-scoring outlier was identified in the intermediate writers’ group (an individual who answered 100% of the test items correctly). Boxplots revealed that the LEMS total score was also relatively normally distributed across groups, and there were no outliers.

A series of one-way ANOVAs revealed no significant between-group differences on the LEMS task test items Level Three, Level Four, and Level Five, and the LEMS Total Correct (across all levels). Neither of the two groups of writers outperformed control group participants on this measure of social cognition (i.e., interpreting embedded mental states in fictional texts), and established writers did not perform any better than intermediate writers. The means for each group were not in the hypothesized direction for any of the individual levels, nor the LEMS Total Test Items Correct. This data is presented in Table 11.

It should be noted that between-group comparisons on the LEMS were conducted on test items only (i.e., those items containing mental state terms). However, to ensure validity of the LEMS, it was necessary to examine the pattern of answers in response to the control questions as well. As previously mentioned, the control questions asked participants
about story facts, and also increased in level (i.e., of the number of facts participants were required to remember) but did not involve mental state terms.

A repeated-measures ANOVA was used to compare the mean scores for all participants across each level of the control questions. Mauchly’s test of sphericity was not significant, $p > .05$. The ANOVA revealed significant between-group differences for the control questions, $F(2,118) = 4.16, p < .05$. Post-hoc Bonferroni t-tests revealed that Level Three items ($M = 3.62, SD = 0.56$) were answered correctly significantly more often than Level Five items ($M = 3.35, SD = 0.76$), $p < .05$, however, there were no differences between scores on Level Three items and Level Four items ($M = 3.60, SD = 0.67$), $p > .05$ or on Level Four items and Level Five items, $p < .05$. Overall, the differences between control levels were subtle, with a significant difference only appearing between the highest and lowest levels; the means for each group are all close to four (the highest possible score).

A similar repeated-measures ANOVA was conducted to compare mean scores for all participants across each level of the test questions. Mauchly’s test indicated that the assumption of sphericity had been violated, $\chi^2(2) = 9.05, p = .011$, therefore degrees of freedom were corrected using the Greenhouse-Geisser procedure. The ANOVA revealed a significant between-group difference for the test questions, $F(2,103.10) = 75.77, p < .001$; post-hoc Bonferroni t-tests revealed that Level Three items ($M = 3.53, SD = 0.68$), were answered correctly significantly more often than Level Four items ($M = 2.78, SD = 0.87$), $p < .001$, which were answered correctly significantly more often than Level Five items ($M = 1.90, SD = 0.77$), $p < .001$.

Therefore, while control questions became subtly more difficult as more fact/memory items were added, the test questions became increasingly more difficult as
more incremental mental states were added. The number of correct test items appears to
decrease much more sharply than the control questions as level increases. Refer to Figure 1.

This difference suggests that the difficulty of the test items is related to inclusion of
the mental state terms, not other factors such as memory, which supports the LEMS as a
measure of social cognition. Therefore, the lack of between group differences suggests that
writers do not have any advantage over control group participants on interpreting embedded
mental states in texts, and established fiction writers do not have any advantage over
intermediate fiction writers.

7.2.2.2.4 - The Role Category Questionnaire. Boxplots revealed that the RCQ Total
score was normally distributed both within each group and across groups. There were no
outliers. A series of one-way ANOVAs revealed no significant between-group differences on
the total number of traits generated on the RCQ Liked Peer, RCQ Disliked Peer, and RCQ
Total scores (RCQ Liked Peer and Disliked Peer summed). Neither group of writers
generated more traits than the control group at any significant level, and the two groups of
writers did not differ significantly either. The means for each group were not in the
hypothesized direction for the Disliked Peer RCQ, but were in the hypothesized direction
on the RCQ Liked Peer and RCQ Total Score (Liked Peer and Disliked Peer summed).
Refer to Table 12.

Additional comparisons were also calculated based on the valence ratings given by
the research assistants during coding. Recall that each RCQ response (Liked Peer and
Disliked Peer separately) were given a score indicating whether the Liked Peer response
contained only positive traits and the Disliked Peer response contained only negative traits,
or whether participants indicated at least one negative trait in the Liked Peer response
and/or at least one positive trait in the Disliked Peer response. Protocols were scored as
being either homogenous (traits of only one valence) or heterogeneous (including at least one trait of the opposite valence).

Two Pearson’s chi-square tests were conducted—one for the Liked Peer RCQ and one for the Disliked Peer RCQ—to compare the proportions of participants in each of the three groups (established, intermediate, and control) who scored either homogenous or heterogeneous on their protocols. According to the results, there were no significant differences between the proportions of participants in each of the three groups when comparing those whose protocols were homogenous (representing traits of only a single valence) or heterogeneous (representing traits of both positive and negative valences) for either the Liked Peer RCQ, \( \chi^2(2) = 2.82, p > .05 \), or the Disliked Peer RCQ, \( \chi^2(2) = 0.137, p > .05 \). Refer to Table 13.

To summarize, the RCQ is a measure of cognitive complexity/differentiation (a measure related to social cognition, but one which does not require participants to actually infer and interpret mental states). Neither of the two groups of writers outperformed control group participants on this measure, and likewise established writers did not perform any better than intermediate writers. Additionally, there were no differences in the proportion of responses containing more than one trait valence between all three groups.

7.2.2.2.5 – Effect sizes and power calculations. A closer look at the means for the groups revealed that the means on the RCQ Total Score and RCQ Liked Peer were in the hypothesized direction, though the between-group differences were not statistically significant. To further explore the difference to determine whether perhaps the analyses were limited by sample size and the differences may have been significant with more participants, effect size and power analyses were calculated on the RCQ Total Score (given that the differences on the RCQ Total Score were larger than the RCQ Liked Peer).
Cohen’s d effect sizes were calculated for this variable by taking the largest difference between the three means (the difference between established writers and control group participants) and dividing it by the average standard deviation for those two groups. The effect size for the RCQ Total (Cohen’s d = .286) was relatively small in magnitude. Additionally, power calculations revealed that, given the distributions of the variables and 80% power, the analyses would have required 193 more participants per group (for the established and control groups) for the RCQ Total between-group difference to be significant at $p < .05$.

It was not necessary to calculate effect size or power calculations for any of the other performance-based outcome variables (i.e., RME, IPT-15, and LEMS task) given that none of these variables showed a pattern such that the means were in the hypothesized direction, and given that the magnitude of the differences for the other variables were less than the differences for the RCQ Total Score. For example, the direction was opposite of the hypothesized direction on the RME, with control group participants scoring highest, but the mean was only 0.50 above the mean for intermediate writers (out of a possible 36 points), and intermediate writers scored, on average, only 0.05 above established writers. On the IPT-15, established writers scored the highest, but intermediate writers scored the lowest; the largest mean difference was only 0.65 (out of a possible 15 points). On the LEMS Total Test Items Correct, intermediate writers scored the highest, followed by the control group, and then established writers; established writers were only 0.5 points behind the intermediate writers (out of a possible 12 points).

In summary, the only variable on which there were possible trends (i.e., scores in the hypothesized direction) was the RCQ. The effect size for the RCQ Total was small and power calculations revealed that many more participants were required to reach significance,
providing support for the fact that the lack of between-group differences on this variable was not the result of a small sample size.

7.2.2.6 – Summary. On the whole, the data supports the conclusion that there were no significant or meaningful differences between groups for any of the performance-based outcome measures of social cognition. Statistical tests consistently revealed a lack of between-group differences on all performance-based outcome measures, both those that measured social cognition directly (i.e., the RME, IPT-15, and LEMS task) as well as a related task measuring cognitive complexity/differentiation (i.e., the RCQ). Writers did not show any advantage compared to the control group on social cognition or cognitive complexity/differentiation; furthermore, there were no significant differences on social cognition or cognitive complexity/differentiation between the two groups of writers, even though they differed in total lifetime hours spent writing, intensity of practice (hours per year of literate life), and publication status.

7.2.3 – Hours Spent Writing and Sociocognitive Abilities

Is there any relationship between hours spent writing fiction and sociocognitive abilities? To answer this question, a series of Pearson bivariate correlations were calculated on these two variables across the two groups of writers (i.e., N=40) excluding the control group. Because the control group participants were specifically selected due to the fact that they did not write fiction, and because there was little variability in their lifetime writing scores, it was not appropriate to examine a potential relationship between hours spent writing fiction and social cognition except within those individuals who engaged in fiction writing with some regularity.

The analysis revealed no significant associations between either of the two variables measuring time spent writing (i.e., total lifetime hours and average number of hours per year
of literate life) and any of the outcome variables, both self-report (i.e., all four subscales of
the IRI) and performance-based (i.e., the RME, IPT-15, all three test levels of the LEMS and
the LEMS total test items correct score, both versions of the RCQ and the RCQ Total).

Table 14 represents the correlations between the two hours variables (lifetime hours and
hours per year of literate life) and the outcome variables.

In summary, there was no significant relationship between the number of hours
spent writing fiction total or intensity of practice (hours per year of literate life) and
sociocognitive ability, interpersonal/social reactivity, or cognitive complexity/differentiation,
suggesting that repeated or intensive practice in writing fiction does not improve an
individual’s social cognition, nor does it improve the related variables measured in the
current study.

7.2.4 – Fiction Writing Quality and Sociocognitive Abilities

Is there any relationship between fiction writing quality (i.e., how well an individual
writes, or how skillfully a piece of fiction is written) and sociocognitive abilities? Recall that a
single writing sample (composed in three days or less and on a specific prompt) was
obtained from each participant and then scored by expert raters to provide a proxy of fiction
writing quality. Scores were based on each rater’s assessment of how well-written the story
was on a zero to 10 Likert Scale, and then the three raters’ scores were added together to
yield a total rating out of 30. This proxy measure was used to explore a relationship between
fiction writing quality or skill and scores on the outcome variables (both self-report and
performance-based) in the study.

First, it was necessary to examine the story quality ratings between the three raters.
The correlations between the three raters were \( r = .375 \) (raters one and two), \( r = .486 \) (raters
one and three), and \( r = .578 \) (raters two and three). Therefore, while there was some
agreement between the raters, there was still discrepancy between the three in terms of what each felt to be good quality writing, a finding consistent with the subjective nature of rating artistic products. Boxplots revealed that, across all participant groups, and within each participant group individually, total quality ratings (out of 30) were relatively normally distributed, and there were no outliers.

First, a one-way ANOVA was used to compare quality ratings across the three groups. The ANOVA was significant, $F(2,57) = 9.09, p < .001$. Post-hoc Bonferroni t-tests revealed significant differences in the quality scores between established writers ($M = 17.50, SD = 4.33$) and control group participants ($M = 12.65, SD = 4.24$), $p = .001$, and between intermediate writers ($M = 17.23, SD = 3.50$) and control group participants, $p < .01$. However, there were no differences in quality between the two groups of writers; in fact, their mean scores were virtually identical.

A series of Pearson bivariate correlations revealed no significant relationship between quality ratings on the writing samples and any of the performance-based measures that directly assessed social cognition (i.e., the RME, LEMS task, or IPT-15). In terms of interpersonal/social reactivity, Pearson bivariate correlations revealed no significant relationship between quality ratings and scores on any of the subscales of the IRI. In terms of cognitive complexity/differentiation, quality rating was significantly positively correlated with scores on the Liked Peer RCQ, $r = .256, p < .05$, but not significantly correlated with the Disliked Peer RCQ or RCQ Total.

In summary, there were no significant correlations between quality scores based on expert ratings and any of the performance-based measures of social cognition (i.e., the RME, IPT-15, LEMS task). Furthermore, there was no relationship between quality and self-reported interpersonal/social reactivity.
The only outcome measure that saw a statistically significant relationship with quality was the RCQ (Liked Peer version only). The RCQ does not directly measure social cognition, but rather the related construct of cognitive complexity/differentiation. Thus, writing quality appears to be unrelated to social cognition (i.e., the ability to make inferences about the mental states of others), but individuals who were able to generate more distinct traits for a liked peer were also more likely to write higher quality fiction, as judged by the expert raters in this study.

7.2.5 – Hours Spent Writing and Fiction Writing Quality

Having collected data on both hours spent writing (over the lifetime and average per year of literate life) and fiction writing quality allowed for some exploration of the relationship between these two variables. Analyses were conducted to shed some light on earlier discussions about expertise and the debate about the various roles of practice and talent. While the quality measure used in the current study only provides one estimate of quality (in that it is based on a single writing sample and on the expert judgments of only three individuals), the data can still be considered relevant to this question.

All calculations in regards to this question were conducted within writers only (i.e., N=40). Because the control group was specifically selected for the fact that they did not write fiction, and because there was little variability in their lifetime writing scores, it was not appropriate to examine a potential relationship between hours spent writing fiction and fiction writing quality except within those individuals who engaged in fiction writing with some regularity.

Pearson bivariate correlations revealed a significant correlation between total lifetime hours spent writing and fiction writing quality scores. Surprisingly, however, the relationship was negative, \( r = -.329, p < .05 \), suggesting that, as total time a participant had spent writing
increased, his or her quality score actually decreased. A similar correlation calculated with quality and hours per year of literate life also revealed a negative (but not significant) relationship, \( r = -0.287, p > 0.05 \). These results cast some doubt on the idea that in fiction writing, repeated practice improves or hones one’s craft, at least when writing a first draft in a short period of time. However, the results might also be a feature of the way that quality was defined, or they might be due to some characteristic of the writers sampled in the study. This will be taken up in the discussion (Chapter 9).

7.2.6 – Textual Determinants of Sociocognitive Ability

7.2.6.1 – Character transparency. Additional analyses were conducted to explore potential textual determinants of sociocognitive ability—features within a writing sample that could reveal sociocognitive skills. The first textual determinant explored was that of character transparency (henceforth referred to as transparency). Transparency was scored the same as quality. Each expert rater gave each writing sample a transparency rating on a zero to 10 Likert scale, and then the three ratings were summed. Across all groups, transparency ratings were normally distributed, and there were no outliers. When examined within each group, transparency ratings were still reasonably normally distributed, and there were no outliers. Transparency was highly and significantly correlated with quality ratings, \( r = 0.940, p < 0.001 \).

A series of Pearson bivariate correlations were used to explore any potential relationships between transparency (as scored by the three expert raters) and the outcome variables in the study. As with quality, the analyses revealed no relationship between transparency ratings and scores on any of the subscales of the IRI, nor scores on the RME, LEMS task, or IPT-15. Transparency ratings were, however, significantly positively correlated with scores on the Liked Peer RCQ, \( r = 0.288, p < 0.05 \), and RCQ Total, \( r = 0.258, p < 0.05 \).
<.05, but not the Disliked Peer RCQ. Table 15 represents the correlations between transparency and the outcome variables.

Again, similar to the analyses that explored fiction writing quality, the only variable that saw a significant relationship with transparency was the RCQ (Liked Peer and Total Scores). The RCQ does not directly measure social cognition. Thus, the ability to write a piece of fiction in which there is a high degree of transparency appears to be directly unrelated to social cognition, but individuals who were able to generate more distinct traits for a liked peer and more traits for peers overall were also able to write fiction with a higher degree of transparency, as judged by the expert raters in this study. There may be some evidence of cognitive complexity/differentiation evident in an individual’s writing through that individual’s ability to convey the mental states of a character or characters in a way that a reader can track and follow.

7.2.6.2 – Point of view. The second textual determinant examined was that of point of view. All three raters agreed on whether the point of view in each writing sample was first person, second person, third person, objective, or inconsistent for 85% (N=51) of the stories. In eight of the remaining cases (15%), there was agreement between two of the raters but not the third; in these cases, the point of view ultimately assigned was that of the majority. In the final case, all three raters disagreed on the point of view, and the story was coded as having an inconsistent point of view.

Stories were coded as either having a direct point of view (i.e., first person), a moderately direct point of view (second or third person) or an indirect point of view (objective or inconsistent point of view). While it was possible to further categorize the point of view of the stories (e.g., to separate third person limited omniscient from third person fully omniscient, or to separate second person from third person), the small number of cases
in each category limited any analyses based on the sample size herein. Therefore, for the purposes of this analysis, the broader categorization was used.

A majority (N=37) of the participants wrote in third person point of view, while only one chose second person. Therefore, the majority (63%) of stories were coded as having moderately direct point of view (either second or third person). Twenty-two percent (N=13) chose first person (the most direct point of view). Of the remaining participants, 7% (N=4) were coded as using an objective point of view, and 8% (N=5) were coded as using an inconsistent point of view; therefore, N=9 participants were coded as using an indirect point of view (either objective or inconsistent).

A series of one-way ANOVAs revealed no significant between-group differences on any of the following measures: the IRI (all subtests), RME, IPT-15, LEMS task test levels Three, Four, and Five; the total number of LEMS test items correct; and the RCQ Liked Peer, RCQ Disliked Peer, and RCQ Total. The findings were consistent across the measures: the directness of the point of view chosen on the writing prompt did not suggest any significant differences on any measure of social cognition or related variables (interpersonal/social reactivity or cognitive complexity/differentiation).

On the whole, the data revealed no significant between-group differences on any of the social cognition outcome measures (both self-report and performance-based) regardless of point of view chosen by the author for the writing sample in the study (see Table 16). The data, thus, supports the conclusion that individuals who chose a more direct point of view on the writing samples did not have better social cognition than those who chose a less direct or inconsistent point of view.
Chapter 8: Exploratory Analyses

Contrary to the findings of Mar et al. (2006), there was not a significant correlation between RME and the ART-F in the current study, which warranted further exploration via exploratory analyses. Mar found a weak ($r = .20$) and non-significant raw correlation between the RME and the ART-F, similar to the non-significant correlation between these two variables in the current study, though the correlation noted by Mar et al. was positive, and the correlation in the current study was negative ($r = -.079$). Only after running a partial correlation “controlling for Non-fiction, foil-checking, age and years of English fluency, and g,” (Mar et al., p. 703) did Mar et al. find a statistically significant correlation between the RME and ART-F ($r = .34, p < .05$). The authors further added that “a simultaneous linear regression…with Fiction, Non-fiction, age and fluency, g, and foil-checking predicting scores on the MIE [RME] replicated the results of the partial correlations; Fiction positively predicted MIE [RME]” (p. 704).

To determine whether the lack of an association between the RME and the ART-F in the current study was due to a failure to account for potential confounding variables, partial correlations were calculated following the procedure outlined by Mar et al. (2006). Any of the potential confounding variables that were significantly correlated with ART-F scores were identified: ART-NF scores ($r = .822, p < .001$), total lifetime hours spent writing fiction ($r = .403, p = .001$), BDI-II scores ($r = .342, p < .01$), and VIQ Standard Scores ($r = .431, p = .001$) were all significantly correlated with ART-F scores.

A partial correlation between the ART-F and RME was calculated controlling for the three aforementioned variables that were reasonably normally distributed (ART-NF, BDI-II scores, and VIQ standard scores). Recall that the range of total lifetime hours spent writing

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17 Mar et al. (2006) use the acronym MIE (Mind In the Eyes) for the RME (Reading the Mind in the Eyes) but are referring to the same measure.
fiction was purposefully limited in the control group; for this reason, even though it was statistically significantly correlated with ART-F scores, it was excluded from the partial correlation regression.

The partial correlation between ART-F and RME scores (controlling for ART-NF, BDI-II scores, and VIQ standard scores) was no longer significant, $r = -.255, p > .05$, once the other variables were controlled for, whereas the results of the partial correlation reported by Mar et al. (2006) were both significant and positive. Further research is warranted to clarify the discrepancy between Mar’s work (2006), which suggested that individuals who read more fiction perform better on the RME, and the partial correlation in the current study, which suggested no such association. Such differences may be due to the differences in the populations studied; while two thirds of the sample in the current study was comprised of individuals who were either pursuing a career in fiction writing or writing professionally, the population sampled by Mar et al. (2006) did not specifically select for fiction writers. It is unclear whether writing fiction changes the relationship between reading fiction and social cognition. This will be explored further in the discussion (Chapter 9).
Chapter 9: Discussion

9.1 – Summary of the Results

The current study had two primary aims. The first was to investigate beliefs held by the general public about the social cognition of fiction writers. The second was to empirically examine whether there was a significant relationship between social cognition and fiction writing.

In addressing the first aim, a survey was conducted to explore beliefs held by the general public about the social understanding/cognition of fiction writers. While Grow (1990), Dunbar (2000, 2005), Flavell (2004), Keen (2006), Kaufman and Kaufman (2007), Myers and Hodges (2009), Piirto (2009), and Zunshine (2003, 2006, 2007) all suggested or argued that fiction writers do or should have above average sociocognitive (or related) abilities compared to individuals who do not write fiction, it was unclear whether this perception was shared by the general public.

The results of the survey indicated that the majority of respondents believed fiction writers had better social cognition than the general public. Furthermore, fiction writing was one of the highest ranked careers in terms of social cognition of those listed on the survey questionnaire. Furthermore, the mean social cognition rating for fiction writers was significantly higher than a test-value representing an average level of social cognition, indicating that on average, participants (who represent the general public) believe fiction writers to demonstrate above average levels of social cognition. Additionally, the belief that fiction writers have above average social understanding was held more strongly by fiction writers themselves than by individuals who do not write fiction.

Having established that the general public believes fiction writers demonstrate above average levels of social cognition, and individuals who self-identify as fiction writers believe
the same thing (even more strongly), the second aim of the study was to shed light on whether this belief could be supported empirically or whether it was a myth. To this aim, 20 established fiction writers, 20 intermediate fiction writers, and a control group of 20 individuals who did not write creatively in any format but rather came from a variety of educational and employment backgrounds were compared across a variety of both self-report and performance-based measures of social cognition. Additional measures with conceptual similarities to social cognition (i.e., measures of interpersonal/social reactivity and cognitive complexity/differentiation) were also used. As expected, the groups differed on the time they had devoted to writing (overall, as well as per year of life from the age of literacy), as well as their ability to recognize names of fiction and non-fiction authors (a proxy of how well read a person is). Groups were also found to differ on age and level of depression, but neither variable was related to any of the outcome variables.

Results from the variables that directly measured social cognition (i.e., the ability to interpret and make inferences about mental states) showed a consistent lack of between-group differences for any of the groups. There were no between-group differences on any of the performance-based outcome variables that directly assessed social cognition (i.e., the RME, IPT-15, and LEMS task). Potential confounding variables such as age, level of depression, verbal intelligence, and how well read an individual was were also explored. None were found to provide an explanation for the results.

The consistent lack of between-group differences provides evidence that the general public’s belief that fiction writers would demonstrate above average levels of social cognition is likely a myth. The sheer fact of being a writer does not, in and of itself, appear to be associated with better social cognition when variables such as verbal IQ, how well read someone is, and depression are accounted for.
Looking more broadly at the variables that are conceptually related to social cognition, both groups of fiction writers self-reported a higher tendency to project themselves into fantasy or become highly engaged in a fictional narrative (i.e., books, movies, daydreams, etc.) compared to the control group, even when adjusting for potential confounding variables that were correlated with the Fantasy subscale (ART-F and NF scores, level of depression, and age). This result is not surprising; the idea that writers would be more likely than the general public to become highly engaged in fictional worlds is entirely consistent with their chosen pursuit. It makes complete sense that someone who becomes highly engaged in fictional worlds would be more likely to create their own worlds via fiction writing and, vice versa, that individuals who frequently create their own worlds via fiction have a greater tendency to become highly engaged in fictional worlds.

Despite the between-group differences on the Fantasy subscale, however, there were no between-group differences on the remaining three subtests of the IRI: Perspective Taking, Empathic Concern, and Personal Distress, all of which measure aspects of interpersonal/social reactivity. In general, writers did not self-report higher levels of interpersonal/social reactivity than the control group except on the Fantasy subscale. Perhaps most relevant to discussions of social cognition, neither of the two groups of writers self-reported a greater tendency to try to adopt the perspective of another individual (as measured the IRI Perspective Taking subscale), nor were there any differences between the two groups of writers themselves on this subscale. While females in the established fiction writers group self-reported higher levels of perspective taking compared to available population norms for females on the IRI, there were no self-reported differences between either of the two writer groups and the control group in the current study.
There were also no between-group differences on a measure of cognitive complexity/differentiation (the RCQ). Writers were not significantly more likely to generate more traits for liked or disliked peers than the control group, a finding that was reinforced by effect sizes and power analyses. Writers were also no more likely to describe liked or disliked peers in more heterogeneous ways (i.e., using traits of more than one valence) than the control group, and there were no differences in terms of valence between the two groups of writers, either. The RCQ results suggest that, in addition to not demonstrating higher levels of social cognition compared to non-writers of similar educational and verbal intelligence levels, writers as a group are similar to non-writers of similar educational and intelligence levels in terms of their ability to think about and/or describe peers in cognitively complex or differentiated ways, even though the groups differed in total lifetime hours spent writing, intensity of practice (average number of hours per year of literate life), and publication status.

Providing further support for the lack of a relationship between fiction writing and social cognition were the results that showed a lack of any significant associations between either of the two variables measuring time spent writing fiction (i.e., total lifetime hours and hours per year of literate life) and any of the outcome variables—both those directly measuring social cognition and those related to social cognition (interpersonal/social reactivity and cognitive complexity/differentiation). These results suggest that not only do fiction writers not demonstrate better social cognition than individuals who do not write creatively, but repeated or intensive practice writing fiction also does not improve an individual’s social cognition.

With respect to fiction writing quality, the findings of the current study revealed a consistent lack of significant relationships between expert rated quality on participants’
prompted writing samples (composed in three days), and scores on any of the outcome variables except the Liked Peer RCQ score (which measures cognitive complexity/differentiation). Thus, writing quality, at least as it was defined in the current study, appears to be unrelated to social cognition (i.e., the ability to make inferences about the mental states of others). However, there may be some relationship between how skilfully an individual writes fiction and how cognitively complex or differentiated they are.

Finally, in terms of textual determinants, character transparency ratings were not found to be associated with scores on any of the outcome variables except the RCQ Liked Peer and RCQ Total Score; both correlations were significant and positive. These results suggest that the ability to write a piece of fiction in which there is a high degree of transparency appears to be unrelated to social cognition. However, there might be some evidence of cognitive complexity/differentiation evident in an individual’s writing through their ability to convey the mental states of a character or characters in a way that a reader can track and follow. There was no evidence in favour of point of view being a textual determinant of social cognition—at least insofar as it was defined in the current study, since no between-group differences were found in terms of the directness of the point of view chosen for the writing sample.

Most of the hypotheses tested in the current study have not been empirically tested elsewhere. However, the IRI was previously used with a sample of fiction writers in a study by Taylor et al. (2003). The results of the current study are somewhat discrepant with the results reported by Taylor et al.; in the current study, writers only self-reported higher scores on the Fantasy subscale compared to control participants, while Taylor et al. found writers to self-report higher scores on all subscales compared to a control/comparison group (population norms for the IRI). The results of the current study were only slightly more
consistent with those reported by Taylor et al. when the data from the writers in the current study were compared to the population norms (Taylor et al.), in that females in both writer groups scored higher on the Fantasy subscale, and established female writers scored higher on the Perspective Taking subscale.

The sample sized used by Taylor et al. (2003) was comparable to the sample sizes in the current study, at least for females; Taylor sampled 15 females, while each of the groups of females in the current study had either 15 or 16 participants. However, Taylor et al. studied 35 men, while in the current study there was overall a small number of men (each group had either four or five men). This limited the statistical comparability of the two studies. The fact that the results of the current study differed from those of Taylor et al. might also be due to other differences between the samples. For example, Taylor et al. reported the mean age of participants to be 37; in the current study, the mean age of the established writers was 49.1, and the mean age of the intermediate writers was 33.4. Taylor et al. also used an American sample, while the writers in the current study were Canadian. It is unclear how factors such as age or country of residence may be related to social cognition, so it remains to be determined whether these differences explain the discrepant findings. It is also unclear to what extent the sample in the current study differed from the sample used by Taylor et al. in other ways that may not be apparent from the article. For example, females in the control group of the current study scored significantly lower than population norms on the Personal Distress subscale, suggesting that there may be group differences between the population on which the test was normed and the current study control group.

Despite the differences between the current study and the results reported in Taylor et al. (2003), the results of the current study (i.e., the overall lack of sociocognitive between-group differences) are consistent with the results of the previously described pilot study in
which participants were randomly assigned to an intervention that required them to think like a fiction writer by both generating and brainstorming about a character. The pilot study tested whether the intervention had any impact on how participants subsequently performed on measures of social cognition. The results of the pilot study demonstrated that the intervention had no impact on scores of measures directly assessing social cognition (i.e., the RME and the MASC-MC). Furthermore, the results of the pilot study also suggested that individuals’ self-reported participation in fiction writing or creative writing generally did not impact scores on direct measures of social cognition.

The results of the pilot study and the current study are consistent in indicating no differences between writers and control/comparison participants on direct measures of social cognition on tasks requiring participants to reason about or make inferences about the mental states of others. The results of the pilot study also revealed no incurred sociocognitive benefits for those who participated in a fiction writing simulation, which is consistent with the lack of a significant relationship between hours spent writing fiction and social cognition in the current study. Both studies suggest overall that there is no meaningful relationship between fiction writing and social cognition, and no sociocognitive benefits for those individuals who write fiction. It is important to recall, however, that the results of the pilot study may have been limited by the length or intensity of the intervention.

9.2 – Making Sense of the Results: So Fiction Writers Don’t Have Above Average Social Cognition?

The finding that fiction writers do not have above average social cognition is perhaps surprising, given that so many theorists purported the relationship in the absence of direct, empirical, performance-based evidence. Furthermore, the results of the current study demonstrated that, on average, the general public believes that fiction writers have above
average social cognition, just as so many theorists do. In exploring the null results, lines of evidence that may support and/or explain that fiction writers would not have above average social cognition, or that they would have poor social cognition, were explored. These included audience awareness, daydreaming and fantasizing about characters, reading fiction, other activities or careers, and context-specificity. Each of these possible explanations will be discussed.

9.2.1 – Audience Awareness

In reconsidering how audience awareness may impact fiction writers’ sociocognitive abilities in light of the results of the current study, recall that the results of Rubin et al. (1985) and Burleson and Rowan (1985) were conflicting as to whether or not narrative writing was associated with audience awareness. While Rubin et al. found evidence in favour of an association, Burleson and Rowan challenged their results, finding fault with the statistical analyses. Bonk, who reviewed the literature in this area in 1990, suggested that argumentative and informational writing requires more audience awareness than narrative writing, perhaps because of the necessity for clarity within these genres. This is in line with the findings of Kroll (1985). On the topic of clarity, recall how a defining feature of fiction is its potential for multiple interpretations (Stockwell, 2002), which may lead to empathic inaccuracy (Keen, 2006). Within the genre of fiction, it may not be necessary that authors and readers make the same interpretive inferences, making it arguably less necessary that authors of fictional texts demonstrate strong audience awareness when writing.

Additionally, Elbow (1987) and Perry (2009) argued that, at least for fiction writers, focusing on audience awareness is potentially detrimental to one’s work. Elbow claimed that turning off audience awareness is a higher skill than tuning into audience awareness, and suggested that fiction writers focus inwardly during the writing process. Perry (2009), too,
recommended a partial or limited awareness of audience during the writing process. If fiction writers do not need to demonstrate good awareness of their audience, by virtue of multiple interpretations or by focusing internally, it lends some credence to the argument as to why fiction writers may show no advantage in sociocognitive ability.

9.2.2 – Daydreaming and Fantasizing about Characters

Even if writers do not worry or ruminate about their audience while writing, what about their interactions with characters? Interacting with real people requires face-to-face communication, while interacting with characters is fully imaginary. Any amount of time that a writer spends thinking about their characters (a solitary activity) is time they are not spending engaged in face-to-face interaction. Thus, it can be argued that the more time a writer spends thinking about a character or characters, the less time he or she spends interacting socially. While thinking about characters could involve thinking about mental states in the form of actions and reactions, motivations, and so on, thinking about characters does not allow an individual to practice skills that are part of face-to-face interactions, such as reading facial expressions or body language. It is plausible that one type of sociocognitive practice (i.e., thinking about characters) deters from another kind of sociocognitive practice (i.e., live interactions), and the relative benefits and costs cancel each other out.

While thinking about characters is certainly not the same as interacting with real people, is thinking about characters the same as thinking about real people? Taylor et al. (2003) found that fiction writers scored higher on the Fantasy subscale of the IRI, which includes proneness to daydreaming and becoming highly involved in fictional worlds. Likewise, both the established and intermediate writers in the current study scored higher than the current study control group on the Fantasy subscale. Essentially, both studies provided evidence that fiction writers, as a group, self-report higher levels of fictional
engagement.

Following from this, a recent study by Mar, Mason, and Litvack (2012) suggested that thinking about characters (fictional engagement) and thinking about real people might be different. Mar et al. found that daydreaming about close friends and family (real life individuals with whom one was close) was positively associated with life satisfaction, whereas daydreaming about individuals with whom one could not be close was associated with negative outcomes, such as greater loneliness and less social support. Mar et al. included the following categories for individuals with whom one cannot be close: past or potential relationship partners, strangers, and, most relevant to the current study, fictional characters.

In summary, daydreaming about a fictional character seems to be linked to greater loneliness and less social support, while the outcomes of daydreaming about real individuals seems to depend on the degree of closeness with the individual. Fiction writers, who frequently daydream about their characters, may be more similar to individuals who daydream about people with whom they are not close: lonely, and lacking in social support. Causality cannot be inferred based on these data; it is not clear in this research whether the daydreaming resulted in the loneliness and decreased social support, or whether individuals who are lonely and lacking in social support may be prone to daydream.

Considering loneliness, according to Kohányi (2005a; 2005b), fiction writers retrospectively reported having solitary and introverted childhoods, and according to Barron (1996), fiction writers reported sacrificing important personal relationships. Gleason et al. (2009) reported that children and adolescents who scored better on a measure of empathic accuracy (correctly identifying the thoughts and feelings of individuals seen discussing a problem on videotape) were less likely to suffer from relationship victimization and had fewer internalizing and social problems. Furthermore, loneliness was linked to decreased
brain matter in a brain region involved in social perception (Kanai et al., 2012). Perhaps, frequently thinking about characters does not actually enhance sociocognitive abilities, but, rather, is associated with loneliness, decreased social support, and decreased sociocognitive abilities.

With respect to mental health problems, there is well-established literature linking fiction writing to mental illnesses, specifically depression (Andreasen, 1987; Kaufman, 2002; Waddell, 1998). For example, fiction writers showed significantly higher scores on the Personal Distress subscale of the IRI compared to population norms (Taylor et al., 2003). A review of the literature on depression and social cognition was mixed, with Harkness et al. (2005) showing enhanced social perceptual abilities in women with mild-to-moderate depression on the RME, and Lee et al. (2005) finding decreased abilities in mild-to-moderately depressed women on the same task. Lee et al. reported even worse performance for women with severe depression. In the current study, there were no significant associations between level of depression and any of the outcome variables, but on average, the mean level of depression for each of the three groups in the current study was below the threshold score (BDI-II score = 12) that Harkness et al. used to delineate dysphoria, indicating that, at least according to the criteria used by Harkness et al., the participants in the current study were (on average) not dysphoric or depressed. Perhaps this is the reason no association (either positive or negative) between level of depression and social cognition was found in the current study. Bipolar disorder (Shamay-Tsoory et al., 2009) and alcoholism (Maurage et al., 2011) are other psychological conditions that have been linked with fiction writing and impairments in social cognition.

Based on the studies reviewed here, one might actually hypothesize that, due to their associations with psychological disorders or characteristics related to impaired social
cognition, fiction writers might actually show decreased sociocognitive skills. The findings of the current study found no differences between fiction writers and control group participants: no advanced abilities, but no reduced abilities, either. While on average the participants in the current study were not depressed—at least at the time of testing—loneliness was not measured, nor were any other mental illnesses screened for.

The literature in this area may be mixed because there are multiple complex factors at play—some of which are theoretically or empirically linked to decreased or impaired social cognition, while other factors are theoretically or empirically linked to increased or above average social cognition. These multiple variables remain to be fully explicated. One of the factors that the bulk of the literature suggested is associated with enhancing social cognition is reading fiction.

9.2.3 – Reading Fiction

The burgeoning body of evidence in support of links between reading fiction and social cognition, championed by Keith Oatley, et al. Raymond Mar and Maja Djikic (e.g., Oatley, 1999; Mar, 2008; Mar & Oatley, 2008; Oatley & Djikic, 2008; Oatley, Mar, & Djikic, 2012) has already been outlined. According to these scholars, reading literature stimulates social reasoning through a mental model or simulation, even in the absence of live interactions.

In the current study, both groups of writers scored higher on the ART in both fiction and non-fiction genres compared to the control group. This suggests that, as one might have expected, the writers not only wrote more fiction, but also read more fiction than the control group. However, the established writers did not differ significantly from the intermediate writers in terms of the number of names of fiction writers they recognized.

Based only on the fact that the 40 writers in the study read more fiction than the
control group, one might have expected them to perform better on the social cognition outcome variables, in accordance with the body of work by Oatley, Mar, and Djikic. However, this question was examined in the exploratory analysis of the current study, and a significant correlation between RME and the ART-F was not found. For example, a significant correlation was found between ART-F and RME scores in Mar et al. (2006) when partial correlations were used, but this was inconsistent with the current study, even after using partial correlations accounting for potential confounding variables.

The primary difference between the current sample and that studied in Mar et al. (2006) is that two thirds of the participants in the current sample were actively engaged in fiction writing, and they were selected specifically by virtue of writing fiction in some form. Perhaps, then, there is something about the act of fiction writing above and beyond fiction reading that counteracts the association that might be present in a typical sample. It is possible that readers of fiction incur sociocognitive benefits if they both read and have regular face-to-face interactions. However, fiction writers engage in two solitary activities, reading and writing, which might reduce the time they spend engaged in live, interpersonal interactions to a degree that the benefits they would have otherwise accrued from reading fiction are counteracted. Since the amount of time individuals spent in solitary versus face-to-face activities was not measured, this proposition remains speculative. It might also be that other aspects of being a fiction writer, such as loneliness or mental illness (as previously described), may counteract sociocognitive benefits of reading fiction.

Mar (2007) found statistically significant correlations between the Fantasy subscale of the IRI and scores on the IPT-15, as well as positive associations or trends noted between Fantasy scores and scores on the RME. Mar et al. (2009) also found statistically significant associations between scores on Fantasy subscale of the IRI and scores on the RME. In the
current study, however, scores on the Fantasy subscale were not correlated with any outcome variable. One possibility for these discrepant findings is, again, that there is something unique about fiction writers; while the population sampled in the current study was two thirds fiction writers, Mar (2007) and Mar et al. (2009) did not specifically recruit for fiction writers. It is possible that the association between strong narrative engagement, reading fiction, and some measures of social cognition is different in fiction writers, for the reasons outlined above.

9.2.4 – Other Activities or Careers

Another potential variable that may influence the sociocognitive abilities of creative writers is the other activities or careers in which they engage. For example, there have been arguments that certain careers may be associated with poor theory of mind. While not discussed in the literature review, this line of reasoning was explored in greater depth for the purposes of the discussion due to the consistent lack of any sociocognitive advantage for fiction writers revealed in the current study.

Baron-Cohen et al. (1998) found that individuals who worked in fields such as mathematics, engineering, and physics were more likely to have a biological relative with autism, a disorder shown to have deficits in theory of mind. Piven, Palmer, Jacobi, Childress, and Arndt (1997) reported that individuals whose family included multiple members with autism had milder traits of autism (including social deficits). Piven et al. referred to this as the broader autism phenotype. Interestingly, the comparison group in Baron-Cohen et al.’s study was comprised of individuals currently studying literature, but Baron-Cohen et al. did not discuss the potential implications of this group—that there may be associations between reading fiction and theory of mind, as demonstrated by Mar et al. (2006). Additionally, Carroll and Kin Yung (2006) found that students studying science scored slightly lower than
students studying the humanities on the RME, further indicating potential group differences based on career choice (which may have to do with the types of individuals who choose various careers).

It is interesting that, among the fiction writers sampled in the current study, some were also employed in science or mathematical careers (e.g., accounting, engineering, biology, chemistry, finance, information technology, etc.). It is unclear to what extent different occupational activities might influence sociocognitive abilities, especially when individuals are involved in more than one career. Participants in the current study came from varying educational and occupational backgrounds, with some participants experienced in fields with links to poor sociocognitive abilities.

It is also possible that participants in the current study could, by virtue of their educational or occupational background (aside from fiction writing), demonstrate good sociocognitive skills. One could reasonably speculate that good sociocognitive abilities are required for many of the careers of the participants in the current study. For example, it would be beneficial for trial lawyers to have good sociocognitive reasoning in order to anticipate the strategies of opposing counsel, to track the beliefs and perceptions of a jury, and to use evidence and arguments in such a way to convince the judge and jury of the innocence or guilt of a client. Similarly, it would be beneficial for teachers to have good social cognition in order to better understand the knowledge states of their students, to create lessons at the developmental level of students, to create lessons that can be enjoyed and integrated into students’ previous knowledge, to recognize when students’ knowledge has been consolidated, and to build rapport with and empathy for students.

If one is comparing fiction writers to the general public, and the general public is composed of individuals such as lawyers and teachers and others with occupations that
might improve social cognition, this might also explain the null findings. People may think fiction writers would have above average social cognition when thinking about the daily tasks and thought processes of a fiction writer, and when considering fiction writers in isolation, but their involvement in other careers that may increase or decrease social cognition, could mask true differences. In the current study, only individuals in active counselling professions were excluded, as plausible arguments could be made that many of the careers of the participants require good sociocognitive skills, and eliminating any career that had the potential for good sociocognitive reasoning would have resulted in a comparison group not representative of the general public.

9.2.5 – Context Specificity

The lack of between-group differences in the current study also provides some evidence for the theory that social cognition is context-specific. Perhaps fiction writers are able to create authentic characters with complex inner worlds, but this ability may not generalize to real world social interactions—especially given that writing is largely a solitary pursuit and there is no objective standard (a live human being) against which to compare or evaluate one’s accuracy on sociocognitive interpretations (Hodges, 2009).

Recall the distinction between having skills or tools, and using or applying them (Keysar et al., 2003). Furthermore, Ickes et al. (2000), Klein and Hodges (2001), and Koenig and Eagly (2005) all demonstrated how performance on various measures of social cognition could be changed based on gender-congruence. The fact that scores can be altered based on these situational factors argues against the idea that sociocognitive ability is a static, stable entity. Rather, the evidence supports arguments by Keysar et al. (2003), Meins et al. (2006), and Apperly (2012) that, while adults have the capability to make social inferences, they do
not always reliably do so, highlighting how theory of mind application can be context sensitive, and, as Apperly asserted, dependent on motivation.

The argument by Love and Stosny (2007)—that men who are highly skilled writers have difficulty applying their language skills, particularly emotional vocabulary, in their marriages—seems to argue for context-specificity in skill application, though no empirical evidence was found to substantiate the contention. Thomas and Flether (2003) also found differences in sociocognitive abilities based on factors such as level of acquaintanceship, relationship satisfaction, relationship closeness, and discussion of relationship problems. Again, these findings suggest that social cognition in a given situation depends not only on individual ability, but also on situational factors and, likely, how such factors interact with one’s underlying ability to create in-the-moment performance.

Though the literature review for this study did not examine biochemical influences on social cognition, given the findings it is of interest to note that there have been specific demonstrations of the alteration of performance on sociocognitive tasks under biochemically specific circumstances. Domes, Heinrichs, Michel, Berger, and Herpertz (2007) showed that performance on the RME could be increased by administering an intranasal dose of oxytocin (a hormone the authors note is associated with social behaviour such as reproduction, parenting, affiliation, attachment, and social memory). A second study found the same result when intranasal oxytocin was administered to youths with autism spectrum disorders (Guastella et al., 2010). Finally, a third study found changes in RME performance based on MDMA (ecstasy) ingestion: participants who had taken MDMA were better able to identify positive emotions, but impaired in identifying negative emotions compared to those who had ingested a placebo (Hysek, Domes, & Liechti, 2012). The authors noted that MDMA releases oxytocin. Oxytocin may be more or less present in humans based on the situation; it
is often secreted after intercourse and during breast-feeding. Taken together, these findings support the idea that elements of a situation can influence social cognition or performance on sociocognitive tasks, and they also support a context-specific model of social cognition.

How might context-specificity apply to fiction writers? It may be that writers tap into their sociocognitive abilities and apply them during the writing process, when they are highly engaged with their characters and motivated to complete (and potentially market) their work. More about motivation and its influence on sociocognitive performance will be discussed in section 9.5.2. Factors other than motivation—such as working memory, emotional stress, personal involvement, and so forth—might make fiction writers more or less able to demonstrate sociocognitive skills in a given situation. For example, a fiction writer may be more motivated, more emotionally stressed, and/or more personally involved when writing fiction. Djikic et al. (2006) posited that fiction writers are more driven by negative emotions than other successful professionals. There may be something unique about the situation of creating one’s own work that elicits demonstrations of sociocognitive abilities—an understanding of how one’s characters tick, how they interact, and what their underlying motivations are—that does not reveal itself outside of these specific conditions. If this is true, it could explain why no between-group differences were found on the performance-based outcome variables in the current study.

9.3 – Reasons Behind the Myth

The results of the current study provide support for the idea that the belief held by the general public and by many theorists, as well as by individuals who self-identify as fiction writers—the belief that fiction writers have above average social cognition—may be a myth. If it is a myth, why do so many believe it?
In their recent book *50 Great Myths of Popular Psychology: Shattering Widespread Misconceptions about Human Behaviour*, Lilienfeld, Lynn, Ruscio, and Beyerstein (2009) described the concept of psychomythology, which the authors claimed encompasses “misconceptions, urban legends, and old wives’ tales” (p. 2). They further described surveys demonstrating how believing in myths is extremely common. Lilienfeld et al. noted several reasons why individuals may believe in myths, the first being the human tendency to try to understand or make sense of others and why they do what they do. The media, word-of-mouth, and interactions with others impact theories about human behaviour. However, according to Lilienfeld et al., people lack the ability to empirically test these theories, especially in the moment, and may instead make reasonable sounding or common sense assumptions or conclusions because of the desire for a quick and easy answer, though these assumptions or conclusions may ultimately be incorrect. Common sense, Lilienfeld et al. noted, can sometimes lead people astray because of cognitive illusions or biases, such as selective perception or memory, a tendency to infer causation, exposure to a biased sample, judging a book by its cover, exaggerating the truth, misunderstanding terms or labels, etc. Lilienfeld et al. describe some common psychological myths about social/interpersonal interaction that people believe, but evidence has since disproven, such as the idea that opposites attract in romantic relationships, and the idea that men and women communicate in fundamentally different ways.

It is possible that the “myth”—according to the results of the current study—that fiction writers have above average sociocognitive abilities is in part due to a “halo effect,” a cognitive bias in which individuals assume that, if someone shows positive traits in one area, they would also show positive traits in another area. In other words, the “halo effect” is the tendency to form a positive overall impression of an individual based on one positive trait
versus identifying both strengths and weaknesses. It may be that the general public assumes that fiction writers, by virtue of showing a unique strength or talent in writing fiction, may also be skilled in reasoning about others or have wisdom as to why human beings do what they do. This may be an especially easy generalization to make given that the two skills (writing about people and reasoning about people) are conceptually related.

A second reason for believing the myth, following from the conceptual relatedness of the two abilities, is that it is both rational and plausible, or as Lilienfeld et. al (2009) would say, “common sense” to believe that fiction writers would demonstrate above average social cognition. Unless one considers all the nuances, the line of reasoning makes sense, and an individual may not question it or move beyond their first assumption.

Finally, it is possible that verbal intelligence plays a role. Perhaps individuals’ experience with fiction writers who they know personally or have experience with (i.e., whose work they have read, who they have seen give a reading or lecture, etc.) leads them to believe these individuals have above average social cognition than the general public, but verbal intelligence is confounding this comparison. It may be that fiction writers do demonstrate above average social cognition compared to a true general public (with the full range of verbal intelligence), but once verbal intelligence is controlled for (as in the current study), this advantage no longer exists. This line of reasoning was unable to be tested in the current study because of the small range of verbal intelligence scores (all three group means were above average).

9.4 – The Road to Fiction Writing Expertise: Talent, Practice, or Instruction?

Perhaps surprisingly, the current study found a significant but negative association between total lifetime hours spent writing fiction and expert-rated quality on a prompted writing sample written in three days and specifically for the purposes of the study. At first
glance, this finding appears to suggest the idea that not only does repeated practice not improve one’s craft, but that it can actually make one worse. However, a closer examination reveals this may not be the case for the reasons outlined below.

9.4.1 – Assessing Writing

First, it is important to explore the quality ratings in the current study and how representative they may be of true “quality” in writing. As previously discussed in the literature review, it is extremely difficult to judge what makes good fiction. There is no established standard or best practice for doing so, and there is often a lack of consensus, as there was between the expert raters in the current study (who at best showed a moderate correlation in the ratings they assigned to the writing samples).

Additionally, the ratings used in the current study came from the opinions of three individuals with experience in writing and judging fiction (previously referred to as expert-raters). Due to the inherent subjectivity in creative writing, it is not clear whether the opinions of these three individuals would generalize if other experts were asked to rate the same stories in the same way. The authors of future studies could choose to employ a broader base of expert raters (i.e., employ more than three expert raters).

Furthermore, the writing sample provided was only a proxy of an individual’s true writing skill or ability. Each participant composed only a single writing sample and had only three days to produce it. This procedure does not necessarily reflect the true writing process. Doyle (1998) proposed that the writing process typically involves a “seed incident” (p. 30)—an incident that ignites the idea for a story. Participants in the current study were given three writing prompts to choose from and were not allowed to generate their own topic or idea. Doyle also wrote about the process of revision, or what she calls “revisioning” (p. 34), a process during which revisions can seem “endless” (p. 34), and during which a draft may be
shown to others and revised based on feedback. Finally, Doyle referred to writers feeling a sense of completion or readiness. The three-day time frame provided little opportunity for revision and likely constrained a sense of readiness. The writing samples produced for the current study were, in essence, first drafts based on someone else's ideas (the prompts), and therefore only approximated the natural writing process described by Doyle. As such, the task may not have allowed the participants' skill or potential to manifest.

This may explain a lack of an expected difference in quality ratings between the established and intermediate writers, despite the fact that the established writers had reached an external standard in the field (publication of a book-length manuscript). Additionally, the established writers had invested more time writing fiction and had, in general, a more intense practice than the intermediate writers. It is possible that, at least for the group of writers sampled, the revision process may have been necessary for group differences in quality to be identified. It is also possible that, through revision, the established writers might have demonstrated the ability to fine-tune their writing in ways that the intermediate writers might not have been able to, though this line of reasoning remains speculative.

Another possible explanation for the negative relationship between hours spent writing and quality is the fact that the intermediate writers in the study were possibly highly skilled. The intermediate writers in the study achieved, on average, the same level of expert-rated quality on a first draft (the writing sample in the current study) but with less practice overall and less intense practice. The talent level of the intermediate writers may have been due to the fact that approximately half of the participants in the intermediate group were studying fiction writing at the university level, including several who were in pursuit of a master's degree (MFA) in creative writing or in English with a creative writing component. Portfolio acceptance was required for admission into many of the programs (e.g., the online
Master of Fine Arts in Creative Writing program at the University of British Columbia) or courses (e.g., Fiction Writing 1, 2, and 3 at the University of Calgary) that these participants reported being currently enrolled in. Portfolio-entry classes select applicants who demonstrate higher skill than other applicants. It is not clear how the results would have differed if writers had been allowed to provide a sample of their best work for expert rating. It is plausible that, if the intermediate writers were particularly skilled, a negative correlation between practice and quality may have resulted, given the fact that the intermediate writers spent less time practicing than the established writers. It is also plausible, as previously discussed, that differences between the established and intermediate writers may have revealed themselves had participants been allowed to fine tune their work until they felt it was ready for submission. Perhaps it is in the editing process that established writers would have revealed their advantage, though this remains speculation.

Despite the aforementioned limitations of the writing task used in the current study, the writing task allowed for an efficient selection of the fiction writing of the participants used in the sample. It also allowed for a consistent measure on which all participants (both writers and non-writers) could be judged. Additionally, the method used included steps to prevent plagiarism or selecting from one’s previous work (which would have given some writers an unfair advantage).

Another important factor in considering what constitutes “expertise” in fiction writing discussed in the literature review but not measured empirically, is the concept of instruction. Repeated practice on its own might not yield any improvement in skill; without instruction or feedback, writers could simply continue to repeat mistakes or write poorly. Ericsson et al. (2006) differentiated “deliberate practice” from simply hours spent engaging in a given activity. These authors noted that “in the absence of adequate feedback, efficient
learning is impossible and improvement only minimal even for highly motivated subjects” (p. 366), and defined deliberate practice as activities specifically designed (often by an instructor) to improve one’s current level of performance.

While participants were asked during the testing sessions to report any fiction writing classes they had taken, these data were not analyzed. The difficulty in quantifying the quality of the range of reported courses and the lack of information on what material was actually covered, what instructional models were used, the quality of the instructor, and so forth made this infeasible. In addition, several writers participated in classes many years prior and some classes were no longer offered. However, it is plausible that the intermediate writers had different or more recent education in creative writing, which may have contributed to a higher skill level, because their practice was, as Ericsson et al. (2006) would define it, more deliberate than individuals who write fiction in their spare time but do not receive feedback on their writing or complete exercises deliberately targeting growth and improvement. It may be that the intermediate writers in the current study were highly skilled, but had not yet reached the milestone of publication because they had not yet completed and submitted a full manuscript, and not because they had not reached the same level of “expertise” as the established writers.

Another consideration related to the quality ratings is the fact that the three expert raters who marked the writing samples provided by participants for quality were instructed first to rate the overall quality of the stories on a holistic scale, and then to rate each for character transparency (the degree to which readers were able to understand, track, appreciate, and/or identify with the internal mental states of the characters and imagine themselves inside characters’ heads). Raters were specifically instructed to rate each story from zero to 10 on the presentation of character in the story, and told to judge each story
based on whether or not the writer did a good job of presenting the characters’ thoughts and feelings. Each rater was also asked to consider how well they were able to get inside the heads of the main character or characters while reading the story.

Because raters were required to rate both quality and transparency, it is possible that raters were primed to think of the transparency (which is highly associated with social cognition) while rating the stories, which may have influenced them to put greater emphasis on character transparency in their ratings than might otherwise have been the case. Analyses revealed a very strong correlation between the quality and character transparency ratings (.937). This may reflect the fact that good quality writing is required for a writer to achieve transparency, or that transparency is required for good quality writing. However, the strong association between these two variables at least raises the possibility that priming may have played a role, and as such, the quality ratings were biased. Is it possible, for example, to have a story that is extremely well written, but in which a character's intentions are vague (perhaps even deliberately), or in which a character is difficult to identify with? What about a story in which a reader can easily transport him or herself into a character's mind and identify with that character, even though the writing is poor? A closer examination of the ratings for each individual rater would suggest this did not happen in the writing samples of the participants. The quality and character transparency ratings only differed by a maximum of three (out of a possible 10 points) and this was in only one (out of 60) cases; the remaining cases differed either by zero, one, or two points. There were no instances in which quality was high and transparency was low, or vice versa.

In summary, it is important to consider how quality was defined in the current study and how this may have impacted the results—and more importantly, how it may have impacted the ability to draw conclusions and generalizations from the results. Future
research could examine quality more broadly using a greater number of expert raters, and having expert raters rate quality in isolation rather than along with other measures that could bias their quality ratings.

It is also worth considering the potential role that verbal IQ might play in the ability to craft a high quality story. As previously mentioned, the sample was (on average) of higher intelligence than the total population. This was partly due to deliberate attempts to enlist control group participants who were comparable to the established and intermediate writers on measures of verbal IQ. Therefore, it is not clear whether a different relationship between quality of writing and hours spent writing might have been revealed in a sample with a wider range of verbal intelligence.

A final note regarding the use of a single writing sample to make judgments about an individual’s writing quality relates to the second textual determinant examined: point of view. The results showed no differences in the social cognition outcome variables for individuals who chose more direct versus more objective points of view. However, examining associations based only on the point of view chosen for the writing sample has its limitations, much in the same way that basing quality on a single writing sample also has limitations. The chosen point of view on a single story (such as the one in the current study) does not necessarily reflect the point of view the author may typically use when writing fiction, nor may the author even have one point of view that he or she uses most regularly. Researchers interested in looking more in-depth at point of view may wish to ask writers which point of view they feel most comfortable using in their writing, or which they tend to use most often. Researchers may also choose to collect all works by a particular author and identify the most commonly used point of view, or test only differences between those who consistently use a particular point of view and those for whom point of view changes or is
inconsistent. Researchers interested in looking more in-depth at point of view may also
investigate the following research questions: 1) does changing points of view and juggling
multiple perspectives in a story require more advanced social cognition than maintaining a
single point of view? And, 2) would asking individuals to write stories from different
characters’ points of view have any effect on their social cognitive abilities?

9.4.2 – Categorizing Writers

The lack of a difference between the mean quality rating for the established and
intermediate writers also raises questions as to whether the two groups of writers were really
all that different from each other to begin with, and whether dividing them as such was truly
justified. It is possible that using publication of a book-length manuscript as the threshold
did not distinguish between writers in terms of skill level. The intermediate group had
reached the same mean level of quality on the writing samples, but with less overall practice
and less intense practice. This calls into question the original operational definitions of
“established” and “intermediate” writers. While the operational definitions were based on a
review of the literature, the results may indicate that it is more accurate to define writers in
terms of how well they can write, not what milestones they have reached in their career,
which may be an inadequate indicator of true skill level.

As an example, the commercially successful novel Fifty Shades of Grey (James, 2012)
was described as being poorly written by Jessica Reaves, journalist for the Chicago Tribune.
“This is a pretty dreadful book. Put simply, author E L James…is not a very good writer.
Her dialogue is stilted, the descriptions of place overwrought, and the characters and plot so
predictable” (Reaves, 2012). Despite being perceived as poorly written by some reviewers,
James’s novel and two following were still published and extremely well received, likely due
to the sensationalism of the subject matter (Grinberg, 2012). E.L. James’s work illustrates the
multifaceted nature of publication. Publication is not based solely on quality according to experts, but rather multiple factors, notably the potential to generate revenue. For example, high quality books may be rejected for publication because of the perception that the story may not be in high demand or may not sell. In summary, the way the groups were originally defined, using publication as the primary marker, may be an important limitation of the current study.

Categorizing writers in terms of hours spent writing, as traditional definitions of expertise have suggested, may also be incorrect, as the results revealed a significant negative association between lifetime hours spent writing and quality. Moreover, there were no differences in quality between the two groups of writers, even though the established writers had spent significantly more of their lifetimes writing, as well as wrote more per year of their literate lives. Not using hours of practice as a measure of fiction writing expertise in isolation is consistent with Vakil (2008), Amabile (2001), and Kaufman and Kaufman (2007), who each spoke about other factors (e.g., talent) in the development of fiction writing expertise, in contrast to Ericsson’s theories (Ericsson et al., 1993; Ericsson, 2006).

Future research may benefit from subdividing authors by genre. The findings of Drevdahl and Cattell (1958)—that writers overall reported greater emotional sensitivity than the comparison group, but science fiction writers reported less emotional sensitivity—suggest that there may be genre-dependent differences within fiction writers. Due to the relative rarity of writers (especially published writers) in the population, the decision for the current study was to recruit writers regardless of genre to achieve a large enough sample.
9.5 – Methodologic Limitations

While the current study addressed many of the limitations of previous research, nonetheless, there are several limitations within the present study itself that could be addressed in future studies. Each limitation will be discussed in detail in this section.

9.5.1 – Cognitive Factors

First, while sociocognitive ability was assessed using a variety of different measures (both self-report and performance-based), the study did not include measures of the kinds of cognitive abilities that theorists claim are intertwined with social cognition, such as executive functioning and working memory. Apperly (2012) wrote:

Although there is no doubt that higher orders of ToM are more difficult than lower orders, it is really not clear that these tasks require conceptual knowledge beyond that required for ‘standard’ tasks passed by younger children. In contrast, it seems quite clear that by asking participants to put basic ToM concepts into embedded hierarchical structures, higher order ToM tasks make far higher demands on working memory and executive function. This makes it likely that individual differences in performance on such tasks will be driven more by these cognitive demands than by variation in conceptual understanding of ToM. (p. 833)

This quotation is particularly relevant when it comes to working memory in relation to the LEMS task. The fact that there was only a subtle increase in difficulty as level of control questions increased, but a much more prominent increase in difficulty as the level of test items increased provided some evidence that it was the mental state terms in the test items that were difficult to understand, not the length of the questions or the number of facts. However, in the version of the LEMS used in the current study, the increasing levels of mental state embedding in the sentences not only increases the demand for understanding higher-order mental states, but also increases the demand on working memory. While the control questions were matched at each level for number of facts to number of mental states, the control questions were not matched for embeddedness; the facts in the control questions typically were joined by conjunctions such as and or or, which simplified the task.
demands of the sentences.

The following two examples represent a fifth level embedded mental states question and a fifth level control question. Note the differences between the sentence structure and linguistic complexity in the two sentences.

Jane understood that Sam thought Jane knew whether Pete intended for Sam to believe Pete was being honest.

Sam read a sign at the Elm Street Office, and was unable to buy a Parking Permit at the Bold Street Office, and has not worked at the office as long as Jane, who he talked to after lunch, and who is friendly with Pete.

While the first sentence, the test question, is actually shorter in terms of word count, the number of conjunctions in the second (control) question makes it easier to comprehend. Individuals could segment the question into component parts, determine if any of the component parts were false, and answer the question based on this reasoning, whereas comprehending the test question requires processing the sentence as a whole. This limitation of the LEMS was also a weakness in Dunbar’s “Imposing Memory Task.”

It is plausible that the relative difficulty in comprehending the mental state questions on the LEMS compared to the control questions was, at least in part, due to factors such as linguistic complexity. It is possible then that the lack of difference between the three groups on the test items of the LEMS actually revealed a lack of difference in comprehension of sentences of increasing linguistic complexity as opposed to a lack of differences in sociocognitive ability. Future iterations of the LEMS, to validate it as a tool measuring social cognition, should involve questions that are matched on the following variables: 1) the number of facts should match the number of mental state terms, and 2) the level of embeddedness of the sentences/sentence clauses.

Steps were undertaken to improve the LEMS and match for these variables, but
doing so meant increasing the length of the story used. That is, in order to create enough
details and plot points that fact questions could be embedded (i.e., X did something to Y,
who did something to Z, etc.) and mental state terms could be embedded (e.g., X knew
something about Y, who believed something about Z, etc.), the stories became extremely
long, which created problems for inclusion in the current study test battery. A longer story
would have made it more difficult to remember the items, as well as lengthened the overall
testing time, and participant fatigue was a concern. Thus, for logistical purposes, the original
version of the LEMS was used, though its limitations are acknowledged.

In addition to not measuring factors such as executive functioning, the current study
measured only accuracy on each of the tasks, and did not measure speed (aside from the
RCQ, which had a time limit). It is possible that some differences may have revealed
themselves in the speed of processing the various stimuli (e.g., how does a participant who
achieves a score of 25/36 on the RME, but who takes 10 minutes to do so, differ from a
participant who achieves the same score, but who takes only three minutes?). For the current
study, the focus was on sociocognitive accuracy as opposed to efficiency, though efficiency
in responding is an important component of social cognition that could be addressed in
future research.

9.5.2 – Motivation and Other Situational Factors

In the current study, participant motivation was addressed, but not measured. While
the methods included steps to ensure adequate motivation in all participants, the extent to
which participants were actually motivated to do well on the various tasks was not measured.
While external reinforcements (the movie passes and feedback) were used to help control for
differences in motivation, participants appeared to be differentially motivated. The monetary
payment ($30) and movie passes could be argued to be more motivating for certain
participants (e.g., students) than others (e.g., the full time employed bankers and engineers in the study). Participants were also told that the movie passes would be given out once all the study data were collected, and the time delay may have made the prizes less motivating. Klein and Hodges (2001) rewarded participants immediately on completion of their study tasks. Additionally, while some participants expressed an eagerness to know how well they did on the various tasks, a few resisted the idea of feedback, saying they would prefer not to know how well (or poorly) they had done.

Further to the discussion of motivation, it is possible that social cognition is more context-specific than context-general. It may be that writers become highly motivated to tap into their sociocognitive abilities and apply them during the writing process. However, it is unclear whether this motivation would generalize to real-world interactions, or to completing tasks that assess social cognition in a laboratory situation, such as in the current study.

Researchers using incentives such as the movie passes and feedback may also opt to measure how personally motivating these are for participants (e.g., by having participants self-report their motivation on a Likert scale). Differential motivation of participants was addressed in the current study by having multiple potential reinforcements that could appeal to different participants. Reinforcements used were both extrinsic (i.e., the movie passes) and intrinsic (i.e., providing feedback). Finally, Klein and Hodges (2001) found that even small motivations (a few dollars) neutralized potential motivational differences between groups such that all participants were sufficiently motivated and between-group differences in motivation were no longer a concern. This is the strategy employed in the current study, which meant that measuring motivation might not have been necessary.

9.5.3 – Internal and External Validity

Another potential limitation of the current study regards the choice and composition
of the control group. First, the writers were selected based on criteria representing their fiction writing achievements or practice, while the control group was selected to match the fiction writers. While efforts were made to match all three groups on variables that could possibly have influenced sociocognitive performance (i.e., verbal IQ, depression, etc.), there were still between-group differences identified, such as the significant age difference between the established and intermediate writers, and the significant difference in depression scores between the intermediate writers and the control group. While there were between-group differences on these variables, none of the variables correlated significantly with any of the outcome variables, and thus were unlikely to have influenced the results.

Regarding internal validity, both groups of writers were heterogeneous in composition; for example, within both groups of writers, different genres, education levels, writing achievements, additional careers, and so forth were represented. Also, as previously mentioned, it is possible that the intermediate writers were possibly distorted in terms of talent (i.e., demonstrating more talent than might be typical for a yet-to-be published group of fiction writers), as described previously.

Moving on to external validity as a possible study limitation, the control group used in the current study was not necessarily representative of the general public. Rather, the control was comprised of individuals who were willing to write a short story and willing to participate in the study for relatively modest incentives. While this may be construed as suggesting that participants in the control group were interested in fiction writing and this is why they participated, given their lack of involvement in fiction writing (i.e., the very limited number of hours spent writing), it is much more likely that participants were motivated to participate in the study for other reasons, such as a desire to help (perhaps given that several were recruited through personal networks and snowball sampling) or an interest in
participating in research in general.

Similarly, the group of writers also represents writers willing to complete the study tasks and willing to compose a short story on a prompt within only three days. One writer asked to participate indicated she felt anxious writing on the spot and would not complete the study because of the writing sample facet. Therefore, it is difficult to make claims about the sociocognitive abilities of all writers based on those who participated in the current study.

While random samples of the full population of writers of each type and matched comparison groups would have been ideal, this would have required a sampling frame of all individuals in a given geographic area, which is not known to exist, and as such, the approach was not feasible for the current study.

9.5.4 – Task Order and Participant Burden

In addition to the aforementioned limitations of the LEMS task, an additional possible limitation of the LEMS as it was used in the current study was its difficulty and the reported frustration it invoked in participants. Two of the levels on the LEMS (test levels four and five) have been previously demonstrated to be too difficult for typical individuals to answer at levels higher than chance (Kinderman et al., 1998). Including questions at these levels of difficulty was necessary in the current study, since the LEMS needed to measure whether fiction writers could outperform control participants, and thus, the established ceiling for control participants needed to be elevated. However, the analysis showed that all participants in the current study answered level four questions correctly between 64% and 78% of the time, and by level five, all participants were responding correctly between 46% and 49% of the time (essentially, at chance). Therefore, all participants in the current study were regularly encountering questions that were simply too mentally taxing to answer. Due
to the frequent comments from participants that the LEMS task was frustrating, it may have been wiser to have this task completed first in the test battery as opposed to near the end, after they had already completed other tasks that tapped (and potentially taxed) their sociocognitive ability. On the other hand, scheduling a frustrating task first might have aggravated participants and they might have tired more quickly or put forth less effort on subsequent tasks.

Future researchers intending to use measures of sociocognitive ability to test between-group differences may choose to present tasks in isolation as opposed to in a battery, or to randomize the order of presentation (given sufficient sample size for this approach). While using multiple measures could be problematic from the perspective of participant fatigue, all measures that were used in the current study were considered necessary because of the relatively early status of the line of investigation.

First, each instrument had specific strengths and limitations—the battery of tests was designed to balance these. Second, a battery of tests allowed for broader conclusions to be drawn. There were no between-group differences on any of the performance-based outcome variables, as well as no significant correlations between hours spent writing and any of the performance-based outcome variables. These findings provide stronger and more comprehensive evidence that fiction writing does not infer any meaningful sociocognitive advantage. Using only one measure in isolation, while potentially useful from the perspective of participant burden, only allows for conclusions to be drawn about a single test at a time. A significant result (or lack thereof) could simply indicate the presence or absence of differences on that facet of social cognition, rather than differences in social cognition holistically. A future approach to address these issues might be holding a series of assessment sessions, each using a different single measure and/or having participants come
for repeated, shorter sessions on separate days or with scheduled breaks.

In further support of using a battery of methods is the lack of any significant correlations among any of the outcome variables (both self-report and performance-based), a finding consistent with the evidence to date that social cognition is a complex and heterogeneous phenomenon, and poor or even no correlations have been found among tasks that measure it (Ickes, 1997; Mar et al., 2006).

9.5.5 – Statistical Power

One could argue that, with a sample size of only 60 participants, analyses may have had limited statistical power, which in turn could have resulted in a failure to find results. While the size of the sample was constrained by the limited availability of published, willing, and able fiction writers accessible to the study, most of the variables were continuous measures. As such, if there had been meaningful differences, they should have been detectable with the current sample size.

Even so, insufficient power as a potential limitation was addressed via effect size and power calculations on the only variable that showed the greatest between-group difference in mean among the three study groups, and on which the means were in the hypothesized direction: the RCQ Total Score. Recall that the effect size was relatively small in magnitude and that power calculations revealed that, given the distributions of the variables and 80% power, the analyses would have required considerably more participants per group for differences to reach statistical significance. This suggests that any potential differences that could be identified with a larger sample are very subtle and not particularly meaningful. All other variables had extremely small between-group differences and the means were not in the hypothesized order. On the whole then, sample size was accounted for based on the power calculation and effect size analyses, and was determined to have had little to no effect.
on the lack of results found between the three participant groups.

9.6 – Methodologic Strengths

Despite the limitations of the study outlined above, there are also several strengths that warrant outlining. First, the study employed multiple measures of social cognition, both performance-based and self-report. It is necessary to examine social cognition from several different angles and to include a variety of measures that assess its different components. The fact that no significant between-group differences were identified across any of the outcome measures provides more convincing evidence for the lack of a sociocognitive advantage for fiction writers when other variables, such as depression and verbal intelligence, are accounted for.

The inclusion of performance-based outcome measures also allowed for true empirical testing of the phenomenon of social cognition, given the notoriously poor relationship between individuals’ self-perceived sociocognitive abilities and their actual performance (Ickes, 2003; Ames & Kammrath, 2004). The inclusion of performance-based outcome measures was a methodologic improvement on previous studies that directly tested fiction writers, but used only self-report measures (Drewdahl & Cattell, 1958; Taylor et al., 2003). However, self-report measures were also included, which allowed for comparisons between fiction writers’ perceived interpersonal/social reactivity and their actual sociocognitive performance.

The current study used carefully defined groups, with categorization of writers based on a review of the literature. Variables that could potentially have influenced the results (i.e., verbal intelligence, level of depression, etc.) were identified, measured, and accounted for. Furthermore, the current study used three levels of comparison, such that a broader definition of fiction writers (not only those who had published) could be included.
Finally, the study explored public perceptions, which revealed a general belief that fiction writers demonstrate above average sociocognitive abilities. These results then stood in contrast to the empirical findings of the study. Because of the inclusion of the two parts of the study, the results were able to provide evidence for the identification and dispelling of a potential myth regarding fiction writers.

9.7 – Summary and Conclusions

This study of fiction writers’ sociocognitive abilities offered new insight into the theoretical proposition that fiction writers have more advanced sociocognitive skills compared with individuals who do not write creatively. Despite the plausibility of this claim, and the fact that theorists, the general public, and even individuals who self-identify as fiction writers seem to hold it as the truth, the current study was the first known study that tested it directly and empirically. Contrary to this generally held belief, the results of the current study indicate that there are no meaningful differences in the sociocognitive abilities between individuals pursuing writing and individuals who do not write creatively. Simply choosing writing as a hobby or career does not appear to confer sociocognitive benefits, seemingly regardless of whether one publishes or not. The study provided evidence that the belief that fiction writers are more perceptive about other people’s thoughts, emotions, and behaviours appears to be a myth.

To further support and explain the lack of a relationship between fiction writing and social cognition, the current study did not find an association between hours spent writing and social cognition, suggesting that repeated practice writing fiction does not make one better at sociocognitive reasoning, even if the writing task involves thinking about characters interacting and thinking about audience awareness. The finding that engaging in fiction writing does not improve social cognition was supported by the results of a large pilot study.
wherein individuals did not improve in their sociocognitive reasoning despite participating in a fiction writing intervention, and a lack of group differences on tasks directly measuring social cognition between individuals who indicated that they wrote fiction and those who did not, and individuals who indicated that they wrote creatively and those who did not.

In the current study, a negative association between hours spent writing and expert-rated quality on a writing sample was also found (in the 40 writers who participated), suggesting that traditional definitions of expertise (i.e., by hours spent in deliberate practice) may be flawed when it comes to fiction writing. Good quality fiction may result from other factors—talent, for example, as opposed to repeated practice. The data also provides some support for defining expertise by expert-rated skill as opposed to defining expertise by career achievements (i.e., publication). Even though the two groups of writers in the study differed significantly by overall number of hours practiced, intensity of practice, and achievements, the quality of the writing samples they provided was, on average, the same. This may have been, at least in part, due to some limitations with the way that quality was defined.

Future research is needed to replicate or refute the current findings. Recommendations for future research include: the use of larger and possibly more representative samples; a broader range of writing samples or submissions of best work; more raters to better establish a standard of writing quality; and the inclusion of individuals with a greater range of verbal intelligence. It may also be advisable for future investigators to spread out the testing sessions to reduce participant burden. Finally, researchers may choose to explore other cognitive variables that could influence social cognition, such as speed/fluency, working memory, motivation, and situational factors.

This research represents an initial examination of a line of investigation that is still in the early stages. It provides a starting point for further empirical study of the sociocognitive
abilities of fiction writers, as well as the relationships between social cognition, hours spent writing, and quality fiction.
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Table 1
Survey Careers in Comparison to Fiction Writers

<table>
<thead>
<tr>
<th>Career/Subject Area</th>
<th>Mean</th>
<th>SD</th>
<th>Closest Anchor Point</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>Psychologist</td>
<td>4.47</td>
<td>0.76</td>
<td>Much Better</td>
<td>.000***</td>
</tr>
<tr>
<td>Social Sciences Researcher</td>
<td>4.24</td>
<td>0.73</td>
<td>Somewhat Better</td>
<td>.001***</td>
</tr>
<tr>
<td>Marketing Specialist</td>
<td>4.02</td>
<td>0.82</td>
<td>Somewhat Better</td>
<td>.717</td>
</tr>
<tr>
<td>Teacher</td>
<td>4.00</td>
<td>0.77</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Nurse</td>
<td>3.95</td>
<td>0.88</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Fiction Writer</td>
<td>3.73</td>
<td>0.85</td>
<td>Somewhat Better</td>
<td>N/A</td>
</tr>
<tr>
<td>Philosopher</td>
<td>3.69</td>
<td>0.95</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Lawyer</td>
<td>3.58</td>
<td>0.83</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Non-Fiction Writer</td>
<td>3.54</td>
<td>0.77</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Doctor</td>
<td>3.51</td>
<td>0.90</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Actor</td>
<td>3.51</td>
<td>0.90</td>
<td>Somewhat Better</td>
<td>1.000</td>
</tr>
<tr>
<td>Artist</td>
<td>3.48</td>
<td>0.79</td>
<td>The Same</td>
<td>1.000</td>
</tr>
<tr>
<td>Customer Service Agent</td>
<td>3.32</td>
<td>0.80</td>
<td>The Same</td>
<td>.037*</td>
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<tr>
<td>Musician</td>
<td>3.27</td>
<td>0.82</td>
<td>The Same</td>
<td>.000***</td>
</tr>
<tr>
<td>Banker/Financial Planner</td>
<td>2.91</td>
<td>0.84</td>
<td>The Same</td>
<td>.000***</td>
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<tr>
<td>Athlete</td>
<td>2.75</td>
<td>0.72</td>
<td>The Same</td>
<td>.000***</td>
</tr>
<tr>
<td>Military Personnel</td>
<td>2.71</td>
<td>1.02</td>
<td>The Same</td>
<td>.000***</td>
</tr>
<tr>
<td>Scientist</td>
<td>2.65</td>
<td>0.83</td>
<td>The Same</td>
<td>.000***</td>
</tr>
<tr>
<td>Manual Labourer</td>
<td>2.65</td>
<td>0.77</td>
<td>The Same</td>
<td>.000***</td>
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<tr>
<td>Accountant</td>
<td>2.61</td>
<td>0.84</td>
<td>The Same</td>
<td>.000***</td>
</tr>
<tr>
<td>Engineer</td>
<td>2.53</td>
<td>0.92</td>
<td>The Same</td>
<td>.000***</td>
</tr>
<tr>
<td>Computer/IT Specialist</td>
<td>2.41</td>
<td>0.92</td>
<td>Somewhat Worse</td>
<td>.000***</td>
</tr>
</tbody>
</table>

*p ≤ .05. ** p ≤ .01. *** p ≤ .001
<table>
<thead>
<tr>
<th>Name</th>
<th>Acronym</th>
<th>Measures</th>
<th>Type of Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal Reactivity</td>
<td>IRI</td>
<td>Interpersonal/social reactivity</td>
<td>Outcome Variable</td>
<td>Four subscales (seven items each): Fantasy (FS)—tendency to transpose oneself into fictional scenarios such as books and movies; Perspective Taking (PT)—tendency to take the perspectives of others; Empathic Concern (EC)—tendency to experience feelings of compassion, concern, etc.; and Personal Distress (PD)—tendency to experience distress when witnessing others experiencing negative situations.</td>
</tr>
<tr>
<td>Index</td>
<td></td>
<td>(Fantasy, Empathy, Perspective Taking, and Personal Distress subscales)</td>
<td>Self-Report</td>
<td>28-item questionnaire.</td>
</tr>
<tr>
<td>Reading the Mind in the</td>
<td>RME</td>
<td>Social Perception</td>
<td>Outcome Variable</td>
<td>Participants view 36 black and white photos of only the eye region of the face and select from four words which best describes what the person in the photo is thinking or feeling.</td>
</tr>
<tr>
<td>Eyes Task—Revised Version</td>
<td></td>
<td>(interpreting thoughts and feelings via static photos of eyes)</td>
<td>Performance-Based</td>
<td></td>
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<tr>
<td>Interpersonal Perception</td>
<td>IPT-15</td>
<td>Social Cognition (reading body language, interpreting conversation)</td>
<td>Outcome Variable</td>
<td>Requires participants to make inferences about social situations based on videotaped interactions (e.g., reading body language, interpreting conversation, etc.). Contains 15 unscripted interactions (with two or more people) representing five common types of social interaction: status, intimacy, kinship, competition and deception. Participants respond to multiple-choice responses; only one answer is objectively true.</td>
</tr>
<tr>
<td>Task—15-Item Version</td>
<td></td>
<td></td>
<td>Performance-Based</td>
<td></td>
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<td>Test Name</td>
<td>Questionnaire</td>
<td>Description</td>
<td>Outcome Variable</td>
<td>Notes</td>
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<tr>
<td>-----------------------------------------------</td>
<td>-----------------</td>
<td>----------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Levels of Embedded Mental States Task</td>
<td>LEMS</td>
<td>Social cognition (understanding incremental levels of mental states presented in written format in increasing complexity or difficulty)</td>
<td>Performance-Based</td>
<td>Participants read two short stories and then answer true-false questions about the content. Participants cannot refer back to the stories while answering questions (must rely on memory). Test questions contain increasing levels of mental states (e.g., A believes that B knows that C…). Control questions contain matched levels of fact questions.</td>
</tr>
<tr>
<td>Role Category Questionnaire</td>
<td>RCQ</td>
<td>Cognitive Complexity/Differentiation (the degree to which someone can think about others in differentiated ways); asks about traits rather than mental states</td>
<td>Performance-Based</td>
<td>Requires participants to write as many traits for first a liked peer and then a disliked peer (five minutes each). Scored for number of discreet traits identified for each person within the timeframe.</td>
</tr>
<tr>
<td>Author Recognition Test</td>
<td>ART</td>
<td>Literary Exposure; how “well-read” a given individual is</td>
<td>Performance-Based</td>
<td>List of 86 authors’ names (45 real names, 41 foils). Requires participants to identify which names they recognize as being authors of books (fiction or non-fiction) and to avoid guessing (only indicate those they are sure of). Subscales: Fiction (ART-F) and Non-Fiction (ART-NF).</td>
</tr>
<tr>
<td>Beck Depression Inventory—II</td>
<td>BDI-II</td>
<td>Level of Depression/Depressive Symptoms</td>
<td>Potential Confounding Variable Self-Report</td>
<td>Measures mood, pessimism, sense of failure, lack of satisfaction, feelings of guilt, sense of punishment, self-dislike, self-accusation, suicidal wishes, crying, irritability, social withdrawal, indecisiveness, distortion of body image, work inhibition, sleep disturbance, fatigability, loss of appetite, weight loss, somatic preoccupation, and loss of libido. Scores can be analyzed continuously or based on cut-offs.</td>
</tr>
<tr>
<td>Verbal IQ—</td>
<td>VIQ</td>
<td>Verbal Intelligence/Abstract Verbal Reasoning</td>
<td>Potential Confounding Variable Performance-Based</td>
<td>Similarities subtest of the Wechsler Adult Intelligence Scale—4th Edition (WAIS-IV). Participants verbally state how two words are conceptually related. Items increase in difficulty.</td>
</tr>
<tr>
<td>Education Level</td>
<td>Established Writers</td>
<td>Intermediate Writers</td>
<td>Control Group</td>
<td></td>
</tr>
<tr>
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<td>---------------------</td>
<td>----------------------</td>
<td>---------------</td>
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<td>Completed Some College/Technical School</td>
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<td>N=1 (5%)</td>
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<td>N=0 (0%)</td>
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<tr>
<td>Partial Bachelor’s Degree</td>
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</tr>
<tr>
<td>Bachelor’s Degree Completed</td>
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<td>N=5 (25%)</td>
<td>N=6 (30%)</td>
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<td>Partial Master’s Degree</td>
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<td>N=7 (35%)</td>
<td>N=0 (0%)</td>
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</tr>
<tr>
<td>Master’s Degree Completed</td>
<td>N=11 (55%)</td>
<td>N=2 (10%)</td>
<td>N=5 (25%)</td>
<td></td>
</tr>
<tr>
<td>Partial Doctoral Degree</td>
<td>N=0 (0%)</td>
<td>N=0 (0%)</td>
<td>N=1 (5%)</td>
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</tr>
<tr>
<td>Doctoral Degree Completed</td>
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<td>N=1 (5%)</td>
<td>N=1 (5%)</td>
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Table 4  
*Participant Level of Education by Group: Collapsed*

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<tr>
<th>Education Level</th>
<th>Established Writers</th>
<th>Intermediate Writers</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Level 1</td>
<td>N=1 (5%)</td>
<td>N=2 (10%)</td>
<td>N=1 (5%)</td>
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<tr>
<td>Education Level 2</td>
<td>N=7 (35%)</td>
<td>N=8 (40%)</td>
<td>N=12 (60%)</td>
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<tr>
<td>Education Level 3</td>
<td>N=12 (60%)</td>
<td>N=10 (50%)</td>
<td>N=7 (35%)</td>
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Table 5

*Age* Correlations

<table>
<thead>
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<th></th>
<th>IRI-FS</th>
<th>IRI-EC</th>
<th>IRI-PT</th>
<th>IRI-PD</th>
<th>LEMS Test Level 3</th>
<th>LEMS Test Level 4</th>
<th>LEMS Test Level 5</th>
<th>LEMS Total</th>
<th>IPT-15 Test Items Correct</th>
<th>RCQ Liked</th>
<th>RCQ Disliked</th>
<th>RCQ Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>-.260*</td>
<td>-.020</td>
<td>.083</td>
<td>.145</td>
<td>-.026</td>
<td>.058</td>
<td>-.188</td>
<td>-.008</td>
<td>-.087</td>
<td>-.107</td>
<td>-.073</td>
<td>-.187</td>
</tr>
<tr>
<td>Age Sig. (2-tailed)</td>
<td>.045</td>
<td>.880</td>
<td>.530</td>
<td>.267</td>
<td>.842</td>
<td>.661</td>
<td>.150</td>
<td>.953</td>
<td>.510</td>
<td>.416</td>
<td>.582</td>
<td>.152</td>
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* p ≤ .05
Table 6

*Depression Correlations*

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<th>IRI-FS</th>
<th>IRI-EC</th>
<th>IRI-PT</th>
<th>IRI-PD</th>
<th>RME Test Level</th>
<th>LEMS Test Level 3</th>
<th>LEMS Test Level 4</th>
<th>LEMS Test Level 5</th>
<th>LEMS Total Test Items Correct</th>
<th>IPT-15</th>
<th>RCQ Liked</th>
<th>RCQ Disliked</th>
<th>RCQ Total</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td></td>
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<tr>
<td>BDI-</td>
<td>Pearson Correlation</td>
<td>.254*</td>
<td>-.017</td>
<td>-.033</td>
<td>.216</td>
<td>.045</td>
<td>-.011</td>
<td>-.124</td>
<td>.121</td>
<td>-.014</td>
<td>-.238</td>
<td>.082</td>
</tr>
<tr>
<td>II Sig. (2-tailed)</td>
<td>.050</td>
<td>.898</td>
<td>.804</td>
<td>.097</td>
<td>.734</td>
<td>.931</td>
<td>.346</td>
<td>.358</td>
<td>.915</td>
<td>.067</td>
<td>.531</td>
<td>.798</td>
</tr>
</tbody>
</table>

* *p ≤ .05*
Table 7
Author Recognition Correlations

<table>
<thead>
<tr>
<th></th>
<th>IRI-FS</th>
<th>IRI-EC</th>
<th>IRI-PT</th>
<th>IRI-PD</th>
<th>RME Test Level 3</th>
<th>LEMS Test Level 4</th>
<th>LEMS Test Level 5</th>
<th>LEMS Total Test Items Correct</th>
<th>IPT-15</th>
<th>RCQ Liked</th>
<th>RCQ Disliked</th>
<th>RCQ Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART- F Pearson Correlation</td>
<td>.268*</td>
<td>.050</td>
<td>.081</td>
<td>.349*</td>
<td>-.079</td>
<td>-.080</td>
<td>-.023</td>
<td>.086</td>
<td>-.005</td>
<td>-.016</td>
<td>.159</td>
<td>.033</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.039</td>
<td>.703</td>
<td>.538</td>
<td>.006</td>
<td>.548</td>
<td>.544</td>
<td>.862</td>
<td>.511</td>
<td>.973</td>
<td>.904</td>
<td>.225</td>
<td>.801</td>
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<tr>
<td>ART- NF Pearson Correlation</td>
<td>.272*</td>
<td>.080</td>
<td>.128</td>
<td>.331**</td>
<td>.069</td>
<td>-.054</td>
<td>-.025</td>
<td>.007</td>
<td>-.035</td>
<td>-.099</td>
<td>.092</td>
<td>.016</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.036</td>
<td>.543</td>
<td>.331</td>
<td>.010</td>
<td>.603</td>
<td>.684</td>
<td>.848</td>
<td>.955</td>
<td>.791</td>
<td>.450</td>
<td>.485</td>
<td>.904</td>
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*p ≤ .05, **p ≤ .01
Table 8
*Between-Group Comparisons on Each Subscale of the Interpersonal Reactivity Index*

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<th></th>
<th>Mean</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td><strong>IRI-FS</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Established Writers</td>
<td>20.85</td>
<td>5.28</td>
<td>6.945</td>
<td>.002**</td>
</tr>
<tr>
<td>Intermediate Writers</td>
<td>22.05</td>
<td>3.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>17.05</td>
<td>4.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IRI-EC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Established Writers</td>
<td>21.90</td>
<td>4.08</td>
<td>.020</td>
<td>.980</td>
</tr>
<tr>
<td>Intermediate Writers</td>
<td>21.70</td>
<td>3.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>21.90</td>
<td>3.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IRI-PT</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Established Writers</td>
<td>20.75</td>
<td>3.08</td>
<td>.548</td>
<td>.581</td>
</tr>
<tr>
<td>Intermediate Writers</td>
<td>19.50</td>
<td>4.89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>19.55</td>
<td>4.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IRI-PD</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Established Writers</td>
<td>11.60</td>
<td>6.02</td>
<td>1.049</td>
<td>.357</td>
</tr>
<tr>
<td>Intermediate Writers</td>
<td>11.65</td>
<td>4.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>9.60</td>
<td>4.56</td>
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</tbody>
</table>

** * p ≤ .01
Table 9
Statistical Comparisons Between Population Norms for Males and Males in the Current Study

<table>
<thead>
<tr>
<th>IRI Subscale</th>
<th>Test Value</th>
<th>Established Writers</th>
<th>Intermediate Writers</th>
<th>Control Group Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>t</td>
<td>Sig.</td>
</tr>
<tr>
<td>Fantasy</td>
<td>15.73</td>
<td>17.75</td>
<td>5.74</td>
<td>0.70</td>
</tr>
<tr>
<td>Empathic Concern</td>
<td>19.04</td>
<td>19.00</td>
<td>4.90</td>
<td>-0.02</td>
</tr>
<tr>
<td>Perspective Taking</td>
<td>16.78</td>
<td>18.25</td>
<td>2.99</td>
<td>0.99</td>
</tr>
<tr>
<td>Personal Distress</td>
<td>9.46</td>
<td>10.25</td>
<td>7.09</td>
<td>0.22</td>
</tr>
</tbody>
</table>

* p ≤ .05. ** p ≤ .01. *** p ≤ .001
Table 10
Statistical Comparisons Between Population Norms for Females and Females in the Current Study

<table>
<thead>
<tr>
<th>IRI Subscale</th>
<th>Test Value</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sig.</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sig.</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fantasy</td>
<td>18.75</td>
<td>21.63</td>
<td>5.06</td>
<td>2.27</td>
<td>.038*</td>
<td>22.47</td>
<td>4.21</td>
<td>3.42</td>
<td>.004**</td>
<td>17.07</td>
<td>4.33</td>
<td>-1.50</td>
<td>.155</td>
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<tr>
<td>Empathic Concern</td>
<td>21.67</td>
<td>22.63</td>
<td>3.67</td>
<td>1.04</td>
<td>.314</td>
<td>21.93</td>
<td>3.88</td>
<td>0.26</td>
<td>.797</td>
<td>21.93</td>
<td>3.49</td>
<td>0.29</td>
<td>.775</td>
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<tr>
<td>Perspective Taking</td>
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<td>21.38</td>
<td>2.85</td>
<td>4.80</td>
<td>.000*</td>
<td>19.73</td>
<td>5.34</td>
<td>1.29</td>
<td>.219</td>
<td>19.00</td>
<td>4.72</td>
<td>0.85</td>
<td>.408</td>
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<td>Personal Distress</td>
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<td>5.94</td>
<td>-0.23</td>
<td>.821</td>
<td>11.20</td>
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<td>-0.94</td>
<td>.369</td>
<td>9.53</td>
<td>4.97</td>
<td>-2.14</td>
<td>.050*</td>
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* $p \leq .05$. ** $p \leq .01$. ***

233
Table 11
*Statistical Comparisons Between Groups on the Levels of Embedded Mental States Task.*

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<td></td>
<td></td>
</tr>
<tr>
<td>Established Writers</td>
<td>3.45</td>
<td>.76</td>
<td>.466</td>
<td>.63</td>
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<tr>
<td>Intermediate Writers</td>
<td>3.50</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>3.65</td>
<td>.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LEMS Level Four</strong></td>
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<tr>
<td>Total Correct</td>
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<tr>
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<tr>
<td>Control Group</td>
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<tr>
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<td>.69</td>
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<td></td>
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<tr>
<td>Intermediate Writers</td>
<td>1.85</td>
<td>.99</td>
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<td></td>
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<tr>
<td>Control Group</td>
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<td><strong>LEMS Total Test</strong></td>
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<td>Items Correct</td>
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<tr>
<td>Intermediate Writers</td>
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<td>1.54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Group</td>
<td>8.25</td>
<td>1.16</td>
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Table 12
Statistical Comparisons Between Groups on the Role Category Questionnaire.

<table>
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<th>Mean</th>
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<th>Sig.</th>
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<tr>
<td>RCQ Liked</td>
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</tr>
<tr>
<td>Peer</td>
<td></td>
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</tr>
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<td>Established Writers</td>
<td>19.23</td>
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<td>.723</td>
<td>.49</td>
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<td>6.91</td>
<td></td>
<td></td>
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<tr>
<td>Control Group</td>
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<td>4.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCQ Disliked</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Peer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Established Writers</td>
<td>14.85</td>
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<td>.350</td>
<td>.71</td>
</tr>
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<td>13.35</td>
<td>5.45</td>
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<tr>
<td>Control Group</td>
<td>14.18</td>
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<td>RCQ Total</td>
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<td></td>
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<tr>
<td>Established Writers</td>
<td>34.08</td>
<td>10.89</td>
<td>.408</td>
<td>.67</td>
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<td>31.70</td>
<td>11.84</td>
<td></td>
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<tr>
<td>Control Group</td>
<td>31.28</td>
<td>8.72</td>
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</table>
Table 13  
*Heterogeneous and Homogenous Role Category Questionnaire Protocols by Group.*

<table>
<thead>
<tr>
<th></th>
<th>RCQ Liked Peer</th>
<th>RCQ Disliked Peer</th>
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<tr>
<td></td>
<td>Heterogeneous</td>
<td>Homogenous</td>
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<tr>
<td>Established Writers</td>
<td>N=8 (40%)</td>
<td>N=12 (60%)</td>
</tr>
<tr>
<td>Intermediate Writers</td>
<td>N=12 (60%)</td>
<td>N=8 (40%)</td>
</tr>
<tr>
<td>Control Group</td>
<td>N=7 (35%)</td>
<td>N=13 (65%)</td>
</tr>
<tr>
<td></td>
<td>IRI- FS</td>
<td>IRI- EC</td>
</tr>
<tr>
<td>------------------</td>
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<tr>
<td><strong>Total Lifetime Hours</strong></td>
<td>Pearson Correlation</td>
<td>-.142</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.383</td>
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<tr>
<td><strong>Total Hours Per Year of Literate Life</strong></td>
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<td>.007</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.964</td>
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N=40 (data reported for Established and Intermediate writers only)
Table 15
*Transparency Correlations*

<table>
<thead>
<tr>
<th>Character Transparency</th>
<th>Pearson Correlation</th>
<th>Sig. (2-tailed)</th>
<th>IRI- FS</th>
<th>IRI- EC</th>
<th>IRI- PT</th>
<th>IRI- PD</th>
<th>RME</th>
<th>LEMS Test Level 3</th>
<th>LEMS Test Level 4</th>
<th>LEMS Test Level 5</th>
<th>LEMS Total Items Correct</th>
<th>IPT- 15</th>
<th>RCQ Liked</th>
<th>RCQ Disliked</th>
<th>RCQ Total</th>
</tr>
</thead>
</table>
|                        |                     | .102, .100, .190, .106, .139, .017, .085, .129, .124, .089, .288*, .195, .258* | .438, .449, .145, .421, .291, .897, .517, .327, .347, .499, .026, .136, .046 | *p ≤ .05.
Table 16
*Sociocognitive Performance by Point of View Categories*

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<th>Category</th>
<th>First Person</th>
<th>SD</th>
<th>F</th>
<th>Sig.</th>
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<td>21.31</td>
<td>4.92</td>
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<td>.321</td>
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<tr>
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<td>19.97</td>
<td>4.76</td>
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<td>5.11</td>
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<td>4.16</td>
<td>.588</td>
<td>.559</td>
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<td>Objective</td>
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<td>5.11</td>
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<tr>
<td>Objective</td>
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<tr>
<td>RCQ Liked Peer</td>
<td>First Person</td>
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<td>Second and Third Person</td>
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<td>6.15</td>
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<td>Objective or Inconsistent</td>
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<td>9.71</td>
<td>1.92</td>
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<td>Second and Third Person</td>
<td>30.82</td>
<td>10.67</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Objective or Inconsistent</td>
<td>38.28</td>
<td>9.34</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1
Number of Items Answered Correctly on the Levels of Embedded Mental States Task Control and Test Items
Appendix A

Part 1: Online Survey

What is your gender?

___ Male
___ Female

Below, you will see a list of careers. Please indicate how you think each career compares to the general public in terms of their social understanding. That is, please indicate whether you believe that people IN GENERAL in each career are MUCH BETTER than the general public, SOMEWHAT BETTER than the general public, THE SAME as the general public, SOMEWHAT WORSE than the general public, or MUCH WORSE than the general public in terms of their social understanding.

SOCIAL UNDERSTANDING is the ability to correctly infer/understand/predict the thoughts, feelings, beliefs, desires, actions, behaviours, etc. of others. Someone with good social understanding would be able to draw conclusions or make good guesses about what others think, feel, or know, or make predictions about what others may do.

We acknowledge that there are differences between people who are in the same career, but try to imagine each career IN GENERAL, and make your best estimate on how people in this career compare AS A WHOLE to the general public.

The following careers were listed in matrix form and presented in a randomized order such as the one below:

<table>
<thead>
<tr>
<th>Nurse</th>
<th>MUCH WORSE Social Understanding Compared to the General Public</th>
<th>SOMEWHAT WORSE Social Understanding Compared to the General Public</th>
<th>THE SAME LEVEL of Social Understanding Compared to the General Public</th>
<th>SOMEWHAT BETTER Social Understanding Compared to the General Public</th>
<th>MUCH BETTER Social Understanding Compared to the General Public</th>
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<td>Military Personnel</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Manual Labourer (e.g., someone who works in the trades)</td>
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<tr>
<td>Lawyer</td>
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<tr>
<td>Teacher</td>
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<tr>
<td>Social Sciences Researcher (e.g., someone who designs or carries out studies on humans, such as psychological or sociological studies)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Artist/Designer</td>
<td></td>
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</tr>
<tr>
<td>Career/Subject Area</td>
<td>Yes—I have been involved in this field or a very similar field (work, volunteer, school, hobby, etc.)</td>
<td>No—I have never been involved in this field or a very similar field (work, volunteer, school, hobby, etc.)</td>
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<tr>
<td>Psychologist</td>
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<tr>
<td>Fiction Writer/Novelist</td>
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<tr>
<td>Engineer</td>
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<tr>
<td>Athlete</td>
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<tr>
<td>Scientist (e.g., someone who works in a lab, such as a Biologist or Chemist)</td>
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<tr>
<td>Doctor</td>
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<tr>
<td>Customer Service Agent</td>
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</tr>
<tr>
<td>Computer Analyst/Information Technology Specialist (e.g., someone who specializes in, works with, or fixes computers)</td>
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<tr>
<td>Non-Fiction Writer (e.g., someone who writes non-fiction or factual texts, such as journal/newspaper/magazine articles, textbooks, manuals, essays, etc.)</td>
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</tr>
<tr>
<td>Actor/Actress</td>
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<tr>
<td>Marketing/Communications Specialist (e.g., someone who specializes in designing material to sell products or to market services to customers)</td>
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<tr>
<td>Accountant</td>
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<tr>
<td>Philosopher</td>
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<tr>
<td>Banker/Financial Planner</td>
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<td>Nurse</td>
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<td>Manual Labourer (e.g., someone who works in the trades)</td>
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<td>Banker/Financial Planner</td>
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<tr>
<td>Musician</td>
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</tbody>
</table>
Appendix B

Part 2: Demographics Questionnaire

Please provide the following information. Thank you!

1. What is your sex?
   - 1) Male
   - 2) Female

2. What is your age? _____ years

3. Is English your first language?
   - 1) Yes
   - 2) No
   If No, what was your first language? _________________________________

4. What is your highest level of education COMPLETED?
   - 1) Grades 1-6
   - 2) Grades 7-9
   - 3) Grades 10-11
   - 4) Graduated High School (Grade 12)
   - 5) Some College/Technical School (i.e., currently pursuing a degree or certification)
   - 6) College Degree/Technical Degree or Certificate
   - 7) Some University (i.e., currently pursuing a Bachelor’s Degree)
   - 8) Bachelor’s Degree
   - 9) Pursuing a Master’s Degree
   - 10) Master’s Degree
   - 11) Pursuing a Doctoral Degree
   - 12) Doctoral Degree Completed

5. If you have or are taking specific training (e.g., college, technical school, university, etc.) beyond high school, please specify what that training is currently or was in (e.g., what your university degree is or was in, or what subject area courses you took). If you have studied/are studying in more than one area, please list as many as apply:

6. What is your current occupation? (You may list more than one if you have multiple jobs; also, please be specific, e.g., if you are a high school teacher, please indicate subject)

7. Please describe your history with FICTON writing classes (do not include poetry classes)
   - 1) I have NEVER taken any fiction writing classes before
   - 2) I have PREVIOUSLY taken fiction writing (please describe by answering questions below)
2-1) I took a fiction writing class or classes at the high school level (or classes that involved a component of fiction writing) 
Please indicate the names of all classes taken (to the best of your abilities):


2-2) I took a creative writing class or creative writing classes at the university or college level (or classes that involved a component of fiction writing) 
Please indicate the names of all classes taken (to the best of your abilities):


2-3) I took a private creative writing class or creative writing classes (or classes that involved a component of fiction writing) 
Please indicate the names of all classes taken (to the best of your abilities):

8. Please check any of the following which you do FOR WORK or FOR A CAREER or FOR SCHOOL (NOT as a hobby or in your spare time)
□ 1) Writing narrative fiction (i.e., short stories, novels)
□ 2) Writing creative non-fiction (i.e., true stories written as fiction, such as autobiographies, biographies, narrative case studies)
□ 3) Writing poetry
□ 4) Writing song lyrics
□ 5) Non-Literary Writing (Please indicate which forms of non-literary writing you engage in)
   □ 5-1) Advertisements
   □ 5-2) Textbooks
   □ 5-3) Brochures/Information Hand-outs
   □ 5-4) Scientific Writing (e.g., Empirical Studies, Literature Reviews, Monographs, etc.)
   □ 5-5) Other (please specify): _______________________________________

9. Please check any of the following which you do AS A HOBBY (i.e., in your spare time)
□ 1) Writing narrative fiction (i.e., short stories, novels)
□ 2) Writing creative non-fiction (i.e., true stories written as fiction, such as autobiographies)
□ 3) Writing poetry
□ 4) Writing song lyrics
□ 5) “Non-creative” Writing (Please indicate which forms of non-creative writing you engage in)
   □ 5-1) Advertisements
   □ 5-2) Textbooks
   □ 5-3) Brochures/Information Hand-outs
   □ 5-4) Scientific Writing (e.g., Empirical Studies, Literature Reviews, Monographs, etc.)
   □ 5-5) Other (please specify): _______________________________________
10. Please assist us in calculating an estimate of the TOTAL NUMBER OF HOURS you have spent engaged in fiction writing (work/career/school/hobby combined) in your lifetime. Do not include hours spent writing other genres (i.e., poetry, non-fiction, etc.).

Please fill in the number of hours per week, month, or year for each age period up to your present age. You need choose only one box per age period (i.e., choose either per week or month or year or zero). Choose whichever is more applicable or easier for you to calculate for each age period. Ignore shaded areas. If you did not write at all during a given time period, put a 0 in the column “I did not write during this time period.”

Please consider the different age periods of your life during which you were writing. For example, pretend you are 40 years old, and you started writing fiction at age 10. You wrote fiction about an hour a month for about four years. At age 15, you started writing fiction for an hour or so every day until approximately age 20. At age 20, you did not write for two years (ages 20 and 21). Since age 22, you have been writing fiction about two hours per week (until the present).

- Age period: 10-14 Estimate of number of hours per month: 1
- Age period: 15-19 Estimate of number of hours per week: 7
- Age period: 20-21 I did not write during this time period: 0
- Age period: 22-40 Estimate of number of hours per week: 2

We are just looking for your best estimate—it does not have to be exact.

<table>
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<th>Age period</th>
<th>Estimate of number of hours a week</th>
<th>Estimate of number of hours a month</th>
<th>Estimate of number of hours a year</th>
<th>I did not write during this time period</th>
<th>Total for Age period</th>
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Lifetime Estimate:
Appendix C

Part 2: Interpersonal Reactivity Index (IRI)

Instructions

The following statements inquire about your thoughts and feelings in a variety of situations. For each item, indicate how well it describes you on a scale from 0 (does not describe me well) to 4 (describes me very well). When you have decided on your answer, circle the number on the answer sheet next to the item number. READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can.

Sample Items

0 (Does not describe me well) – 1 – 2 – 3 – 4 (Describes me very well)

1. I daydream and fantasize, with some regularity, about things that might happen to me.

   0 1 2 3 4

2. I often have tender, concerned feelings for people less fortunate than me.

   0 1 2 3 4

3. I sometimes find it difficult to see things from the “other guy’s” point of view.

   0 1 2 3 4

4. Sometimes I don’t feel very sorry for other people when they are having problems.

   0 1 2 3 4
Appendix D

Part 2: Reading the Mind in the Eyes Test (RME)

Projected on the screen one at a time, you will see a picture of someone’s eyes. For each set of eyes, choose and circle which word best describes what the person in the picture is thinking or feeling. You may feel that more than one word is applicable but please choose just one word, the word that you consider to be most suitable. Before making your choice, make sure that you have read all four words. You should try to do the task as quickly as possible but you will not be timed. If you really don’t know what a word means you can look it up. The full list of vocabulary words is provided on the next several pages, followed by the response sheet.

Sample vocabulary descriptions

ACCUSING: blaming
The policeman was accusing the man of stealing a wallet.

AFFECTIONATE: showing fondness towards someone
Most mothers are affectionate to their babies by giving them lots of kisses and cuddles.

AGHAST: horrified, astonished, alarmed
Jane was aghast when she discovered her house had been burgled.

Sample Question

<table>
<thead>
<tr>
<th>jealous</th>
<th>panicked</th>
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<tbody>
<tr>
<td>arrogant</td>
<td>hateful</td>
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Appendix E

Part 2: The Interpersonal Perception Task (IPT-15)

Instructions

The videotape you are about to see contains 15 brief scenes and lasts about 20 minutes. There is one question on this answer sheet for each of the 15 scenes on the videotape. Before each scene, you should read the corresponding multiple choice answer options on this sheet. Please try to answer every question, even if you feel you are merely guessing.

Sample Items Corresponding to the Five Question Types:

1. Status: in which scene is the woman talking to her boss?
2. Intimacy: who is the woman talking to on the telephone?
3. Kinship: which man is the father of the two little boys?
4. Competition: who won the racquetball game?
5. Deception: which is the lie and which is the truth?
Appendix F

Part 2: The Levels of Embedded Mental States Task (LEMS)

Instructions

For this task, you will be asked to read TWO short stories. First, you will read each story, and then you will be asked to answer some true or false questions about the story. You will NOT be able to refer back to the original story while answering the questions. Because of this, it is very important that you read each story thoroughly and pay attention to the details in it. We ask that you please read each story TWICE before moving ahead to the questions. If you are unsure of an answer to a question, please just take your best guess or go with your gut instinct. Please answer all questions. Please do not go back and change your answers once you have already answered a question.

Story Excerpt

Sam wanted to find a Registry Office so he could buy a Parking Permit for his car. He was already late buying one, as his permit had run out the week before. Because traffic wardens often checked the street where he lived, he was worried about being caught without a Parking Permit and getting a ticket. Sam had recently moved to the area and was the newest employee at his office. He asked his co-worker Pete if he could tell him where to get one. Pete told him that he thought there was a Registry Office on Elm Street. When Sam got to Elm Street, the Registry Office was closed. A notice on the door said that it had moved to a new location on Bold Street. So Sam went to Bold Street. But by the time he got there, the Registry Office had already closed. Sam wondered if Pete, who was the office prankster, had sent him on a wild goose chase on purpose…

Sample Items

Level Five Test Question: Jane understood that Sam thought Jane knew whether Pete intended for Sam to believe Pete was being honest.

Level Five Control Question: Sam talked to Pete before going to Elm Street to get a Parking Permit for his car and talked to Jane before going to Bold Street.
Appendix G

Part 2: Role Category Questionnaire (RCQ)

Instructions

Our interest in this questionnaire is to learn how people describe others whom they know. Our concern here is with the habits, mannerisms—in general, with the personal characteristics, rather than the physical traits—which characterize a number of different people. In order to make sure that you are describing real people, we have set down a list of two different categories of people. In the blank space beside each category below, please write the initials, nicknames, or some other identifying symbol for a person of your acquaintance who fits into that category. Be sure to use a different person for each category.

Spend a few moments looking over this list, mentally comparing and contrasting the people you have in mind for each category. Think of their habits, their beliefs, their mannerisms, their relations to others, any characteristics they have which you might use to describe them to other people. If you have any questions about the kinds of characteristics we are interested in, please ask them.

Participants were timed for one minute to mentally compare and contrast the two people.

The following instructions were given twice—once for each of the two people selected.

Now describe this person as fully as you can. Write down as many defining characteristics as you can. Do not simply put down those characteristics that distinguish him/her from the other person, but include any characteristics that he/she shares with others as well as characteristics that are unique to him/her. Pay particular attention to his/her habits, beliefs, ways of treating others, mannerisms, and similar attributes. Remember, describe him/her as completely as you can, so that a stranger might be able to determine the kind of person he/she is from your description. Use the back of this page if necessary. Please spend only about five (5) minutes describing him/her.

This person is…
Appendix H

Part 2: Author Recognition Test (ART)

Instructions

Below you will see a list of names. Some of the people on the list are writers of books and some are not. You are to read the names and put a check mark next to the names of those individuals who you know to be writers. Do not guess, but only check those who you know to be writers. Remember, some of the names are people who are not writers, so guessing can easily be detected. Note: Genre does not matter.

Sample Authors

<table>
<thead>
<tr>
<th>Diane Ackerman</th>
<th>Geraldine Dawson</th>
<th>Norman Mailer</th>
</tr>
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<tbody>
<tr>
<td>Amir D. Aczel</td>
<td>W Patrick</td>
<td>Franklin Manis</td>
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Appendix I

Part 2: Short Story Writing Task Instructions and Prompts

Please select one of the following three story starters and use it to draft a short story that is approximately 1-2 pages in length. Please draft a *complete* short story or scene. That means that a reader can read the entire story or scene and not need any other information. It should have a defined beginning and end. Please write a completely new story. If you have written any stories previously, please do not use any of your pre-existing characters or pieces from other work you may have composed. Please do not ask others for help with this story; it should be entirely your work. We understand that some people, especially those who have never written before, may find this task very difficult. Please try to do a good job with your story, but do not get too hung up on making your story perfect to the point where you get stuck and cannot write anything. Your story will be read by research assistants, but your name will not be attached to the story (so no one will know who wrote what). Many study participants will be novice writers who have never written before. We are looking at overall patterns in how different people write so do not get too fixated on how your own story stacks up. Just do your best! Please bring a copy of your story with you to your testing session or email a copy to (email address) before your testing session.

1. Write a story that is set in a church, with the nearby roads closed due to bad weather.

2. Write a story that includes the following two characters: a man about to get married and a woman with a severe allergy.

3. Write a story about a family with one member who adamantly believes they are psychic.

If you have any questions about the task, please feel free to email the primary researcher at (email address).