



The role of fiction characteristics, empathy, and English proficiency in Theory of Mind

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Introduction



Literary Genres and Subgenres			
Drama	Fiction	Nonfiction	Poetry
a play for theater, radio, or film	a story that did not actually happen in real life	writing that is real and factual, or that actually happened	writing using language and sounds in special ways to express ideas
comedy	fantasy	autobiography	lyric
tragedy	folklore	narrative	dramatic
	historical	periodicals	
	mystery	reference	
	realistic fiction		
	romance		
	science fiction		
	thriller		

Reading fiction has been known to show improved Theory-of-Mind (ToM) (Kidd & Castano, 2013).

Results have been mixed in that some has shown similar success (Dodell-Feder & Tamir, 2018), but not others (Panero et al., 2017, Wimmer et al., 2021). Empathy traits are known to positively correlate to ToM and reading fiction (Mumper & Gerrig, 2017). Yet, there are concerns with the replicability of these findings ranging from the ToM task to other characteristics e.g. fiction markers and language proficiency.

Aims

For this study, we had two objectives:

1. ToM task – RMET has been used in most studies, but RMET is more accurately used to measure emotion recognition. We examined the effect of reading fiction in another ToM task, Social Stories Questionnaire (SSQ), which captured both blatant and subtle social transgressions.
2. To extend the findings in relation to empathy traits, and to examine the links between SSQ accuracy and empathy, and other characteristics e.g. fiction markers, reading habits, age, and language proficiency.

METHOD

Participants:

We recruited 248 adults (79.4% females, $M_{age} = 23.58$, $SD = 7.29$, 18 – 65 years).

English proficiency: 123 participants identified English as first language, 65 identified English as second language, 60 prefer not to say.

Reading habits: 127 preferred reading fiction (51.2%) and 121 preferred non-fiction (48.8%).

Participants read 3.03 hours of fiction, 2.28 hours of non-fiction weekly, and a total of 6.65 fiction and 4.26 non-fiction books per year.

Procedure:

All participants completed the demographics, reading habits before assigned to read a fiction story. After reading that story, they completed the SSQ and empathy scales.

Materials:

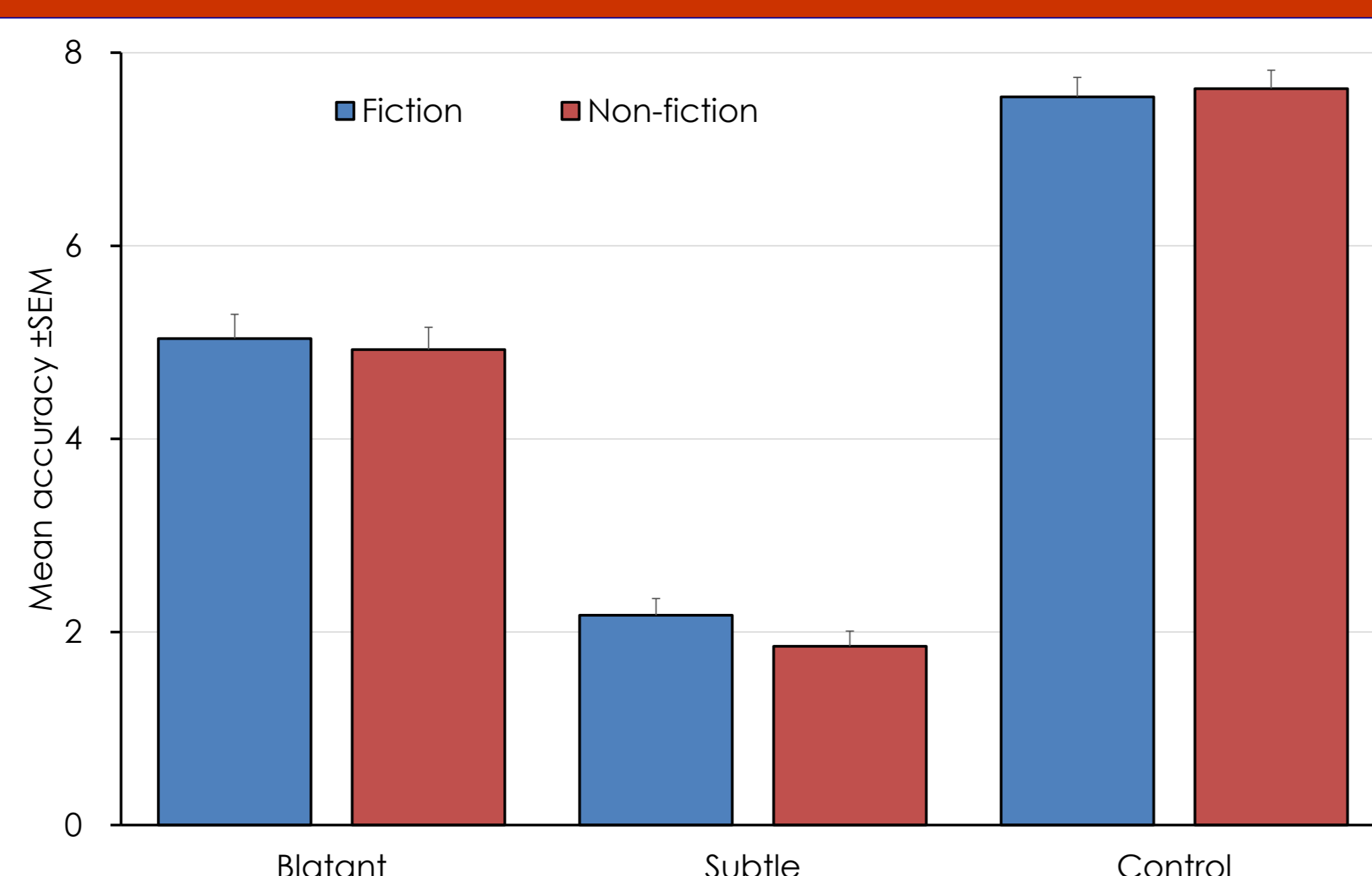
SSQ. SSQ has 10 short stories with one blatant and one subtle faux pas in each. In total, there were 20 faux pas sections and 10 control sections. Higher scores represented accuracy for each faux pas type.

Empathy. There are four subscales; perspective taking (PT), fantasy (FS), personal distress (PD), empathic concern (EC). Higher scores represented higher trait respectively.

RESULTS

Fig 1. SSQ accuracy.

No significant difference in blatant, subtle, and control between those who prefer fiction and non-fiction, all $ps > .17$.



RESULTS

Links between SSQ, empathy subscales, reading habits, demographics

1. Preference for fiction ($n = 127$) and non-fiction ($n = 121$)

(a) For those who preferred fiction, SSQ blatant was positively correlated to hours reading non-fiction, both $ps < .004$.

(b) For those who preferred non-fiction, SSQ blatant was negatively correlated to hours reading fiction, $p < .001$. SSQ subtle was positively correlated to higher FS and PD, both $ps < .002$.

Regression: SSQ blatant or subtle was the dependent variable. Predictors were the four empathy subscales (model 1), reading habits (model 2), and age and gender (model 3).

(a) For those who preferred fiction, Model 3 was significant, $F(10, 89) = 2.00$, $p = .042$. Younger age was the only significant predictor to SSQ blatant accuracy, $p = .017$.

(b) For those who preferred non-fiction, Model 3 was best fit, $F(10, 65) = 2.67$, $p = .008$. Only those with higher PD had higher SSQ subtle accuracy, $p = .04$.

2. English as first language ($n = 116$) and English as second language ($n = 60$)
For those with English as second language, Model 3 was best fit, $F(10, 49) = 2.84$, $p = .007$. Higher EC ($p < .001$) and number of fiction books read were significant predictors to higher SSQ blatant accuracy, $p = .01$.

Effects of fiction markers (timeline, diction) on SSQ ($n = 108$)

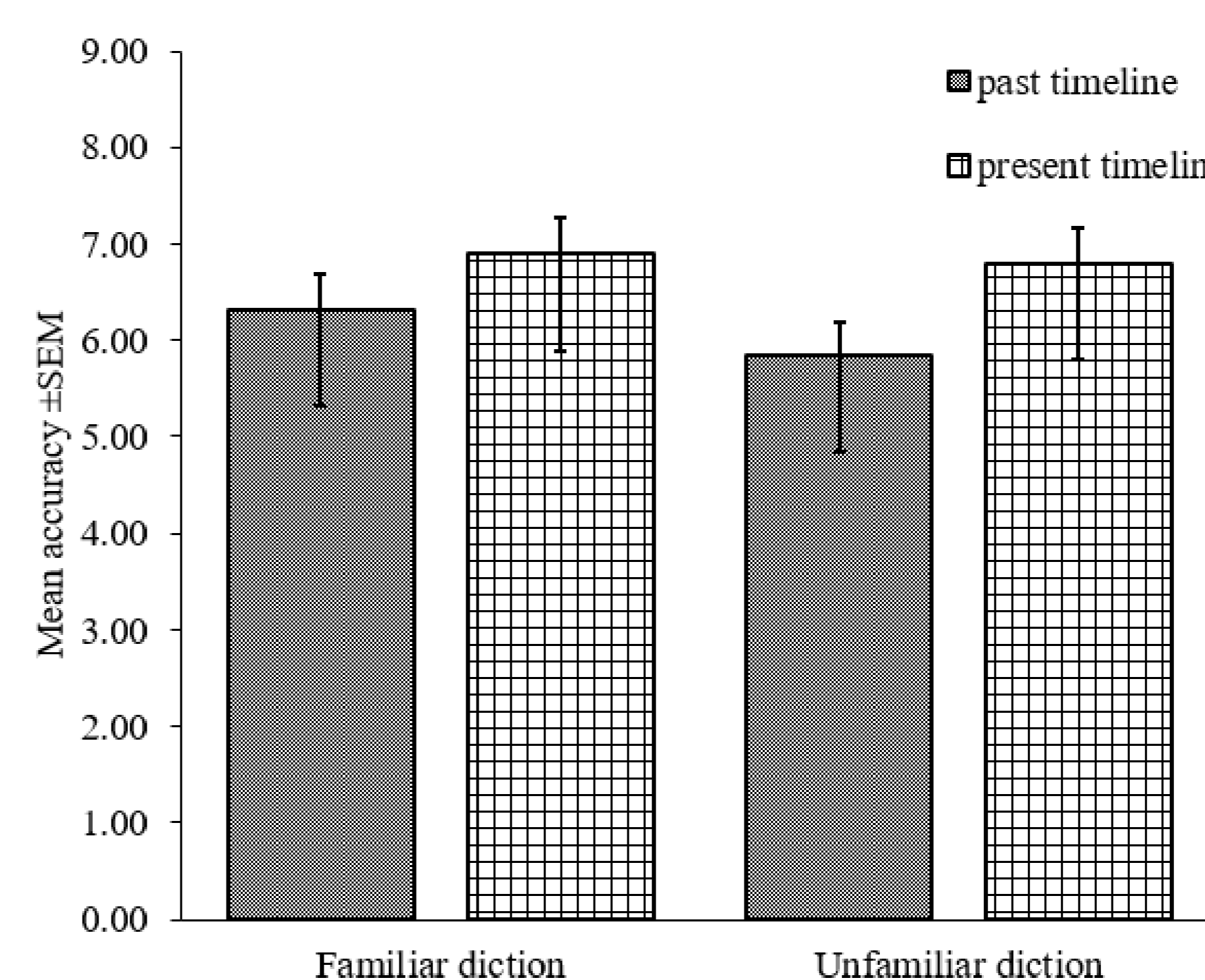


Fig 2. SSQ blatant

Those who read with a present timeline had higher SSQ blatant accuracy compared to those who read in the past timeline, $F(1, 104) = 4.393$, $p = .039$. There was no significant main effect of diction, $p = .44$.

DISCUSSION

- No support for effects of reading fiction on ToM (SSQ blatant or subtle). The reading habits in our participants are quite similar for both fiction and non-fiction materials respectively, suggesting that our participants are active readers, which may have contributed to similar SSQ accuracy.
- Our results are partially concordant with Mumper & Gerrig (2017) (EC was similar but not PD). Our results showed both a higher EC to SSQ blatant accuracy and higher PD to SSQ subtle. Both EC and PD are categorized as affective empathy that helps to mentalize social transgressions scenarios.
- Reading more fiction books is a significant predictor in identifying faux pas in ToM in non-native English speakers, providing some support that reading fictional worlds is useful to train ToM.
- Present timeline as a fiction marker is related to higher SSQ blatant accuracy, suggesting that timeline familiarity may be helpful to understand social transgressions.

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