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Not All Fiction is the Same: Literary and Genre Fiction Reading Associations with Expository and Narrative Text Comprehension

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Abstract
While there is plenty of empirical evidence supporting the link between fiction print exposure and reading comprehension, few studies have focused on the potential differences between reading literary and popular (or genre) fiction. This study is the first the directly compare the associations between literary and genre fiction exposure, narrative and expository text comprehension in adult readers. Two hundred and three volunteers (18–30 years old) were administered the following instruments through an online survey: sociodemographic and reading background questionnaires, an author recognition test including literary and genre fiction writers, narrative and expository text comprehension tests. A path analysis model showed that only literary fiction exposure explained reading comprehension of expository and narrative texts significantly. This effect was more significant for expository texts. In addition, literary and genre author recognition was associated with reading habits, but genre fiction scores were a better predictor of recent reading frequency. Print exposure effects can be interpreted in terms of stimulation and practice-related enhancement of language comprehension processes. Literary fiction exposure effects in particular might be indicating higher processing demands linked to linguistic and world knowledge, and/or a more active and engaged reading attitude from the subjects. Our results could also be explained by bidirectional or reciprocal causation

"Aesthetic value rises out of memory.
And so (as Nietzsche saw) out of pain.
The pain of surrendering easier pleasures in favor of much more difficult ones … successful literary works are achieved anxieties.
Not releases from anxieties.".
Harold Bloom.
The Western Canon: the Books and School of the Ages (1994).
"One literature differs from another.
Either before or after it.
Not so much because of the text as for the manner in which it is read.".
Jorge Luis Borges.
Other Inquisitions (1952).

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between print exposure and comprehension. These findings highlight the importance of considering text features (particularly, literary quality) while examining the link between print exposure and reading comprehension.

Keywords Reading comprehension · Literary fiction · Genre fiction · Narrative text · Expository text

Introduction

Expository and Narrative Text Comprehension

Reading comprehension is a crucial skill for academic achievement through all levels of the education system (Clinton-Lisell et al., 2022; Meneghetti, et al., 2006; Royer et al., 1990). Successful text comprehension is accomplished through the orchestration of several high- and low-level linguistic processes, as well as cognitive and meta-cognitive skills. According to classic models, such as the Simple View of Reading (Duke & Cartwright, 2021; Hoover & Gough, 1990; Hoover & Tunmer, 2020), comprehension involves the coordinate interaction of two components: word recognition, which encompasses the detection and decoding of orthographic information, and language comprehension, which refers to lexical-semantic access and integration with previous knowledge. In addition, text comprehension requires allocation of cognitive resources, such as executive functions (Butterfuss and Kendeou, 2020; Follmer, 2018) and metacognitive skills (such as reading strategies) (Duke & Cartwright, 2021).

One important feature for comprehension is the text genre. Narrative texts are stories written for entertainment purposes (Weaver & Kintsch, 1991), that possess a familiar structure, most commonly progressing through a chronological order of goal-centered events (Berman & Nir-Sagiv, 2007). On the other hand, expository texts are designed for information and education (Graesser et al., 1991; Medina & Pilonieta, 2006) and consist of descriptions, definitions, and ideas supported by an argumentative structure (Boscolo, 1990; Mosenthal, 1985). There are theoretical reasons to expect differences in processing costs of expository and narrative texts (for a review, see Mar et al., 2021). According to the construction-integration model (Kintsch, 1988), building the narrative texts' situation model requires understanding of the characters, actions, events, and context of the story, while in expository text requires integrating the propositional base with prior knowledge on the topic (Best et al., 2008). In this way, while narrative texts are generally more familiar (Gardner, 2004) and rely on more common background knowledge (Graesser et al., 1991), expository texts imply higher cognitive demands because of their greater structural complexity, information density, and specific prior knowledge requirements (Best et al., 2008). As a matter of fact, empirical evidence indicates better comprehension performance for narrative texts, both in children and adults (for a meta-analysis, see Mar et al., 2021),

as well as differences in the linguistic and cognitive skills involved in processing each text type (Best et al., 2008; Clinton et al., 2020; Diakidoy et al., 2005; Eason et al., 2012; Santos et al., 2017).

Fiction Print Exposure Effects on Reading Comprehension

There is extensive evidence supporting a link between reading experience (the amount of time spent reading/number of books read and the diversity of texts) and literacy outcomes (Breadmore et al., 2019; Mol & Bus, 2011). For instance, a large-scale study showed that the time spent reading predicted vocabulary and mathematic skill gains between years 10 to 16 (Sullivan & Brown, 2015a), while these associations were still significant for the same subjects at age 42 (Sullivan & Brown, 2015b). Furthermore, exposure to books at six to 7 years old has been related to vocabulary and listening comprehension skills development, which in turn explained reading performance at age nine (Senechal & Lefevre, 2002).

One the most widely accepted and validated measures of reading experience is the author recognition test (ART) (Stanovich, 2000; Stanovich & West, 1989). It consists on a checklist in which representative fiction (or non-fiction) authors function as a probe into the subject's reading environment. The rationale for the test is that frequent readers will know more about literature, thus being able to recognize more items (Allen et al., 1992). Moreover, performance is thought to reflect attitude toward and familiarity with the domain of literature (Allen et al., 1992; Cunningham et al., 1994). Early research demonstrated that this measure was closely associated with diary activity logs of time spent reading (Allen et al., 1992), and it has been shown to predict reading comprehension better than self-report reading habits measures (Acheson et al., 2008; Tabullo et al., 2021). On their seminal meta-analytic review of print exposure studies, Mol and Bus (2011) found moderate to strong correlations for print exposure and reading comprehension, oral language skills, word reading, and spelling across development, an effect that increased with age for language comprehension measures. Their results were interpreted as indicative of reciprocal causation, while good comprehenders tend to read more, print exposure increases contribute to improve spelling, and reading comprehension. This upward spiral of causality had been previously described as the "Mathew effect" (Stanovich, 1986).

Several mechanisms have been proposed to explain print exposure contributions to text comprehension. First of all, print exposure provides opportunities for vocabulary growth (Mol & Bus, 2011; Stanovich & Cunningham, 1992) which is a pivotal skill form reading comprehension (Duke & Cartwright, 2021). In the same line, the lexical quality hypothesis (Perfetti, 2007) claims that reading practice gives rise to high-quality linguistic representations, strengthening the associations between lower level skills of orthographic decoding, and higher level knowledge of word meanings, which leads to enhanced comprehension processes. According to verbal efficiency theory (Perfetti, 1985), higher level reading processes integral for comprehension, such as integrating propositions, using cognitive and meta-cognitive strategies, and activating background schemas, can be automatized through extended reading

practice. It has also been suggested that reading experiences increases the automaticity of lower reading-related processes, such as word decoding or the effective application of reading strategies, freeing resources for higher level comprehension processes (Perfetti et al., 2005). Reading experience has also been argued to promote anticipatory processes linked to language comprehension (Mani & Huetig, 2014), which are indeed more efficient in higher literacy subjects (Ng et al., 2018) or better text comprehenders (Landi & Perfetti, 2007; Tabullo et al., 2020). Interestingly, specific neuroplasticity print exposure effects have been observed in cortical structures associated with language comprehension, such as the left inferior frontal or the supramarginal gyri (Goldman & Mani, 2013; Johns et al., 2018).

Regarding text type effects, it has been proposed that narratives are more likely than expository texts to stimulate imagination and be personally relevant or emotionally engaging, thus providing more opportunities for language stimulation (Gardner, 2004; Mar, 2004; Oatley, 1999; cited in Mol & Bus, 2011). Quite in fact, narrative fiction exposure has been shown to be a more robust predictor of verbal skills (Mar & Rain, 2015) and reading comprehension (Acheson et al., 2008; Mar & Rain, 2015) than non-fiction. However, the question remains whether this advantage is comparable among different fiction genres.

Literary vs. Genre (or Popular) Fiction

An appealing (but controversial, see for instance: Gavaler & Johnson, 2017) taxonomy to analyze narrative texts is the distinction between *literary* and *genre* (or popular) *fiction* (Kidd & Castano, 2013, 2017). Genre (or popular) fiction (*e.g. romance, fantasy, science fiction, mistery, horror*) is defined by its focus on specific topics and reliance on stylistic conventions, such as formulaic plots and stereotypical characters. On the contrary, literary fiction is characterized by its aim for aesthetic quality, character development, and its tendency to defy conventions and subvert the readers' expectations (Kidd & Castano, 2017; Miall & Kuiken, 1994). Literary fiction has been proposed to be more cognitive engaging and demanding, since it requires its readers to suppress the intuitive application of psychological scripts and schemas (Herman, 1997). In addition, it places higher demands of episodic, semantic, and procedural knowledge (general knowledge as well as knowledge concerning vocabulary, sentence structure and narrative techniques) from the readers, as well as more active inferential processing, in order to build situational models of the text (Miesen, 2004). This distinction also applies to the readers' motivation and appreciation of the texts: it has been shown that genre fiction readers primarily seek entertainment and escape, while literary fiction reading is motivated by understanding and engagement instead (Petite, 2014). Moreover, literary fiction readers exhibit greater appreciation of figurative language, multiplicity of plot lines, meanings and interpretations, perspective shifting, and character development (Miesen, 2004). Furthermore, it has been proposed that genre fiction reading triggers a "less effortful and comprehending mode of reading" (Gavaler & Johnson, 2017), making it less engaging for comprehension processes. Finally, literary and genre fiction exposure have been associated with differences in cognitive functioning, since literary readers

show higher theory of mind scores (Fong et al., 2013; Kidd & Castano, 2013, 2017), lower psychological essentialism (Castano et al., 2021), and higher gender role egalitarianism and reduced gender stereotyping (Fong et al., 2015). Nevertheless, despite the extensive literature examining the link between print exposure and text comprehension, no study has yet examined potential differences in literary and genre exposure associations with reading outcomes.

Current Study

The current study set out to examine the relationship between literary and genre print exposure and the comprehension of expository and narrative texts in adult readers. We used a locally designed and validated measure of fiction print exposure (Tabullo et al., 2018, 2021) as our primary predictor measure. In addition, we considered relevant aspects of their current and background reading experience, such as how early in life they began reading for recreational purposes, estimated number of books at home, and the amount of books read within the last 6 months, as well as distal factors such as education level (for a review, see Breadmore et al., 2019). We specifically examined the direct contribution of these reading-related factors to print exposure, and their direct and indirect effects over comprehension. We expected to find (1) differences in the association of literary and genre fiction with narrative and expository text comprehension, (2) significant mediation of print exposure over reading background, habits, and distal factors effects on reading comprehension.

Methods

Participants

Two hundred and three participants (84.5% described their gender as "female," and the rest as "male"; age range: 18–30 years, *M*: 22.2, S.D.: 4.5 years) completed our cross-sectional study. Education levels were distributed as following: ongoing (3%) or complete (3.4%) primary school; ongoing (26.6%) or complete secondary school (26.1%); ongoing (17.7%) or complete university studies (23.2%).

Instruments

Reading comprehension test (Sampedro et al., 2011). Reading comprehension of expository and texts was assessed by an online version of a pencil and paper assessment tool (Sampedro et al., 2011), designed for and validated in Argentine adult population. This test is based on the multi-componential model of reading (De Beni, 2003; Abusamra et al., 2015). It requires reading two texts *("El surgimiento del Maratón"—"The rise of Marathon,"* adapted from a Wikipedia article; and the short story *"Sala de espera"*—"*The waiting room,"* by Enrique Anderson Imbert.) and answering multiple choice questions that assess different aspects of comprehension, from basic text scheme and lexical semantics to

inference making, text hierarchy and metacognitive skills. Text difficulty was estimated as "normal" for both texts, according to the INFLESZ scale (Barrio-Cantalejo et al., 2008). In this online version, the test was administered as an online survey through Google forms platform. The texts were presented in a linear, continuous, and fixed format, and remained available while the subjects answered the questions. The internal consistency of the expository (Cronbach's $\alpha = 0.702$, McDonald's $\omega = 0.724$) and narrative (Cronbach's $\alpha = 0.712$, McDonald's $\omega = 0.732$) texts was found to be acceptable.

Author Recognition Test (ART, (Cunningham et al., 1994) ART is an objective (but indirect) measure of lifelong print exposure. It consists of a list of authors, half of them actual fiction (or non-fiction) writer names, and half of them foils, which is given to the subjects with the instruction of marking only those names they recognize as writers (regardless of whether they read their work). A local version of the test (Tabullo et al., 2018, 2021) based on the works of Mar (2006, 2009) and Kidd and Castano (2013, 2017) was applied. The current version included ten literary and ten genre fiction author names, and 20 foils. Literary fiction names included Nobel prize winners or nominees (i.e., *Haruki Murakami, José Saramago*) and other laurate international (i.e., *Paul Auster, Vladimir Nabokov*) and national (i.e., *Adolfo Bioy Casares*) writers. Genre fiction names included contemporary best-selling writers of fantasy (i.e., *George R.R. Martin*, *J.K. Rowling*), adventure (i.e., *Wilbur Smith*), science fiction (*Michael Crichton, Phillip K. Dick*), suspense/mistery/thriller (i.e., *Dan Brown, John Katzenbach*), and romance (*Florencia Bonelli*). Two nationwide known authors (*Pablo de Santis*, a thriller author and *Florencia Bonelli*, a romance writer, were included in this scale) (see Appendix for the complete list). Print exposure was operationalized as the number of names correctly identified for each domain. The test showed good internal consistency for literary fiction (Cronbach's $\alpha = 0.852$, McDonald's $\omega = 0.852$) and adequate consistency for genre fiction (Cronbach's $\alpha = 0.729$, McDonald's $\omega = 0.730$). Both ART scores showed significant correlations with reading habit measures (see "Results" section, indicating that they were representative of the participants' reading experience.

Reading Habits Background reading experience and current reading habits were examined through the following variables: *leisure reading start* (question: *"when did you begin to enjoy leisure reading?"*; possible answers: (1) pre-school shared book reading, (2) primary school, (3) secondary school, (4) after secondary school, (5) does not read for pleasure); *number of books at home* (question: *"how many books are there in your personal library (including digital format)?*, possible answers: (1) less than 10, (2) 10–50, (3) 50–100, (4) more than 100); recent reading among (question: *how many books did you finish within the last six months for recreational—non-study or work related—purposes?"*). Our selection of reading habit variables was based on previous literature (Acheson et al., 2008; Breadmore et al., 2019; Tabullo et al., 2018, 2021).

Procedure

Data collection was carried out virtually. Students were invited to participate through university mailing lists and social networks. All participants were informed that their participation would be voluntary, anonymous, and that they could withdraw from the experiment at any time, without any negative consequences. Contact information of the research group was also provided in order to clarify doubts that might arise in relation to the care of rights in research contexts. Those who chose to take part followed the survey's link and expressed their consent with a click before moving on to the questionnaires. All questionnaires and tests were administered through a Google forms survey.

This study was performed in accordance with the ethical principles for research with human subjects recommended by the Declaration of Helsinki (World Medical Association, 2013), as well as the ethical guidelines for research with human participants of the American Psychological Association (2017). In addition, this research was conducted following the ethical regulation 5344/99 by the National Scientific and Technical Research Council of Argentina (CONICET) and was approved and supervised by CONICET's committee.

Statistical Analyses

Statistical analysis was carried out in SPSS v25 and JAMOVI software. Associations between study variables were examined by Pearson correlation coefficients. Separate hierarchical linear regression models were carried out on narrative and expository text comprehension scores. The first step of the models included sociodemographics (gender, age, education level). The second step included literary and genre ART scores. The third step included the rest of the reading experience variables (leisure reading start, books at home, books recently read). Casewise diagnostics were applied to deal with outliers (standardized residuals above 3 or below − 3) (Cousineau & Cartier, 2010). Since no outliers were detected, no data was removed from the analysis. Assumptions of normality, homoscedasticity, and linearity were verified by inspection of: normal quantile plots of residuals, standardized residuals scatter plots, and observed versus predicted values, respectively. Independence of error assumption was met for all models ($1.80 < \text{Durbin-Watson} < 1.90$). Variance inflation factors indicated that multicollinearity was not a concern in any of the models ($1.61 < \text{VIFs} < 3.19$). Adjusted R-squared values and standardized coefficients (with their corresponding confidence intervals) are reported.

In order to test all direct effects simultaneously and to identify potential indirect effects, we ran a path analysis using the *PATHj* module (a JAMOVI implementation of the R *lavaan* package) (Gallucci, 2021). The model included gender, age, education level, leisure reading start, books at home, and books recently read as exogenous variables, ART, and comprehension scores as endogenous variables (see Fig. 1). Since ART scores are the strongest predictors of comprehension in the literature (Acheson et al., 2008; Mol & Bus, 2011), they were chosen as mediator

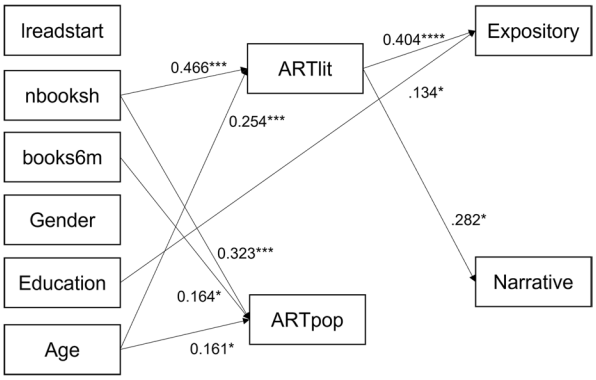

Fig. 1 Path analysis model of reading and expository text comprehension. Notes. Education, education level; expository: expository text comprehension (% correct responses); narrative, narrative text comprehension (% correct responses); ARTlit, literary fiction author recognition test scores; ARTgen, genre fiction author recognition test scores; lreadstart, leisure reading start; nbookh, number of books at home; books6m, books recently read (within the last 6 months)

variables. Direct and indirect effects are reported as standardized coefficients. Model fit was determined by the following indexes: chi-square, comparative index (CFI), Tucker-Lewis index (TLI), mean square error of approximation (RMSEA), and root mean square residual (SRMR) (Xia & Yang, 2019). Given the continuous nature of outcome variables, the maximum likelihood method was applied for parameter estimation (Shi et al., 2019). A bootstrapping procedure with 10,000 bootstrap samples was used to examine the significance of direct, indirect (mediated effects), and total effects and 95% bias-corrected confidence intervals for each variable in the model.

Results

Descriptive Statistics

A complete list of descriptive statistics for the study variables can be found on Table 1.

Participants' comprehension performance was better in the expository ($M = 83\%$, SD = 15.3%) than the narrative text ($M = 80.2\%$, SD = 17%) (T(202) = 2.52, $p = 0.013$, Cohen's $d = 0.177$), although this effect was rather small. Regarding ART scores, a slight advantage was observed in the recognition of genre authors ($M = 41\%$, SD = 26.2%) when compared to literary ones ($M = 38.3\%$, SD = 31.1%) (T (202) = 2.52, $p = 0.045$, Cohen's $d = 0.141$). The proportion of foil errors in the task was low (median = 5%, IQR = 16.3%). With respect to their reading habits, the median of books read in the last 6 months was 3 (IQR = 5), and 58.3% of the participants had fifty books or less on their libraries. In addition, 61.1% of them started reading recreationally in their primary school years, and only 6.9% reported no leisure reading at all (see Table 1 for details).

Table 1 Descriptive statistics of study variables

Variable	Mean	Median	SD	IQR	Minimum	Maximum
Expository	83.03	81.82	15.29	18.18	36.4	100.0
Narrative	80.18	84.62	17.04	23.08	23.1	100.0
ARTlit	38.3	30.00	31.1	50.00	0.0	100.0
ARTpop	41.0	40.00	26.2	40.00	0.0	100.0
lreadstart	2.27	2	1.19	2.00	1	5
nbookh	2.47	2	1.11	2.00	1	4
books6m	5.12	3	7.08	5.00	0	50

Expository expository text comprehension (% correct responses), *Narrative* narrative text comprehension (% correct responses), *ARTlit* literary fiction author recognition test scores (% correct responses), *ARTpop* popular fiction author recognition test scores (% correct responses), *lreadstart* leisure reading start, *nbookh* number of books at home, *books6m* books recently read (within the last 6 months)

Associations Between Reading Habits, Expository, and Narrative Text Comprehension

The Pearson correlation matrix of the study variables can be found on Table 2. Both ART scores were highly correlated ($r = 0.798$, $p < 0.001$), and significantly associated with reading habit variables ($0.271 < r < 0.354$, $p < 0.001$), including leisure reading start ($r < -0.272$, $p < 0.001$). Expository and narrative text comprehension were associated with both ART scores ($0.242 < r < 0.419$, $p < 0.001$). In addition, a partial correlation analysis showed that (after controlling for ART-gen) ART-lit was significantly associated with leisure reading start ($r = -0.141$), number of books at home ($r = 0.295$), and comprehension of both texts ($r > 0.257$) (p's < 0.046), while ART-gen was significantly associated with the number of books read recently (after controlling for ART-lit).

Regression Analysis of Expository and Narrative Text Comprehension

Despite the relatively low proportion of foils selected as authors (median = 5%), we calculated a total ART score ((ART-lit + ART-gen)—ART-foils) and ran a regression model to ensure that comprehension was predicted by recognition accuracy instead of mere acquiescence. Total ART scores increased explained variance for expository ($\Delta R^2 = 0.0759$, $p < 0.001$; adj. $R^2 = 0.147$, $F(4,166) = 8.36$, $p < 0.001$) and narrative ($\Delta R^2 = 0.083$, $p < 0.001$; adj. $R^2 = 0.141$, $F(4,166) = 7.97$, $p < 0.001$) text comprehension, and was a significant predictor of both scores (β's > 0.333, p's < 0.001). In addition, we ran two additional models including separate ART scores for literary and genre fiction. Regarding expository text comprehension, the addition of ART scores significantly increased explained variance ($\Delta R^2 = 0.070$, $p < 0.001$; adj. $R^2 = 0.139$, $F(5,191) = 7.31$, $p < 0.001$). Performance increased with literary (but not genre) ART scores ($\beta = 0.404$, $p < 0.001$), while the effect of education level did not reach significance ($p = 0.06$). With respect to narrative texts, the second

Table 2 Pearson's correlations coefficients matrix

	1		2		3		4		5		6		7		8
1. Age	—														
2. ARTlit	0.541	***	—												
3. ARTpop	0.406	***	0.789	***	—										
4. Narrative	0.343	***	0.419	***	0.343	***	—								
5. Expository	0.244	***	0.358	***	0.242	***	0.508	***	—						
6. lreadstart	− 0.146	*	− 0.298	***	-0.272	***	− 0.149	*	-0.117		—				
7. nbookh	0.414	***	0.326	***	0.271	***	0.356	***	0.217	**	− 0.160	*	—		
8. books6m	0.079		0.344	***	0.354	***	0.232	***	0.171	*	− 0.283	***	0.100		—

Expository expository text comprehension (% correct responses), *Narrative* narrative text comprehension (% correct responses), *ARTlit* literary fiction author recognition test scores, *ARTpop* genre fiction author recognition test scores, *lreadstart* leisure reading start, *nbookh* number of books at home, *books6m* books recently read (within the last 6 months)

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

model also increased explained variance ($\Delta R^2 = 0.065$, $p < 0.001$; adj. $R^2 = 0.162$, $F(5,191) = 8.56$, $p < 0.001$). Once again, performance increased with ART-lit scores ($\beta = 0.282$, $p < 0.014$), but also with participants' age ($\beta = 0.156$, $p = 0.047$). The addition of other reading habits variables did not improve the model's fit in any case ($\Delta R^2 < 0.01$, p's > 0.387) (see Table 3). Finally, the inclusion of the number of foils selected did not contribute to explained variance either ($\Delta R^2 < 0.015$, p's > 0.08).

Comparison of Reading Comprehension Scores by Group

To directly compare reading comprehension performances between subjects with differential exposure to literary and genre fiction, we categorized our participants in four groups according to their ART scores: (1) knows more literary than genre author names ("*more-literary*"), (2) knows more genre than literary author names ("*more-genre*"), (3) knows the same amount of literary and genre author names ("*equal*"), (4) recognizes no author names at all ("*no-name*") (see Table 4). We conducted a MANOVA on expository and narrative comprehension scores, including group, age, and gender as factors. We found significant main effects of group (Wilks $\lambda = 0.894$, $F(6,382) = 3.666$, $p = 0.002$) and age (Wilks $\lambda = 0.922$, $F(2, 190) = 8.053$, $p < 0.001$). Follow-up ANCOVAs indicated significant differences between groups after controlling the effects of age for expository ($F(4,198) = 6.07$, $p = 0.013$, $\eta^2_p = 0.053$), but not for narrative

Table 3 Regression analyses coefficients

							95% Confidence interval	
Outcome	**Predictor**	***β***	**SE**	***t***	***p***	**Stand. *β***	**Lower**	**Upper**
Expository		Model 2						
	Age	0.136	0.273	0.498	0.619	0.0394	−0.11654	0.1953
	Gender:							
	Female	−2.205	2.864	−0.770	0.442	−0.1431	−0.50972	0.2235
	Education	1.102	0.583	1.891	0.060	0.1345	−0.00582	0.2747
	ARTlit	**2.034**	**0.582**	**3.492**	**< 0.001**	**0.4037**	**0.17570**	**0.6317**
	ARTpop	−0.769	0.645	−1.192	0.235	−0.1278	−0.33920	0.0836
Narrative		Model 2						
	Age	**0.596**	**0.298**	**2.0002**	**0.047**	**0.1560**	**0.00216**	**0.310**
	Gender:							
	Female	−0.262	3.127	−0.0838	0.933	−0.0154	−0.37704	0.346
	Education	0.453	0.636	0.7116	0.478	0.0499	−0.08847	0.188
	ARTlit	**1.573**	**0.636**	**2.4742**	**0.014**	**0.2822**	**0.05722**	**0.507**
	ARTpop	0.186	0.705	0.2633	0.793	0.0278	−0.18073	0.236

Expository expository text comprehension (% correct responses), *Narrative* narrative text comprehension (% correct responses), *ARTlit* literary fiction author recognition test scores, *ARTpop* popular fiction author recognition test scores. Significant effects are highlighted in bold

Table 4 Path analysis of expository and narrative scores: coefficents

				95% Confidence Intervals				
Dependent	**Predictor**	**Estimate**	**SE**	**Lower**	**Upper**	***β***	***z***	***p***
Narrative	Age	0.5961	0.3338	−0.07586	1.2720	0.15597	1.7861	0.074
Narrative	**ARTlit**	**1.5731**	**0.6130**	**0.36925**	**2.8235**	**0.28217**	**2.5664**	**0.010**
Narrative	ARTpop	0.1855	0.6339	−0.96926	1.5160	0.02784	0.2926	0.770
Narrative	Education	0.4529	0.5644	−0.61657	1.6008	0.04993	0.8024	0.422
Narrative	Gender1	−0.2621	2.6602	−5.32452	4.8716	-0.00554	-0.0985	0.922
Expository	Age	0.1359	0.2614	−0.39431	0.6647	0.03937	0.5202	0.603
Expository	**ARTlit**	**2.0336**	**0.5631**	**0.95681**	**3.1514**	**0.40372**	**3.6115**	**< 0.001**
Expository	ARTpop	−0.7693	0.6472	−2.08223	0.4371	-0.12779	-1.1886	0.235
Expository	**Education**	**1.1020**	**0.5299**	**0.12229**	**2.1991**	**0.13446**	**2.0797**	**0.038**
Expository	Gender1	−2.2054	2.8113	−7.45096	3.4534	-0.05156	-0.7845	0.433
ARTpop	**books6m**	**0.0920**	**0.0422**	**0.01721**	**0.1853**	**0.16398**	**2.1821**	**0.029**
ARTpop	**nbooksh**	**0.0614**	**0.0167**	**0.02483**	**0.0923**	**0.32281**	**3.6695**	**< 0.001**
ARTpop	lreadstart	−0.0984	0.1118	−0.31293	0.1407	-0.04591	-0.8800	0.379
ARTpop	**Age**	**0.0924**	**0.0465**	**0.00292**	**0.1906**	**0.16102**	**1.9864**	**0.047**
ARTpop	Education	0.1940	0.1035	−0.01921	0.3921	0.14248	1.8738	0.061
ARTpop	Gender1	−0.5480	0.4355	−1.39129	0.2972	−0.07713	−1.2583	0.208
ARTlit	lreadstart	−0.0607	0.1313	−0.31052		−0.02369	−0.4619	0.644
ARTlit	books6m	0.0464	0.0491	−0.05156	0.1405	0.06927	0.9449	0.345
ARTlit	**Age**	**0.1745**	**0.0520**	**0.07542**	**0.2802**	**0.25456**	**3.3578**	**< 0.001**
ARTlit	**nbooksh**	**0.1059**	**0.0187**	**0.06766**	**0.1431**	**0.46576**	**5.6495**	**< 0.001**
ARTlit	Education	0.2009	0.1053	−0.01438	0.3948	0.12350	1.9089	0.056
ARTlit	Gender1	0.0229	0.4614	−0.93619	0.9435	0.00270	0.0497	0.960

Education education level, *Expository* expository text comprehension (% correct responses), *Narrative* narrative text comprehension (% correct responses), *ARTlit* literary fiction author recognition test scores, *ARTpop* genre fiction author recognition test scores, *lreadstart* leisure reading start, *nbookh* number of books at home, *books6m* books recently read (within the last 6 months). Significant effects are highlighted in bold

($F(4,198) = 0.837$, $p = 0.476$, $\eta^2_p = 0.012$) comprehension. Bonferroni-corrected post hoc comparisons indicated that expository comprehension ($M = 78.3\%$, $SD = 17.9\%$) was lower in the more-genre group compared to equal ($p = 0.025$) and more-literary ($p = 0.038$) (equal: $M = 87\%$, $SD = 12.6\%$; more literary: $M = 87.5\%$, $SD = 10.2\%$). While no significant differences were observed for the no-name group ($M = 78.5\%$, $SD = 16.4\%$), it should be noted that its size was considerably smaller ($n = 11$), which may have reduced statistical power. However, their mean comprehension scores were still lower than participants with equal or more literary authors knowledge (see Supplementary Table 6), and more similar to the more-genre group.

Path Analysis Model of Expository and Narrative Text Comprehension

The model fitted our data well (χ^2 (6) = 11.9, p = 0.065; CFI = 0.986; TLI = *0.932*; RMSEA = 0.07, SRMR = 0.030). A direct effect of ART-lit (but not of ART-gen) was observed for expository and narrative text comprehension scores (β's > 0.282, p's < 0.010). Expository text comprehension also increased with education level (β = 0.134, p = 0.038) (see Table 4). In addition, ART-lit scores mediated effects of age (β's > 0.072 p's < 0.050) and number of books at home (β's > 0.131 p's < 0.017), over both comprehension scores, (see Supplementary Table 6). In turn, both ART scores were directly predicted by books at home and age (β's > 0.254 p's < 0.047), while this effect did not reach significance for education (0.056 < p < 0.061). and ART-gen was specifically associated with the number of books read recently (β = 0.163 p = 0.029) (see Table 5).

Discussion

To the best of our knowledge, this study has been the first to examine and compare the contribution of literary and genre fiction exposure to expository and narrative text comprehension. We found that literary (but not genre) fiction reading was a significant direct predictor of comprehension for both types of text and mediated the effects of age and leisure reading start. In turn, print exposure in general increased with age, education level, and the number of books at home, while genre fiction exposure was associated with the number of books recently read. In addition, participants who recognized more genre than literary author names exhibited lower expository comprehension scores than those with equal or greater literary authors knowledge.

These findings are discussed in more detail in the following paragraphs.

Predictors of Print Exposure

A slight advantage in the recognition of genre authors was observed, which is congruent with previous findings on young adult ART scores (Grolig et al., 2020). In the same line, the fact that ART performance improved with age (Grolig et al., 2020), and number of books at home (Wimmer & Ferguson, 2022) is consistent with the literature. Both literary and genre fiction exposure (as indexed by ART) have been found to increase from adolescence to young adulthood (Grolig et al., 2020), and strong correlations have been reported between print exposure, academic achievement (Marschark et al., 2012a; Mol & Bus, 2011), and home literacy environment variables, such as book counting (Wimmer & Ferguson, 2022). These associations suggest that ART scores did reflect the participants' lifelong cumulative fiction reading experience, motivated by their attitude and familiarity with the domain of literature (Allen et al., 1992; Cunningham et al., 1994). It could be argued that ART-genre scores do not necessarily reflect fiction print exposure, but rather a familiarity

Table 5 Path analysis model of expository and narrative text comprehension: indirect effects

					95% Confidence Intervals				
Label	**Description**	**Parameter**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
IE1	age ⇒ ARTpop ⇒ narrative	p14*p3	0.017	0.071	−0.107	0.194	0.004	0.243	0.808
IE2	age ⇒ ARTpop ⇒ expository	p14*p8	−0.071	0.076	−0.311	0.022	−0.021	−0.940	0.347
IE3	**age ⇒ ARTlit ⇒ narrative**	**p19*p2**	**0.275**	**0.134**	**0.084**	**0.660**	**0.072**	**2.051**	**0.040**
IE4	**age ⇒ ARTlit ⇒ expository**	**p19*p7**	**0.355**	**0.146**	**0.125**	**0.729**	**0.103**	**2.423**	**0.015**
IE5	education ⇒ ARTpop ⇒ narrative	p15*p3	0.036	0.143	−0.251	0.366	0.004	0.251	0.802
IE6	Education ⇒ ARTpop ⇒ expository	p15*p8	−0.149	0.155	−0.690	0.031	−0.018	−0.965	0.335
IE7	Education ⇒ ARTlit ⇒ narrative	p21*p2	0.316	0.223	0.015	1.015	0.035	1.420	0.156
IE8	Education ⇒ ARTlit ⇒ expository	p21*p7	0.409	0.244	0.037	1.026	0.050	1.675	0.094
IE9	Gender ⇒ ARTpop ⇒ narrative	p16*p3	−0.102	0.487	−1.511	0.607	−0.002	−0.209	0.835
IE10	Gender ⇒ ARTpop ⇒ expository	p16*p8	0.422	0.562	−0.128	2.334	0.010	0.750	0.453
IE11	Gender ⇒ ARTlit ⇒ narrative	p22*p2	0.036	0.781	−1.647	1.672	0.001	0.046	0.963
IE12	Gender ⇒ ARTlit ⇒ expository	p22*p7	0.047	0.975	−2.131	1.826	0.001	0.048	0.962
IE13	books6m ⇒ ARTpop ⇒ narrative	p11*p3	0.017	0.069	−0.105	0.177	0.005	0.247	0.805
IE14	books6m ⇒ ARTpop ⇒ expository	p11*p8	−0.071	0.075	−0.300	0.026	−0.021	−0.938	0.348
IE15	books6m ⇒ ARTlit ⇒ narrative	p18*p2	0.073	0.088	−0.057	0.296	0.020	0.828	0.408
IE16	books6m ⇒ ARTlit ⇒ expository	p18*p7	0.094	0.110	−0.083	0.359	0.028	0.855	0.392
IE17	nbooksh ⇒ ARTpop ⇒ narrative	p12*p3	0.011	0.043	−0.075	0.092	0.009	0.263	0.792
IE18	nbooksh ⇒ ARTpop ⇒ expository	p12*p8	−0.047	0.040	−0.160	0.020	−0.041	−1.174	0.240
IE19	**nbooksh ⇒ ARTlit ⇒ narrative**	**p20*p2**	**0.167**	**0.075**	**0.051**	**0.345**	**0.131**	**2.233**	**0.026**
IE20	**nbooksh ⇒ ARTlit ⇒ expository**	**p20*p7**	**0.215**	**0.068**	**0.093**	**0.364**	**0.188**	**3.169**	**0.002**
IE21	lreadstart ⇒ ARTpop ⇒ narrative	p13*p3	−0.018	0.102	−0.314	0.126	−0.001	−0.178	0.858
IE22	lreadstart ⇒ ARTpop ⇒ expository	p13*p8	0.076	0.135	−0.071	0.565	0.006	0.562	0.574
IE23	lreadstart ⇒ ARTlit ⇒ narrative	p17*p2	−0.095	0.218	−0.764	0.238	−0.007	−0.437	0.662

Table 5 (continued)

					95% Confidence Intervals				
Label	**Description**	**Parameter**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
IE24	lreadstart ⇒ ARTlit ⇒ expository	p17*p7	−0.123	0.268	−0.771	0.358	−0.010	−0.461	0.645

Education education level, *Expository* expository text comprehension (% correct responses), *Narrative* narrative text comprehension (% correct responses), *ARTlit* literary fiction author recognition test scores, *ARTpop* genre fiction author recognition test scores, *lreadstart* leisure reading start, *nbookh* number of books at home, *books6m* books recently read (within the last 6 months). Significant effects are highlighted in bold. Arrows (⇒) indicate mediation effects, for instance: "age ⇒ ARTlit ⇒ narrative" means that the effect of "age" over "narrative" is mediated by the effect of "ARTlit"

with the authors' work that stems from its presence in pop culture media (e.g., film or TV series adaptations). However, ART-genre scores were specifically associated with the number of recently read books, suggesting that they can be considered an indicator (or at least, a covariate) of the participants' current reading experience. Despite being highly correlated, it should be noted that ART-lit scores were more associated with measures that described general or lifelong reading experience (such as the number of books at home and the beginning of leisure reading in life), while ART-genre were more associated with recent reading experience (number of books read recently).

Print Exposure and Reading Comprehension

Literary (but not genre) fiction ART scores were the strongest predictors of comprehension for both types of text and mediated the effect of socioeconomic and home literacy variables. Many non-mutually exclusive mechanisms have been proposed to explain the association between fiction print exposure and reading outcomes (Pfost et al., 2013). First of all, we should mention vocabulary growth. Vocabulary is critical for reading comprehension (Dong et al., 2020; Duke & Cartwright, 2021) and it has been shown that print exposure provides opportunities for word learning (Drum & Konopak, 1987), leading to increased vocabulary knowledge (Mol & Bus, 2011; Stanovich & Cunningham, 1992). Furthermore, vocabulary (at least partially) mediates reading comprehension effects of print exposure in children (McBride-Chang et al., 1993) and adults (Tabullo et al., 2021). According to the lexical quality hypothesis (Perfetti, 2007), reading practice gives rise to high-quality lexical representations that strengthen associations between orthographic decoding and lexical-semantic access processes, providing a basis for reading comprehension and vocabulary expansion. Relatedly, print exposure is also associated with increased world knowledge (Pfost et al., 2013), which is required not only to access meaning, but for the inferential processes involved in creating situational models of the text (Kintsch, 1988). Furthermore, print exposure might contribute to reading efficiency by enhancing the automaticity of processes like decoding or the selection of reading strategies, freeing cognitive resources for comprehension (Perfetti et al., 2005). In addition, reading experience is known to improve predictive processes involved in text (Landi and Perfetti, 2007, Tabullo et al., 2021) and speech (Mani & Huetig, 2014; Ng et al., 2018) comprehension. It should be noted that a reciprocal causation has been proposed between reading comprehension and print exposure, where reading efficiency and frequency mutually reinforce each other through development (Stanovich, 1986; Mol & bus, 2011; Torppa et al., 2020). On the other hand, there's evidence to suggest that it is actually the comprehension skill what increases leisure reading frequency (Erbeli et al., 2020; van Bergen et al., 2021). While our findings cannot inform this discussion, because we cannot infer causality from purely correlational data, we must point out that they are not incompatible with any of these claims.

Regarding the potential differences in print exposure contribution to different types of text, we observed larger and more significant effects of literary ART scores

on expository ($\beta = 0.396$, $p < 0.001$) compared to narrative ($\beta = 0.281$, $p = 0.02$) reading comprehension. Expository texts have been proposed to impose higher processing difficulties due to their structural complexity, information density, technical and specific vocabulary, and prior world knowledge demands (Best et al., 2008; Mar et al., 2021). While larger contributions from literary fiction exposure to expository (instead of narrative) texts might seem counterintuitive, it could be argued that high-quality fiction experience provides the necessary boost of linguistic and cognitive processes (language comprehension, world knowledge, inferential processing, and strategic reading, metacognition) to meet these texts' requirements. On the other hand, it was surprising to find that our participants actually performed better in expository than in narrative text comprehension (particularly, when considering that reading difficulty was comparable between the texts), when the opposite pattern is typically observed (Mar et al., 2021). When we examined age differences, we found that this advantage was only significant in those participants under 22 years ($T(103) = -3.51$, $p < 0.001$), but not among those older than 21 (50th percentile) ($T(98) = -3.51$, $p < 0.001$), ($T(98) = -0.0178$, $p = 0.986$). Since the expository text was based on a Wikipedia article, this result might be reflecting a specific familiarity with these kinds of composition, for this particular age range. Future studies considering specific language and cognitive skills (such as executive functions) might shed light on the specific mediators of print exposure effects over the comprehension of different text types.

With respect to the distinction between literary and genre (or popular) fiction exposure, we found specific effects of literary ART scores on reading comprehension, which were more consistent for expository texts. Group comparisons according to authors knowledge supported and complemented our interpretation of regression models and path analysis. They showed that (after controlling for age and gender) participants who knew more genre names had lower expository comprehension performance than those who knew the same or more literary names. This pattern further suggests that it is literary fiction exposure what is driving the effect over comprehension scores, since the equal and more-literary groups outperformed the more-genre group, regardless of their genre fiction knowledge. While we would have expected to observe this same pattern in the group who recognized no author names, the absence of these effects could be explained by lack of statistical power due to its low sample size ($n = 11$, see Supplementary Table 6). In fact, expository comprehension scores from the no-name group were more similar to those from the group with more genre knowledge than the rest.

Since it is considered that ART-lit scores reflect literary fiction exposure, their association with comprehension might be explained in terms of linguistic and possibly cognitive stimulation effects of their reading experience. It has been argued that literary fiction texts place higher demands on language and cognitive processing (Herman, 1997; Miesen, 2004), which might create and opportunity to stimulate language comprehension processes. On the other hand, genre fiction might trigger less effortful modes of reading (Gavaler & Johnson, 2017). In this way, the cumulative effect of lifelong literary fiction reading might lead to better outcomes when encountering novel texts (at least, in mature adult readers). In this sense, our findings are in the same line with previous studies that found significant effects of fiction

reading exposure on theory of mind (Kidd & Castano, 2013, 2017; Pino & Mazza, 2016; Tabullo et al., 2018). As it has been proposed that mentalizing contributes to reading comprehension (Boerma et al., 2017; Dore et al., 2018), an intriguing possibility is that theory of mind skill may act as an additional mediator of literary fiction exposure effects. However, we must be careful not to infer causal associations from a correlational design. An alternative explanation would be that more skilled comprehenders are more inclined to read literary fiction, since their reading behavior is motivated by a search of engagement and deeper understanding (Petite, 2014). As we stated before, a reciprocal causation model might also be compatible with our findings.

A note of caution is required regarding the reach and generalizability of our findings. It does not follow from our results that genre fiction reading provides no benefits or that it should be replaced by literary fiction. What we have shown is that literary fiction exposure (as inferred from ART scores) is associated with expository text comprehension in adult readers, a fact that could be explained by many mechanisms, one of which might be the linguistic and/or cognitive stimulation that is gained from reading experience. As we stated previously, we cannot draw conclusions about causality from a correlational design. In addition, our results are not readily generalizable to other linguistic or cognitive domains, nor to other age groups (like children or older adults).

Although Kidd and Castano's (2013, 2017) categorization of literary and genre fiction is not without criticism (see for instance: Gavaler & Johnson, 2017), we should point out that the observed pattern of results is indeed consistent with their characterization of the genres. Furthermore, while it could be argued that literary authors are harder to recognize and therefore more representative of actual reading habits (see Kidd and Castano, 2017), it should be noted that both ART scores were similarly explained by most reading habit variables, while only genre ART scores where significantly associated with recent reading frequencies. This indicates that genre author names recognition did reflect the participants' current reading behaviors.

Study Limitations and Future Directions

We should point out the following limitations in our study. First of all, although adequate for our statistical analysis our sample size was relatively small compared to previous print exposure studies (Fong et al., 2013; Kidd & Castano, 2013, 2017). Relatedly, we cannot rule out the influence of volunteer selection bias, which combined with the first point may limit the representativity of our sample and the generalizability of our results. Due to the correlational and cross-sectional nature of our design, we cannot draw conclusions about causality effects, and all interpretations in this sense should be considered speculative. Future studies with experimental or longitudinal designs might provide additional empirical support to our claims. The present work did not include measures of language and cognitive skills relevant for reading comprehension. Future studies considering vocabulary, fluency, or executive function measures would shed more light on the mechanisms mediating the effects

of literary fiction exposure. In addition, we did not consider motivational and affective factors, such as beliefs and attitudes and towards reading, which are relevant to explain reading behaviors and should be included in future studies. Regarding our ART tests, the number of items ($n = 10$) in each category was relatively low compared to previous studies (Kidd & Castano, 2017). Future studies expanding these scales might allow for a more fine-grained description of participants' reading experience. Moreover, with the inclusion of genre-specific ART scores, potential differences in popular fiction genres effects on comprehension could be examined (see for instance Fong et al., 2013). On a related noted, additional measures of the participants' reading experience (such as the titles and/or authors of the last books they read) might complement and provide further support for ART. Finally, it should be noted that both reading comprehension tasks were presented on screen-format, which might have implications for participants' performance (see Delgado et al., 2018 for a meta-analysis). Therefore, future replications of our findings in paper and pencil format would lend further empirical support to our claims.

Conclusion

To sum up, we found that (1) only literary fiction exposure explained reading comprehension of expository and narrative texts significantly, (2) participants who were equally or more familiar with literary authors outperformed those more familiar with genre authors in expository text comprehension. Print exposure effects in general can be interpreted in terms of stimulation and practice-related enhancement of language comprehension processes. Literary fiction exposure effects might be indicating higher processing demands linked to language and world knowledge, and/or a more active and engaged reading attitude from the participants. On the other hand, we cannot discard the possibility that more skilled comprehenders had been more inclined to read literary fiction, or even a reciprocal causation mechanism. Future studies might shed more light on these findings by examining the potential linguistic, cognitive, and affective/motivational mediators of high-quality fiction exposure effects on comprehension.

Appendix. Author recognition test

List of literary fiction authors.

1. Milan Kundera
2. Vladimir Nabokov
3. Margaret Atwood
4. Paul Auster
5. Arturo Pérez Reverte
6. Haruki Murakami
7. Adolfo Bioy Casares
8. Ernest Hemingway

9. George Orwell
10. José Saramago

List of genre fiction authors.

1. George R.R. Martin
2. Dan Brown
3. J.K. Rowling
4. Michael Crichton
5. Wilbur Smith
6. Phillip K. Dick
7. John Katzenbach
8. Pablo de Santis
9. Florencia Bonelli
10. Tom Clancy

List of foil names.

1. Milagros Gallo
2. Fernando Cuetos
3. Manuel Ferrer
4. Gabriela Berg
5. Ronald K. Hambleton
6. Thomas J. Carev
7. Steve Graham
8. Stephen Higgins
9. Joaquín Fuster
10. Amaia bravo
11. Eduardo Fonseca
12. Michael Dougher
13. Perry Fuchs
14. Phillip Hineline
15. Guillermo Vallejo Seco
16. William Baum
17. Ana Delgado
18. Nélida cornejo
19. Leandro Almeida
20. Robert Flynn

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Author Contributions All authors contributed to the study conception and design. Data analysis was performed by Ángel Tabullo. All authors contributed to writing and reviewing the manuscript.

Data Availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Code Availability Not applicable, statistical analysis was carried out in JAMOVI software.

Declarations

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the CONICET research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent for Publication Informed consent was obtained from all individual participants included in the study.

Competing Interests The authors declare no competing interests.

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