

People Searching for Meaning in Their Lives Find
Literature More Engaging

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Abstract

Why are some people interested in complex literature and others not? This study experimentally investigated this question by assessing what cognitive traits moderated responses to literary and less-literary fictional vignettes. Specifically, participants were exposed to two variants of a celebrated literary text, one altered so as to remove overtly literary elements. A moderation analysis was performed on responses with respect to three variables: need for cognition (NC); meaning in life (measured in two subscales, search for meaning (SM) and presence of meaning (PM)); and intentionality/mentalising ability (IM). Results showed that SM moderated interpretive response to the textual variation, such that those with increasing scores on the SM scale were increasingly more likely to rate the literary vignettes as worthy of appreciation. This result, in turn, gave grounds for a second study that investigated the role played by cloze values in identifying a text as 'literary'. The latter study showed that the literary and less literary vignettes exhibited significant differences in cloze values. Taken together, these studies suggest that differences in responsiveness to literary materials may well be driven by pre-existing cognitive factors.

Keywords: literature, meaning, interpretation, interpersonal variation, semantics

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Though literature is often celebrated as having public value (Arnold, 1932; Carey, 2006; Nussbaum, 2010; Carnwath & Brown, 2014; Hanna Meretoja & Isomaa, 2015), it is evident that not everyone finds it equally valuable. Classic literary fiction, for instance, is estimated to make up between six to ten percent of the overall market (Nowell, 2015), with genres like poetry and drama occupying an even smaller niche. Moreover, given that up to a quarter of adults never read for pleasure (Flood, 2013; Rainie & Duggan, 2012), these figures suggest that literary materials have, at best, a modest claim on the attention of the general public. While public value and public interest are certainly not the same thing, and it is perfectly possible for literature to play important role in (say) consolidating collective memory or driving cultural innovation without it having a mass appeal, the question nevertheless presents itself: What traits—if any—make individuals more likely to positively engage with literature?

Our aim here is to cast light on this question. In doing this, we are less interested in extrinsic factors like social class (Eagleton, 1976; Bourdieu 2013), historical circumstance (Greenblatt 1989) and cultural affiliation (Gadamer, 2004; Fish 1980) that have previously been implicated in interpretive responses to literature. Though these factors undoubtedly have some influence, work on interpretive stance in areas like politics suggests that a large portion of the interpersonal variation in receptivity to political ideas can be attributed to pre-existing personality traits (Graham, Haidt, & Nosek, 2009; Haidt, 2013; Hirsh, DeYoung, Xiaowen Xu, & Peterson, 2010). Considering that interpretive disputes in literary studies often have the same polemical character as disputes in politics (Mailloux, 1985; Rabinowitz, 1998; Ricoeur, 1974), we propose that responsiveness to literary materials may also derive from intrinsic cognitive traits. Indeed, existing studies already support the idea that stable personality features may moderate interest in different types of intellectual activity. For instance, professionals in the social sciences and the humanities, when compared with colleagues in the natural sciences, consistently exhibit higher levels of openness and lower levels of conscientiousness (De Fruyt & Mervielde, 1996), higher levels of liberalism (Rothman, Lichter, & Nevitte, 2005) and lower levels of general intelligence (Dutton & Lynn, 2014). In the specific area of reading behaviours, there is very little data on susceptibility to reading in adults, though work on children clearly points to a number of pre-existing traits affecting the propensity to read different types of material (McGeown,

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Goodwin, Henderson, & Wright, 2012; McGeown, Osborne, Warhurst, Norgate, & Duncan, 2016).

Thus, there exists a *prima facie* case for investigating the claim that propensity for engaging with literature is (at least partially) driven by stable cognitive traits. We proceed towards this goal here by assessing the effects of four variables on responses to literary materials—namely, the *need for cognition*, the *search for meaning*, *presence of meaning*, and *mentalising ability*. These particular variables are chosen for two reasons. On the one hand, they correspond to core hypotheses in literary studies, to the extent that cognate concepts have been theorised by prominent critics as playing a role in driving engagement with literature. On the other, they are all validated measures of cognitive traits that can be readily assessed with established batteries of questions; thus, they present an optimum balance of empirical testability and ecological validity. The one plausible measure we are not including—IQ—is excluded because while all those with a propensity to engage with literature may have higher general intelligence, it is observably not the case that all those with higher general intelligence engage with literature.

Naturally, there can be no guarantee that the chosen measures pick out basic cognitive traits, or if they do, that the traits they pick out are stable across lifespan. Nevertheless, evidence suggests that search for meaning is robust in the face of gender, age and ethnicity (Steger & Shin, 2010), and where lifespan differences exist in mentalising, they are probably due to general age-related cognitive decline (Bernstein, Thornton, & Sommerville, 2011). Equally, variations in gender, anxiety and cognitive style do not seem to impact on the need for cognition score (Cacioppo & Petty, 1982). To this extent, there are no obvious reasons why the various scales should not be used here to measure the variables of interest, which are as follows:

1—*The need for cognition hypothesis*: “Criticism,” T.S. Eliot famously said, “is as inevitable as breathing” (1921, p. 43). One way to interpret this position is to equate interpretive engagement with literature as an extension of everyday problem solving, where hedonic reward follows from successfully ‘solving’ the puzzle of what a piece of literature might mean. Support for this view comes from ‘naturalistic’ models of interpretation in literary studies, which hold the motivation of criticism is to reconcile difficult texts with existing frameworks of understanding (Culler, 1975; Fludernik, 2004). If this is the case, then individuals who are strongly inclined to engage in such processing are likely to be impacted on by literary materials to a greater degree—and

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correspondingly, to gain more pleasure from solving the problem of what these materials might mean. A potential measure of this inclination is provided by the ‘need for cognition’ (NC) scale developed in Cacioppo, Petty, & Kao (1984) and Cacioppo & Petty (1982). Here, need for cognition refers to “the tendency for people to vary in the extent to which they engage with and enjoy effortful cognitive activities” (Petty, Brinol, Loersch, & Michael, 2009, p. 318), with high scores on this trait having been shown to predict more positive reception of complex messages (See, Petty, & Evans, 2009). Thus, if receptivity to literature is a function of the problem-solving propensity being challenged by anomalous representations, then score on the need for cognition scale should moderate audience response.

2—*The meaning in life hypothesis*: For Roland Barthes, “to interpret a text is not to give it a (more or less justified, more or less free) meaning, but on the contrary to appreciate what *plural* constitutes it” (2002, p. 5). Explicit in this view is a conception of literature as an idiosyncratic form of discourse in which meaning is particularly—often contradictorily—concentrated. In this, it supposedly runs against the practical orientation of everyday communication, to the extent that literature foregrounds the expressive possibilities of language and symbolism at the expense of pragmatic efficiency. If correct, such a position suggests that critical responsiveness to literature may scale with the extent to which a person feels their life is meaningful. One measure of this tendency is developed in Steger, Frazier, Oishi, and Kaler (2006) and Steger, Kashdan, Sullivan, and Lorentz (2008) in the form of a ‘meaning in life’ scale, which is broken up into two subscales. The search for meaning (SM) subscale measures the extent to which an individual exhibits “an innate drive to find meaning and significance in their lives” (Steger et al., 2006), whereas the presence of meaning (PM) subscale measures “presence of meaning or purpose in a person’s life” (Steger et al., 2006, p. 83). (That is, SM is the opposite of PM, and vice versa.) If literature presents a cryptic discourse that invites interpretation by accentuating connotative and rhetorical aspects of language, it should be more attractive to individuals who score highly on the search for meaning subscale. Equivalently, if the drive to search for meaning is negatively correlated with the presence of meaning, as has been found (Steger et al., 2008), literature should also be attractive to people who score low on presence of meaning subscale.

3—*The mentalising hypothesis*: “The effort to ignore the author’s intention,” William Empson writes, “makes the critic impute to him some wrong intention” (1984, p. 104). The presupposition here is that criticism involves reconstructing the intentions of an absent agent (whether real or implied) on the basis of material cues in the text. If so, then engagement with literature will be moderated by Theory of Mind (ToM), or the capacity to infer the intentions, motivations and dispositions that inform the actions of others. Extant work in literary studies has taken up and amplified this view, suggesting that a key component of fiction and drama involves exploiting the human ability to construct ToM representations of the form ‘*A* believes that *B* thinks that *C* is certain that ... *X* is the case’ (Dunbar, 2005; Zunshine, 2006), with such claims being nuanced in subsequent studies to allow for variations in genre and narrative structure (Carney, Wlodarski, & Dunbar, 2014; van Duijn, Sluiter, & Verhagen, 2015). If such claims are correct, then engagement with literature is continuous with ordinary social cognition, and should be moderated by ability to infer the mind-states of others. One measure of this ability is provided by ‘The Imposing Memory Task’ (IM), which measures how many levels of embedded intentionality an individual can process (Kinderman, Dunbar, & Bentall, 1998). The prediction that follows from this is that high scores in the imposing memory task should moderate interpretive engagement with literary materials.

These, then, are the three hypotheses that our experimental intervention seeks to adjudicate between. However, this intervention must lead to a second question, which concerns the textual triggers for the cognitive trait(s) that drive reader engagement. As shown by sustained research programmes on topics like defamiliarisation (Miall & Kuiken, 1994; Shklovsky, 1965), textual materiality (Moylan & Stiles, 1996) and embodiment approaches (Bolens, 2012), textual materials play an important role when it comes to stimulating engagement. Naturally, it is impossible to investigate this topic experimentally without substantially narrowing down the field of potential textual triggers. Given that our first intervention does precisely this, it allows for a follow-up study on the textual triggers for literary engagement. We pursue this by way of a second study that focuses on the role of cloze values—measures of how likely a reader is to correctly supply a missing word in a sentence—in determining how literary a text is found to be. In particular, we assess whether literary and less literary texts evince significant differences in the cloze values they exhibit. We suggest that cloze values provide a semantic ‘gap’ into which readers can project

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meaning-finding strategies, and thus that they offer a way of measuring the extent to which a text can function as a stimulus for those who score high on the search for meaning scale. (SM being the variable of interest to emerge from the first study.) In this way, we hope to match the investigation of interpersonal variation in literary responsiveness with a potential trigger for this variation.

We are aware from the outset that literary responsiveness may not be exhausted by these suppositions, or that it may be a compound entity that is mediated and/or moderated by more than one of the variables discussed. Nevertheless, we are confident that our design covers the most plausible candidates for the psychological factors affecting the propensity to engage with literature. Indeed, given the paucity of empirical work on this topic relative to the interminable debates that surround it, we submit that *any* experimentally sanctioned results can only improve current understanding of why literature should exercise such differential effects on audiences.

Study 1

Methods

Participants: The study recruited 112 participants using mailing lists at the Department of Experimental Psychology at the University of Oxford and by way of social media.

Participants who did not complete the survey ($n=9$), participants who reported having already read the test material ($n=12$) and participants for whom data were missing due to entry error ($n=2$) were excluded (one participant had both read the text and did not complete the survey).

The resulting $N=90$ participants had a mean age of 24 ($SD=7.31$); 34% were male. All participants were university educated. Remuneration came in the form of a draw for a £100 voucher for amazon.co.uk, into which all participants were entered. The Central University Research Ethics Committee (CUREC) granted ethical clearance for the study (no. MSD-IDREC-C1-2014-212).

Procedure: The survey questions that comprised the study were delivered online via the Limesurvey platform. Participants were given information about the study, asked to indicate informed consent and polled for demographic data. After this, participants were randomly exposed to one of two texts; in each case they answered the same set of questions and asked if they had previously encountered the text. The remainder of the study scored participants on

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the ‘need for cognition’ (NC), the ‘search for meaning’ (SM, including PM) and the ‘imposing memory’ (IM) tasks. When the experiment closed, email addresses were extracted from the dataset and randomised so as to act as tickets for the draw; after the draw, all email records were deleted. No personal data were retained.

Test materials: The test materials comprised two versions of a c. 1,000-word extract from the opening of Virginia Woolf’s 1931 novel, *The Waves*. This “densely allusive, self-consciously poetic text” (Goldman, 2006, p. 72) was chosen for two reasons: firstly, because its impressionistic style is so overtly literary; and secondly, because it is the least likely of Woolf’s major novels to have been previously read by participants. One version of the test materials consisted of the text in its original form, taken from the Project Gutenberg transcription of the first edition of the novel. The second version was created by the present authors in response to a pilot study on the original text. Specifically, raters ($N=14$) were asked to code each sentence of the original text on a Likert scale in response to the question “The correct interpretation of the text below is obvious” (1=‘strongly agree’; 10= ‘strongly disagree’). A median split was performed on the results; sentences above the median (i.e. those classed as being difficult to interpret) were re-written by the authors in literalistic language. The result was two texts that shared semantic content (cosine similarity=0.74) but which exhibited ‘high’ and ‘low’ levels of interpretive accessibility. Though this leaves out measures like transport and immersion that have been implicated in textual reception (Green, 2014), these effects are also present on non-literary materials and are thus not a useful proxy for literariness. Instead, we propose that the presence of non-obvious meaning in a context where literal comprehension is nevertheless straightforward offers a more plausible (if still imperfect) means of tracking the difference between more and less literary textual variants.

Principal Components Analysis (PCA): Participant responses to the two textual conditions were measured on a 13-item Likert scale questionnaire (1= ‘don’t agree at all’; 7= ‘very much agree’) that assessed issues like interest in the text, assessments of the text’s cultural value and the difficulty of the text, see *Table 1*. Initial PCA using extraction criteria of eigen values > 1 produced an unclear three-factor structure. However, inspection of the scree plot indicated two clear factors above the point of inflexion, with the remainder trailing off into insignificance. A subsequent PCA was therefore carried out, this time specified to extract two factors. The Kaiser-Meyer-Olkin measure ($KMO = .85$) indicated excellent sampling adequacy, and no KMO score for individual variables was below the acceptable cut off of

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<.5. Bartlett's test of sphericity indicated adequate correlation between the items to warrant a PCA ($X^2(78) = 555.27, p < .001$). Rotated (Varimax) factor loadings are reported in *Table 1*. Two clear factors appear, accounting for 58.7% of the variance; the loading structure appeared to suggest semantic groupings around two underlying factors shared by the highly-loaded items. Items loading on factor one appear to index something to do with the perceived *literary value* of the texts, i.e. questions such as "the author put a lot of thought into writing this text", and, "this text has cultural value" weighted most highly on it. On the other hand, factor two seemed to reflect something to do with the perceived *literary difficulty* of the texts, i.e. questions like "the meaning of this text is ambiguous", and, "it is difficult to say for certain what this text means" weighted most highly on it. Finally, note that items weighting on factor one appear to comprise a semantic cline: items approaching the liminal boundary between the two factors contain semantic elements from both constructs, i.e. the items, "I am curious about this text's use of language", and, "this text probably requires specialist knowledge to be properly understood" weight on both factor one and two (albeit more strongly on one). Naming any factor is rather arbitrary, but given the above considerations we chose to call factor one *literary value* and factor two *literary difficulty*. The regression method was used to extract factors for later analysis.

Need for Cognition: NC was assessed with the 18-item Cacioppo et al. (1984) efficient assessment scale; however, one question was incorrectly transcribed to the survey software and thus excluded from results. Typical questions asked about preferences in relation to complex and simple forms of thinking, and the pleasure gained from solving problems, i.e. "I really enjoy a task that involves coming up with new solutions to problems." Because the NC is previously validated (Cacioppo et al., 1984; Cacioppo & Petty, 1982), a mean score was calculated for each participant.

Search/Presence of Meaning: S/PM was measured with the ten-item scale developed in Steger et al. (2006). Steger et al. divide this scale into two subscales, with five items indexing 'presence of meaning' (the extent to which the participant finds their life intrinsically meaningful) and the other five items indexing 'search for meaning' (the extent to which the participant actively seeks out meaning for their life.). A typical question on the PM subscale would be 'My life has a clear sense of purpose'; an equivalent on the SM subscale would be 'I am always looking to find my life's purpose.' Because these scales have been validated

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(Steger et al., 2006), a mean score for each of PM and SM was calculated for each participant.

The Imposing Memory Task (mentalising): Mentalising ability was assayed using the imposing memory task (Kinderman, Dunbar, & Bentall, 1998), which consists of three short narrative vignettes: ‘The post office,’ ‘John’s problem’ and ‘The cafeteria.’ Each of these presents scenarios in which the reader is obliged to keep track of up to six recursively embedded mental states. At the end of each vignette, the reader is asked 22 ‘true’ or ‘false’ questions that measure (1) recall of general propositional attributes of the vignettes and (2) recall of the embedded mental states involved in the vignettes. A prototypical general recall question reads “Pete, who was Helen’s colleague, and who told Sam that Helen was the office prankster, was Sam’s friend,” whereas a prototypical mentalising question reads “Pete thought that Helen wanted Sam to know that she realised that the Post Office was no longer on Elm St.” Memory and mentalising questions were matched such that each contained an equal number of basic propositions and embedded mental states, respectively. In order to control for the obvious confound of memory ability effects upon recall of mental states, mentalising scores were regressed against memory scores and the residuals were saved—thus creating mentalising score independent of memory ability.

Results

Descriptives: Table 2 reports the means standard deviations and bivariate Pearson’s r for the variables under study. Inspection reveals that high *search for meaning* tended to be present among those with low *presence of meaning*, which would be expected given previous findings (Steger et al., 2006). Further, people with high *mentalising* ability tended to rate the texts as being higher in *literary difficulty*. No other correlations were significant.

Effect of Condition: An independent samples t-test was carried out to test for an effect of the experimental manipulation on *literary value* and *literary difficulty*. There was a significant difference, $t(107) = 2.9, p = .005$, between the *literary value* scores for the original text ($M = .3, SD = .92$) and the altered (less literary) version ($M = -.24, SD = 1$). However, no difference was found, $t(107) = .77, p = .44$, between *literary difficulty* scores for the original, ($M = .08, SD = .98$) and altered ($M = -.07, SD = 1.02$) texts, Figure 1. Although the

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assumption of within-group normality was violated, Mann-Whitney U tests confirmed the significant effect for *literary value*, $U = 959$, $p = .002$, and null result for *literary difficulty*, $U = 1384$, $p = .6$.

Moderation Analyses: Given the above findings, four simple moderation analyses (PROCESS model #1) were conducted on *literary value* in the PROCESS (Hayes, 2014) plugin in SPSS 22. This involved including the four potential moderating variables (NC, SM, PM, IM) in separate models to test whether any of them interacted with the relationships between the experimental manipulation and *literary value*. Moderation analysis is conceptually similar to an interaction in a two-way ANOVA (Hayes, 2013); however, this regression-based technique usefully allows for the estimation of models with continuous moderators (Hayes, 2013). Of the four measured variables, SM was the only one to significantly moderate the relationship between the experimental manipulation and *literary value*.

Table 3 reports the results of this moderation model. Caution should be made interpreting the model coefficients, as they are not entirely analogous to main effects in a two-way factorial ANOVA (Hayes, Glynn, & Huges, 2008). In ANOVA terms, they are *simple* effects, and represent the effect of each predictor when the other predictors are set to a specific point—in this case, ‘0.’ This being the case, the test condition variable was recoded such that the original text was coded as $-.5$ and the altered version as $.5$, whilst SM was mean-centred at 0 prior to analysis. The coefficient for SM should therefore be interpreted as an unweighted average effect of *search for meaning* across both conditions (Hayes, 2013). Inspection reveals that it is positive and nearing significance; in other words, people who scored higher on SM *may* have tended to also rate *both* textual variants as more interpretively valuable—though caution should obviously be applied in interpreting trend-level effects.

There is a significant simple negative effect of the experimental manipulation. Since SM has been mean centred at 0, this coefficient should be interpreted representing the effect for participants of exactly average score on SM (Hayes, 2013; Hayes et al. 2008). In other words, removing literary language from the Woolf text caused participants with exactly average SM scores to rate the altered text $-.591$ lower than the original text.

There is a significant negative interaction, meaning that altering the text to make it less literary had an increasingly negative effect with each one-unit change in SM; in other words, participants who were highest on the SM scale rated the altered text much more negatively than participants who were lower on the scale. The R^2 change as a result of the interaction is

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also significant, ($R^{2(\text{change})} = .04$, $F(1,86) = 4.0$, $p = .049$). However, whilst the effect was negative, inspection of Figure 2 reveals that negative reactions to the altered text among high SM scorers may not have been driving the interaction; rather SM seems to exert little effect in the altered text, and in fact the interaction appears to be driven by high SM scorers tending to rate the original text increasingly *positively*.

To probe the interaction further, we employed the Johnson-Neyman technique (Johnson & Neyman, 1936; Karpman, 1983; Potthoff, 1964) to identify where in the scale SM became a significant moderator. *Figure 3* describes the point estimate of the p -value of the experimental manipulation across the entirety of the SM scale (in this case not mean-centred for ease of interpretation), and the 95% confidence interval for the estimate of the p -value. Note that at the point where the 95% confidence interval does not intersect 0 $p = t_{crit}(.05)$, in this case, the effect of the manipulation becomes significant when $SM \geq 3.699$.

Discussion

The two most important results to emerge from Study 1 are (1) that search for meaning (SM) was the only variable that moderated responses to the test material, and (2) that sensitivity to differences between the literary and non-literary increased with higher scores on the SM scale; this appeared to be driven by high SM scorers being more likely to rate the original as having literary value. *Need for cognition* (NC), *presence of meaning* (PM) and *mentalising* (IM) scores did not moderate the effect of the manipulation.

It is notable that while SM did moderate responses, NC did not. This is particularly striking given that NC seems to measure meaningful engagement with objects generally, rather than just with one's life, as is the case for SM. We explain this by suggesting that searching for meaning in one's life is essentially a search for implicit agency (i.e. a teleological purpose that guides events behind the scenes). As this is broadly analogous to inferring and author's indirect purpose by way of the textual cues in a literary work, we propose that the moderating effect of SM can be traced to its association with agency.

Another item of interest is the fact that SM significantly moderated the effect whilst PM did not, though the two variables were negatively correlated. It is difficult to say for certain what this indicates, but it does suggest a looser coupling between SM and PM than is suggested in published literature, to the extent that it may be possible to feel a lack of

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meaning in one's life without a disposition to search for it. As this question goes beyond the immediate topic of interest in this paper, we will not pursue it further.

On the SM side, the drivers of the effect remain unclear. One possibility is that people with high SM scores are simply more predisposed to interpreting complex phenomena, whether these manifest as a complicated world in which one is searching for a meaningful life, or a complicated novel in which one is searching for a meaningfully coherent narrative, character or style of prose. Another is that people with high SM scores tended to rate the Woolf text as more literary because they viewed it as a counterfactual arena affording them the opportunity to think about their own lives' meaning. And there always remains the possibility that SM may be masking some other domain general factor like personality, and as such plays no direct causal role on moderating the observed effect. More research is needed to adjudicate between these possibilities.

Study 2

As indicated, our assessment of the cognitive traits that inform literary appreciation says nothing about the textual triggers that activate reader response. However, identifying SM as a moderator of reader engagement makes it possible to investigate what these triggers might be. In this regard, SM points to ambiguity as a key prompt for literary engagement. That is, if one is engaged in a search for meaning, meaning is most likely not being found in everyday circumstances that are unequivocal in their denotation. Instead, those objects that resist the assignment of meaning may well be more likely to attract and sustain the searcher's attention. If so, then literary texts should exhibit such systematic ambiguity. How might such ambiguity be measured?

Cloze values are the obvious candidate. Cloze tests are a fill-in-the-blank paradigm in which participants must supply the word they think it most likely to complete a given sentence. A cloze score for a word in a given sentence context is the percentage of times that naïve participants will supply that particular word. Cloze scores will vary with respect to how constrained a sentence context may be for a particular word. In the sentence "John got Buster's leash and ball and took his old canine friend to the park for a game of _____," we might reasonably expect *fetch* or *catch* to have high cloze scores whilst *backgammon* or *chess* would have very low cloze scores.

Crucially, event related potential (ERP) studies, wherein electroencephalography is used to time-lock brain wave patterns to presented stimuli, have revealed that cloze values

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correlate negatively with amplitude of the N400 wave, a negative late peaking signal arising ~400 milliseconds after stimuli presentation (Borovsky, Elman, & Kutas, 2012; Borovsky, Kutas, & Elman, 2010; DeLong, Urbach, Groppe, & Kutas, 2011). Simply, the more unlikely the word is in a given context (low cloze) the bigger the N400 signal tends to be. Indeed, the N400 has been found to relate to the processing of novel and unexpected visual material that might be incongruent to common patterns of expected behaviour (Proverbio & Riva, 2009).

Cloze values therefore represent a tool to empirically investigate the textual correlates of literariness. If people who score highly on the search for meaning scale were more likely to rate Woolf's original text more highly, then we might expect that cloze values from the sentences therein would be lower. Further, since cloze values correlate with brain wave patterns known to be involved in surprise at processing novel semantic content, should such a difference evince itself we would be able to make reliable inferences about the kinds of cognitive processing that people associated with literary value, e.g. that *literary value*, like other stimuli which evoke a N400 response, is surprising.

Methods

Each sentence from both the original and altered texts was presented, in order, with the last content word removed to $N = 143$ participants on the online survey hosting platform Limesurvey. While some sentences contained the same final content words, there were 16 which were different. Participants were asked to simply fill in the word that they most likely thought completed the sentence. Random assignment to condition resulted in a sample comprised of $n = 81$ subjects in the original condition and $n = 62$ subjects in the altered text condition.

Results

The cloze value for each sentence was calculated as the percentage of time participants supplied the correct word. This produced two sets of cloze scores, one from each text, with $n = 45$ cloze scores from the original text and $n = 44$ from the altered condition. As the data severely violated the assumption of normality, non-parametric tests were appropriate. Mean cloze score in the original text was $m = 17.72$, $SD = 26.64$, whilst in the altered text mean cloze score was $m = 24.30$, $SD = 26.71$. This difference was significant, Mann-Whitney $U =$

743, $z = -2.03$ $p = .041$, meaning that sentences in the Woolf text exhibited significantly lower cloze values than sentences in the simplified text.

To check the robustness of this result, we also tallied the by-participant number of correct answers. As the data again significantly violated the assumption of normality, non-parametric tests were appropriate. Mean number of correct answers in the original Woolf text was $m = 7.98$, $SD = 2.63$, whilst mean number of correct answer in the altered text was $m = 10.69$, $SD = 3.06$. The difference was again significant, $U = 1225$, $z = -5.27$, $p < .001$.

General Discussion

The emergence of only one moderating variable poses a number of interesting discussion points that it might be useful to take forward in future testing. The first issue of note is that our findings challenge the idea that literature is (or can be made to be) universally appealing. Though it is not clear how performance on the SM measure distributes across the population as a whole, it is certainly the case that high scores are not typical (Steger & Samman, 2012). Thus, while individuals high on SM may (for instance) identify in literature the “opportunity to form and reform our sense of ourselves and the world around us” (Bruns, 2011, p. 151), such claims are likely not to apply to those with different intrinsic dispositions (Eccles & Wigfield, 2002). Certainly, this does not rule out the possibility that exposing people to literary materials has valuable outcomes regardless; indeed, extant experimental results suggest that literature can sometimes foster useful prosocial sentiments like empathy for up to a week after exposure (Bal & Veltkamp, 2013; Kidd & Castano, 2013). Nevertheless, similar results obtain from any number of other stimuli (Abbate, Ruggieri, & Boca, 2013), and even within the class of fictional discourses, one study suggests that the decidedly *déclassé* activity of identifying with a comic-book superhero increases prosocial engagement for up to three months at a time (Nelson & Norton, 2005). Given this, it may well pay to be sceptical about lofty claims concerning the necessary appeal or the civilising effects of great literature (Carney & Troscianko, 2014; Currie, 2013).

A second issue emerges with respect to the traits that tend to positively correlate with SM. Much as one would expect, people high on SM tend to be more curious and receptive to new ideas than those who score lower. At the same time, however, “searchers report worse relationships and less self-acceptance and seem more anxious, ruminative and unhappy about their past experiences and present circumstances” (Steger et al., 2008). Considering that these tendencies are also present in (and predictive of) anxiety and depression (Kinderman,

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Schwannauer, Pontin, & Tai, 2013; Nolen-Hoeksema, 2000; Wilkinson, Croudace, & Goodyer, 2013), our results pose some interesting questions for the use of literary materials in therapeutic contexts. In particular, proponents of ‘bibliotherapy’ (Crothers, 1917; Man, 1995; Detrixhe, 2010) advocate the use of literature as “a therapeutic catalyst for both clarifying and understanding a patient’s life struggles” (Lanza, 1991, p. 318). However, in view of the partial correlation between a ruminative disposition, SM and mixed depression/anxiety, it may well be that the positive results reported for bibliotherapy are misleading (Floyd et al., 2006; Rappee, Abbott, & Lyneham, 2007; Smith, Floyd, Scogin, & Jamison, 1997). That is, bibliotherapeutic interventions might only be effective for the subclass of depressed or anxious individuals whose cognitive traits have *already* made them susceptible to literary materials.

Reversing the direction of causation, there is also the possibility that SM scores are the product of community membership rather than the cause. However, while it is easy to see how those high in SM may be drawn together in professions and hobbies that reward their interpretive propensities, it is less easy to intuit a mechanism whereby this propensity—robust across several axes of interpersonal variation—would emerge from community membership *ex nihilo*. Nevertheless, it remains possible that such a mechanism exists, and if it does, it would support the classic reader-response position in literary studies (Fish, 1980; Iser, 1978).

With respect to our second study, the main result is to offer an explanation of why novelty and ambiguity are so frequently identified as concomitants of literariness (Empson, 2004; Shklovsky, 1965; Berlyne 1970, 1971). Though low cloze values clearly cannot exhaust literature, the significant difference in mean cloze value between the two texts that was the result of a data-driven (i.e. participant ratings of the obviousness of the meaning of each sentence) manipulation. This is especially striking given that the results of the first study gave grounds for predicting this effect. An important caveat it that it is possible that some circularity might be present between the manipulation and the cloze results, i.e. when participants were asked to rate the obviousness of the meaning of each sentence, it is possible that these ratings were simply indexing cloze values. However, it is important to remember that the N400 is responsive to *the extent to which a word is surprising given its sentential context*. That is to say, surprising words in highly constrained contexts provoke and N400 response more than words in relatively unconstrained sentence contexts (Borovsky et al., 2012), which is not the same as a sentence that is difficult to understand the meaning of. If you indexed N400 for a group of Canadian participants on the following sentence, “We went

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to the park for a game of... hurling” you would expect a high N400; in Ireland this wouldn’t be the case, though neither sentence is difficult to understand. As such, it is not entirely a circular result that non-obvious meaning was correlated with cloze values. A more important consideration would be whether the cloze value differences were driven by final words in highly constrained sentence contexts (which we would expect to evoke N400 responses) or by end word in low-constraint contexts, which would have just been harder to guess (and which we would not expect to evoke as strong an N400 response). Further research is needed using ERP methods, which actually index N400 rather than cloze values, as well as further investigation into whether the present cloze results are robust across literary texts. Future research could also continue to investigate whether, and if so, the extent, to which novelty and ambiguity are found to be engaging by those high on SM.

A final point of reflection comes with the parallel between SM and the practice of critical interpretation in the humanities. Specifically, it is generally attested that a central task of the humanities is to interrogate meaning; in Helen Small’s words, “the humanities study the meaning-making practices of human culture, past and present, focusing on interpretation and critical evaluation” (2013, p. 23). While this project cannot be exhausted by a simple metric like the search for meaning, it should, at the same time, be apparent that both practices are consonant with each other. This latter resemblance—if admitted—immediately poses the problem of whether the cognitive practices associated with the humanities should be the target or the grounds of explanation for engagement with literature. Unsurprisingly, most practitioners of the humanities and social sciences favour the latter view, which subordinates empirical truth claims to the interpretive task of situating knowledge in its social and historical contexts (Barnes, 2014; Jameson, 1981; Kirklin & Richardson, 2001). However, it can be argued with equal or even greater force that the propensity to interpret, as a natural part of the human cognitive endowment, should be approached as the *explanandum* for a scientific *explanans*. If so, humanities scholars will need to submit to a type of double reflexivity, where their own scrutiny of the positive sciences is returned by way of a naturalistic appraisal of the interpretive propensity that may drive their own engagement with the humanities. Necessarily, this would entail humanities scholars supplementing the traditional emphasis on the historical and cultural norms that drive interpretive judgments with an appreciation of the cognitive traits that impact on them. While the present study is too limited to offer much to either project, it does at least present some initial evidence in favour of their viability.

To close, the results established here suggest that engagement with fictional texts is moderated by the propensity to search for meaning, and that differential sensitivity to the difference between literary and non-literary texts may increase in proportion to the presence of this propensity. Limitations of the study include its reliance on one example of literariness—itsself an ill-defined concept—and the homogeneous nature of its sample population. Future work will involve replicating the results established here with other texts and genres, and establishing what factors (if any) moderate generic preferences. Ideally, such a research programme will generate further insight into the psychological determinants of literary response.

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Table 1

	Rotated Factor Loading	
	Literary Value	Literary Difficulty
This text is likely to remain of interest to future generations of readers	.851	-.091
Texts like this should be taught in literature courses.	.807	.025
It would be worth spending time trying to understand this text	.793	.093
The ambiguity in this text makes it interesting	.753	.026
The author put a lot of thought into writing this text	.741	.130
This text has cultural value	.741	.149
This text is “literary”	.733	-.003

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There is meaning in this text, but it is not obvious	.691	.151
I am curious about this text's use of language	.570	.321
This text probably requires specialist knowledge to be properly understood	.460	.378
It is difficult to say for certain what this text means	.095	.836
The meaning of this text is ambiguous	.295	.785
This text has clear and obvious meaning*	-.206	.717

*Reversed

Table 2

	Mean	S.D.	NC	SM	PM	IM	LV	LD
Need for Cognition (NC)	3.84	.45	-					
Search for Meaning (SM)	4.46	1.54	0.024					
Presence of Meaning (PM)	4.08	1.44	0.035	-.254**				
Mentalising (IM)	0	1.98	0.153	-0.187	0.076			
Literary Value (LV)	0	1	0.017	0.186	-0.023	-0.05		
Literary Difficulty (LD)	0	1	0.018	0.042	-0.112	-.233*	0	-

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 3

Moderation Analysis

		Coeff.	SE	t	p	LLCI	ULCI
Constant	i_i	-.01	.091	-1.092	.278	-.281	.082
Search for Meaning	b_1	.104	.058	1.785	.078	-.012	.22
Condition	b_2	-.581	.183	-3.172	.003	-.945	-.217
Condition x Search for Meaning	b_3	-.236	.116	-2.045	.044	-.466	-.007
Model Summary			$r = .414, R^2 = .171, MSE = .745,$				
			$F(3,86) = 5.911, p = .001$				

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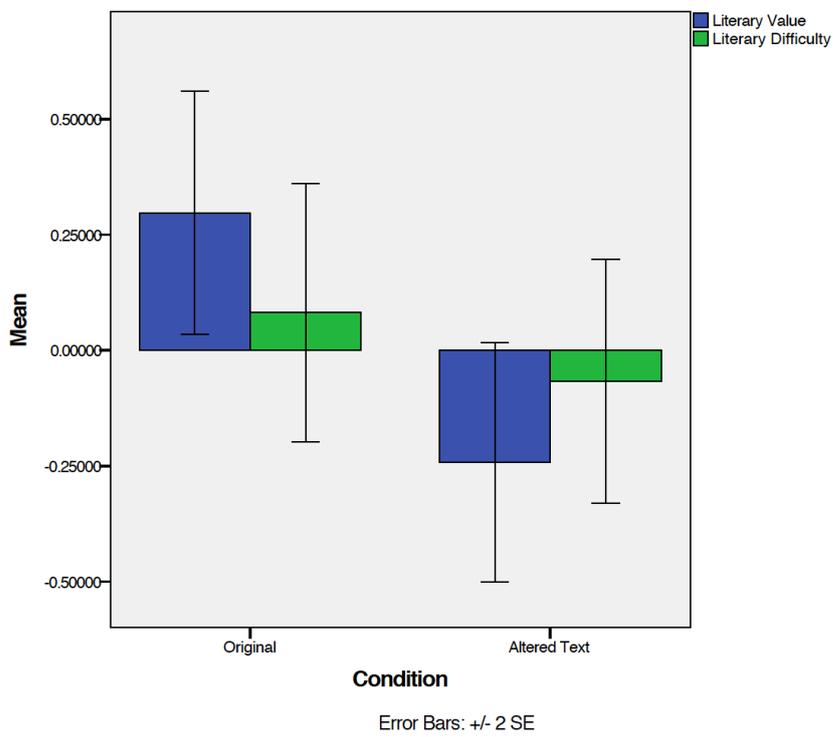


Figure 1

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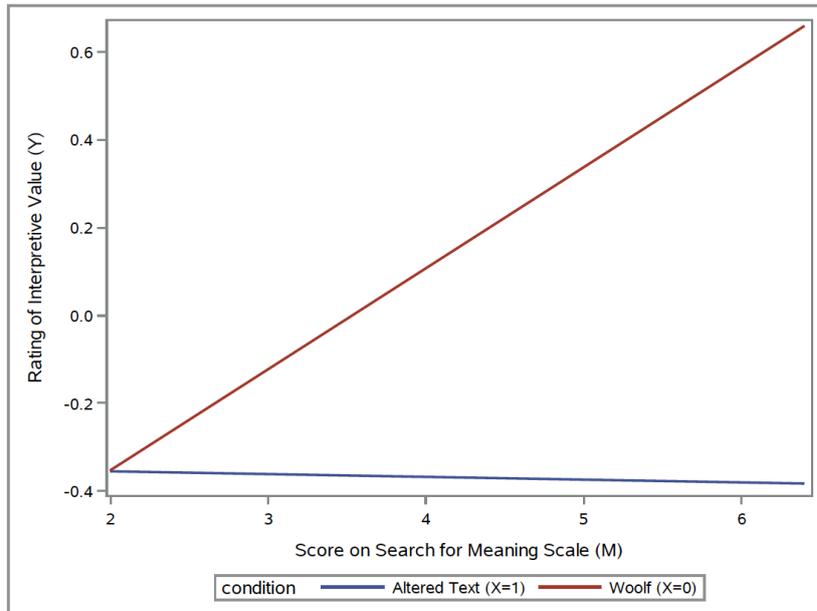


Figure 2

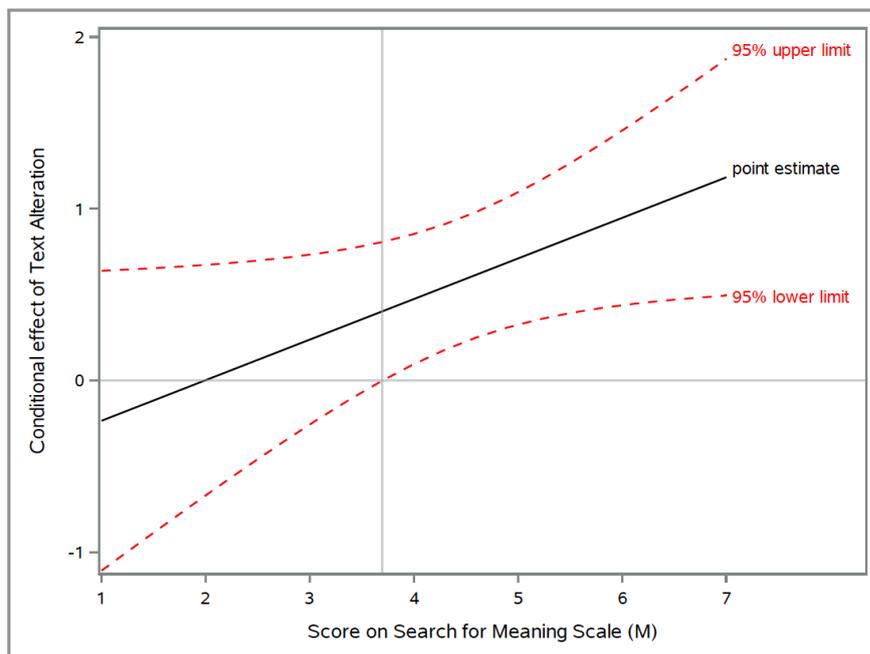


Figure 3