



## FlashReport

The virtues of opaque prose: How lay beliefs about fluency influence perceptions of quality<sup>☆</sup>Jeff Galak<sup>a,\*</sup>, Leif D. Nelson<sup>b</sup><sup>a</sup> Carnegie Mellon University, 5000 Forbes Ave., Pittsburgh, PA 15213, USA<sup>b</sup> University of California, Berkeley, 2220 Piedmont Avenue, Berkeley, CA 94720, USA

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## ABSTRACT

Instructors tell their students to write clearly. This prescription meshes with our intuition, wins confirmation in scores of books on writing, and finds empirical confirmation in research on perceptual fluency: People like content that is easy to process. Nevertheless, in some circumstances people expect content to be difficult, and ease might be interpreted as a lack of quality. We investigate this possibility by asking people to judge the quality of written text which varies in fluency (through the manipulation of font and facial feedback). Across three studies, disfluent content was judged to be of higher quality when it was thought to come from a source focused on conveying information than one designed to maximize enjoyment.

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“Clarity can only be a virtue.” Or so it is argued in the classic writing guide *The Elements of Style* (Strunk & White, 1979). Most writing manuals and instructors hold that quality writing is simple, clear, and succinct. Recent empirical investigations have confirmed the ubiquitous intuition: people think that clearer writing is better writing (Oppenheimer, 2006). Oppenheimer showed that, when text is easy to read, people evaluate the intelligence of the author of that text to be higher than when the text is difficult to read. These findings are grounded in the structure of meta-cognition (Petty & Briñol, 2007; Schwarz et al., 1991). Specifically, research into processing fluency, or the subjective feeling of ease with which people process information, demonstrates that fluent information is judged to be truer and better (Bornstein & D’Agostino, 1992; Reber & Schwarz, 1999; Zajonc, 1968).

Sometimes, however, people appear to value opacity over clarity. For instance, the readability of top management (Armstrong, 1980) and psychology (Armstrong, 1989; Hartley, Trueman, & Meadows, 1988) journals is negatively correlated with the perceived prestige of those journals. In the domain of marketing, there is a small, but reliable negative relationship between the readability of academic articles and the number of times they were cited (Stremersch, Verniers, & Verhoef, 2007). Finally, in the library sciences, the more difficult an article is to read, the more likely it is to be published

(Metoyer-Duran, 1993). Although these correlational results make causal inferences impossible, it may be that in an academic context, at least, Strunk and White (1979) are offering distinctly incorrect advice. Clarity may help convey information, but it may not impress readers.

How can clarity be so appealing in some investigations and so unappealing in others? We propose that this divergence derives from variations in the interpretation of fluency (Alter & Oppenheimer 2009; Unkelbach 2006, 2007). Recently, researchers have demonstrated that the interpretation of fluency depends on a number of variables (Lee & Labroo 2004). For example, fluent statements seem more truthful when fluency is diagnostic of truth, but seem less truthful when fluency is diagnostic of falsehood (Skurnik, Schwarz, & Winkielman, 2000). Fluent statements can be made to be diagnostic of falsehood with a simple learning task (Unkelbach, 2007). And fluency can exert a substantial influence on attitudes, but the influence is entirely dependent upon how people associate fluency with the diagnosticity of self generated arguments (Briñol, Petty, & Tormala, 2006). We follow a similar approach and propose that the interpretation of fluency in a reading context will vary as a function of what motivates a reader. For example, a student hunched over a textbook likely has different motives than does someone curled up with a mystery novel. The student is pursuing the accumulation of knowledge, whereas the mystery reader is pursuing a pleasant afternoon. On the surface, easier prose should aid knowledge acquisition as much as personal pleasure, but readers might expect a complex text to be a better text. Good textbooks are supposed to be difficult to read, a theory might hold, so an easily read book might suggest low quality. Similarly, if the mystery reader expects light and easy writing, then a disfluent read might signal lower quality.

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**Table 1**  
Experiment 1: Average reading goals and idealized complexity for 11 forms of writing.<sup>a</sup>

Item	Reading motivation <sup>b</sup>	Idealized vocabulary complexity <sup>c</sup>	Idealized ease of reading <sup>d</sup>
Novel	3.35 (0.19)	0.50 (0.19)	1.69 (0.18)
Short story	2.85 (0.19)	−0.11 (0.19)	1.75 (0.17)
Poem	2.58 (0.18)	0.85 (0.18)	1.00 (0.19)
Magazine	1.89 (0.20)	−0.74 (0.20)	2.35 (0.17)
Historical book	−0.08 (0.17)	0.91 (0.17)	0.91 (0.19)
Newspaper	−0.50 (0.20)	−0.26 (0.20)	1.94 (0.18)
Trade journal	−1.97 (0.17)	1.54 (0.17)	0.33 (0.22)
Technical magazine	−2.08 (0.19)	1.87 (0.19)	0.06 (0.22)
Research report	−2.43 (0.18)	1.91 (0.18)	0.12 (0.23)
Encyclopedia	−2.56 (0.20)	1.18 (0.20)	0.94 (0.21)
Textbook	−2.77 (0.20)	1.01 (0.20)	0.91 (0.21)

<sup>a</sup> Items ordered by reading motivation. Values in parentheses are standard errors.

<sup>b</sup> “Generally, when reading a [Reading Mode], are you primarily interested in seeking out information or enjoying the reading experience?” −4 = primarily interested in seeking out information, +4 = primarily interested in enjoying the reading experience.

<sup>c</sup> “Imagine that you are reading a [Reading Mode]. Now imagine the best possible version of this [Reading Mode]. How would you characterize the complexity of the vocabulary in this idealized version of a [Reading Mode]?” −4 = very simple vocabulary, +4 = very complex vocabulary.

<sup>d</sup> “Imagine that you are reading a [Reading Mode]. Now imagine the best possible version of this [Reading Mode]. How would you characterize the ease with which the sentences in this idealized version of a [Reading Mode] read?” −4 = very difficult to read, +4 = very easy to read.

## Experiment 1—Measuring lay beliefs

### Method

We asked people to consider 11 different reading modes (see Table 1 for a list) to investigate the relationship between expectations for information gathering versus enjoyment, and how that distinction relates to their ideals for complexity and fluency (Oppenheimer, 2006).<sup>1</sup> A total of 117 participants ( $M_{\text{age}} = 35.2$  years; 93 females) from an online panel completed the experiment in exchange for entry into a \$50 lottery. Participants completed two tasks with counter-balanced order. Approximately half of the participants first indicated their motivation for reading each of the 11 different reading modes (order was randomized across participants). For the second task, participants indicated the idealized level of complexity for each of the same reading modes (see Table 1 for question wording). For the other half of the participants, the order of these two tasks (reading motivates and idealized complexity) was reversed.

### Results

Question and task order did not meaningfully influence responses and so will be omitted from further analyses. We treated reading mode as the unit of analysis and collapsed across participants' responses.<sup>2</sup> For reading modes judged to be more intended for pleasure (versus information seeking), participants favored a simpler ideal vocabulary ( $r = -.66$ ,  $p = .027$ ) and an easier read ( $r = .68$ ,  $p = .020$ , see Table 1). People seem to believe writing intended for information gathering (pleasures) should ideally be less (more) fluent.

## Experiment 2—Reading goals and font readability

When reading for enjoyment, people idealize simple text, but when reading for information, they idealize difficult text. Does that mean that the same text will be judged differently if it is easier or more difficult to read? In Experiment 2, we manipulate fluency to examine its influence on writing evaluations across different reading modes. Across all conditions, written content was held constant, and

fluency was manipulated independently by altering the subjective sense of how difficult participants find the reading experience by manipulating the font readability (Oppenheimer, 2006; Reber & Zupaneck, 2002). When a passage is presented in a difficult to read font, participants misattribute the difficulty associated with the font to the passage itself (Alter & Oppenheimer, 2009; Simmons & Nelson, 2006). In this way, we are able to manipulate fluency, without actually altering the content of the passage.

We manipulate reading context by choosing reading modes primarily associated with either reading for pleasure or reading to gather information. We predict that when participants believe that the goal of the reading task is to enjoy it, they will prefer the fluent version (e.g., easy to read font) to the disfluent version (e.g., difficult to read font) and the opposite will be true when they are made to believe that the goal of the reading task is to obtain information from it.

### Participants and procedure

58 undergraduates ( $M_{\text{age}} = 20.9$  years; 36 females) at a large US university completed the experiment as partial fulfillment of a course requirement. Participants completed a questionnaire where they first read a short story (*The Danger of Lying in Bed* by Mark Twain). Importantly, we independently manipulated two aspects of the questionnaire: the font that the story was presented in and the experimental instructions. The story was printed in either an easy to read font (*Fluent*; Times New Roman - Size 12) or a difficult to read font (*Disfluent*; Times New Roman - Size 12 - Condensed 1.5). A second manipulation varied the source of the text. Some participants were told that they were in the “Historical Analysis Study” and that they would “read a short story and then indicate how you think it fits with the time period it was written in.” The remainder were told that they were in the “Short Story Study” and told to “read a short story and then tell us how much you enjoyed it.” We chose these two frames to maximize the variation in the reading motivation while maintaining believability and credibility with our participants. Next, all participants indicated how well written the story was, how good the story was, and how readable the font was on 7-point scales anchored with −3 (It was poorly written/Very Bad/It was not readable) and +3 (It was well written/Very Good/It was readable).

### Results

#### Font

A 2 (fluency: *Fluent*, *Disfluent*) × 2 (reading frame: *Short Story*, *Historical Analysis*) ANOVA on readability of the font revealed only a

<sup>1</sup> Because some participants gave identical responses across all 11 reading modes, correlations could not be computed for them. As such, four participants were excluded from the vocabulary complexity analysis and 18 participants were excluded from the reading ease analysis.

<sup>2</sup> A similar analysis treating the individual as the unit of measure results in the same conclusion.

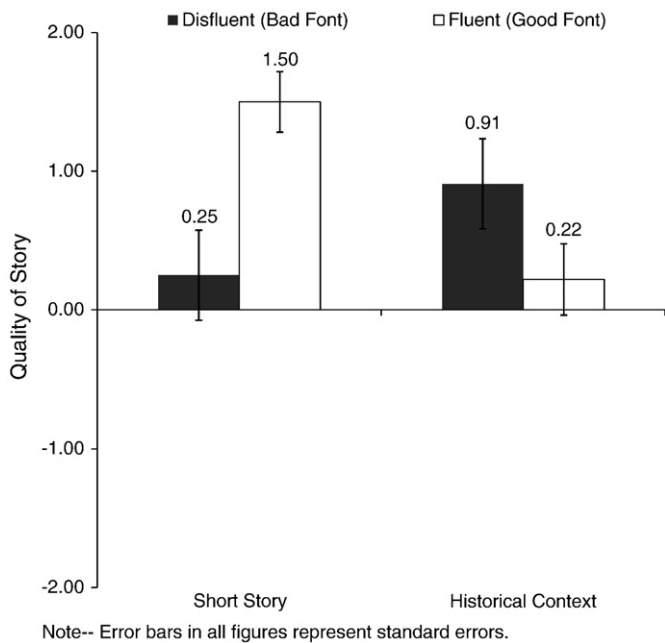


Fig. 1. Experiment 2: Story quality as a function of study frame and fluency.

main effect of fluency ( $F(1,135) = 278.22, p < .001$ ) such that, the *disfluent* font was far more difficult to read than the *fluent* font ( $M = -2.24$  vs  $1.58$ ).

#### Quality

The two primary dependent measures were highly correlated ( $\alpha = .68$ ) and were pooled into a single measure of story quality. An identical ANOVA on story quality revealed only the predicted 2-way interaction,  $F(1,54) = 11.60, p = .001$ . As can be seen in Fig. 1, participants in the “Short Story Study” found the story to be of higher quality when it was presented in a *fluent* font, ( $F(1,54) = 7.41, p = .009$ ). In contrast, participants in the “Historical Analysis Study” found the story to be of higher quality when it was presented in a *disfluent* font,  $F(1,54) = 4.19, p = .046$ . Participants preferred the “short story” when written in a *fluent* font, but preferred the “historical analysis” when written in a *disfluent* font.

#### Experiment 3—Reading goals and facial feedback

In Experiment 3, rather than manipulating fluency through font alterations, we manipulated subjective ease through facial feedback (Tourangeau & Ellsworth, 1979). When people find a task difficult, they tend to furrow their brow. More importantly, because proprioceptive feedback cues, like facial configuration, can influence judgments, the reverse is also true: when people are made to furrow their brows, they infer that a task must be cognitively difficult (Larsen, Kasimatis, & Frey, 1992; Strack & Neumann, 2000). As such, we manipulated fluency by asking some participants to furrow their brow while reading the same passage used in Experiment 2. When someone furrows her brow, she will perceive the accompanying task as more complex and because people expect complexity when reading for information (and clarity when reading for enjoyment), we predict that they will judge the source to be of higher quality. In contrast, a relaxed brow should feel inconsistent and lead to poorer evaluations.

#### Participants and procedure

A total of 92 participants ( $M_{age} = 26.1$  years; 35 females) were recruited off the street and paid \$3 for their participation. Sixteen participants refused or failed to comply with the primary manipula-

tion and were excluded from analyses, resulting in usable data from 72 participants. Participants learned that the session would include two experiments. During the first experiment, *Reading Tension Study*, participants were told that we were interested in understanding how reading assignments might influence tension, and participants would therefore be asked to read a short passage. The next instruction contained our fluency manipulation. Approximately half of the participants were asked to simulate the tension with the following instruction: “contract your eyebrows toward the middle of your forehead and hold that pose during the duration of the upcoming study.” Participants were shown a photo demonstrating what the facial gesture should look like (*Disfluent* condition). The other half of the participants were not asked to contract their eyebrows (*Fluent* condition). Participants were then given a questionnaire similar to the one used in Experiment 2 and were randomly assigned to one of the same two frame conditions (both in the easy to read font): *Historical Analysis* and *Short Story*.

#### Results

The two primary dependent measures were highly correlated ( $\alpha = .78$ ) and were pooled into a single measure of story quality. A 2 (fluency: *Disfluent*, *Fluent*)  $\times$  2 (frame: *Historical Analysis*, *Short Story*) ANOVA on this new measure yielded only a 2-way interaction ( $F(1,71) = 12.30, p < .001$ ). As can be seen in the Fig. 2, and again consistent with our hypothesis and the results of Experiment 2, participants who were told to gather information (*Historical Analysis*) thought the story was of higher quality when they furrowed their brow as compared to those who did not furrow their brow ( $F(1,71) = 3.92, p = .052$ ). However, the opposite was true when participants were told that the goal of the reading study was to simply enjoy it (*Short Story*;  $F(1,71) = 8.59, p = .004$ ).

#### Conclusion

Three experiments demonstrate that reading motivations moderate preferences for writing clarity. A clearly written textbook may be easier to read, but it might also be judged more simplistic and end up less persuasive. Likewise, although critics may praise an abstruse novel, enjoyment-oriented readers might just look further down the shelf. On first glance, these findings seem at odds with previous work suggesting that clarity is better in all domains (e.g., Oppenheimer,

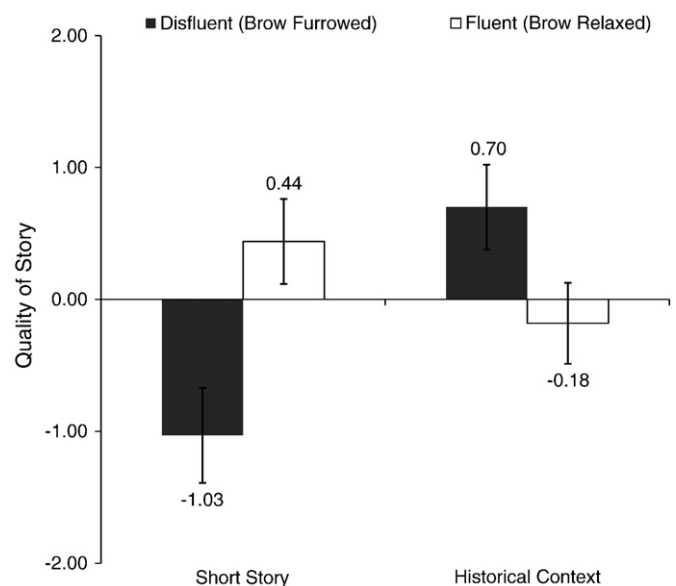


Fig. 2. Experiment 3: Story quality as a function of study frame and fluency.

2006). For instance, Oppenheimer (2006, Study 2) demonstrated that readers preferred fluent over disfluent translations of Descartes's Meditations, although this task was anything but enjoyable. One distinction between our research and the study just described offers a plausible and intriguing explanation. Oppenheimer (2006) asked readers to evaluate the intelligence of the author whereas we asked readers to evaluate the quality of the passages. Although we can only speculate, perhaps readers have different beliefs about what fluency signals about authors as compared to their writing. Perhaps the impenetrable textbook is judged to be quite astute, but its author to be rather asinine. Further research is clearly needed, but the possibility would certainly create a complex prescription for an aspiring author.

We explain our findings in terms of lay beliefs, but these beliefs may be enhanced by the independent influence of expectation disconfirmation (i.e., the Affective Expectation Model; Geers & Lassiter 1999; Wilson, Lisle, Kraft, & Wetzal, 1989). A reader expecting fluency might deride a disfluent passage simply because it violates expectations. For the present set of experiments, this interpretation only offers a partial account as our participants' expectations are not matched against the stimuli: it remains entirely likely that the "fluent" historical analysis was exactly in line with expectations, but the disfluent version was still judged more favorably, despite its violation of expectation. Relative fluency guides our predictions, whereas absolute fluency is central to a consideration of expectancy violation. People's expectations are central to their judgments of quality, but violation of those expectations only offers a partial explanation for the present findings.

Finally, participants in our studies may have had different interpretations of what quality is across the two reading modes. When reading to derive pleasure, quality may be considered differently than when reading to, for instance, evaluate the historical context of a passage. Though this variability is necessarily true, it does not explain the interactions we observe since the interpretation of quality does not differ across fluency conditions. Although variable interpretation of quality may result in a main effect pushing ratings up or down, this variability cannot account for the fact that low fluency yields high-quality assessments in one condition and not in another. In sum, our results demonstrate that when reading, the effects of fluency vary as a function of what the reader expects.

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