Can Legible Marketing Backfire?

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Abstract

The effects of disfluent text and signaling on learning have long been debated and researched. Previous research has found that disfluency (making the text harder to read) can aid in memorization, as it seems to force readers to pay more attention as they read. However, most of the published studies focus on academic learning outcomes. This study intends to focus on consumer behavior. This study compared the memorability of a product using disfluent text and signaling (guiding the eye using design methods, such as boosting saturation.) The experiment recruited 48 participants. Most participants were either self-selected students at the University of Southern California or family and friends of the researchers. The study evaluated disfluency by comparing whether participants could more easily remember a product accompanied by the font Sans Forgetica. Similarly, signaling was assessed by testing how easily participants recalled products with more or less saturated pictures.

The study assessed two outcomes: whether participants were more likely to remember a product and whether they were more likely to purchase a product. The research was conducted using a survey made in Qualtrics. After the statistical analysis, the study found no significant effects. However, the study had several limitations, including screen size disparities, lack of coding experience from the researchers, and screen color variance between participants.

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When marketing products online, a common assumption or intuition among designers is that the clearer and rounder the font, the more legible it is—the more readable the font, the more memorable. A clear example of this thinking lies in how Google has enforced its "Material Design guidelines. According to these guidelines, designers should avoid using "expressive" fonts such as handwritten or script styles in certain parts of the UI, as these can be hard to read ("Material design," n.d.). However, what if this intuitive assumption is flawed? This study considers recent findings on disfluent text and how they may affect the memorability of a product.

Disfluent text is defined as text that is generally harder to read (Weissgerber, 2016). Recent studies have found that disfluent text can have a tangible effect on memory when learning new material (Weissgerber, 2016). Many studies on disfluency focus on academic learning (Kühl, 2016). The present study intends to take things forward by focusing on consumer behavior. It looks to determine whether the disfluency results translate from academic learning to product marketing and presentation.

The running theory on why disfluency works is that text that is challenging to read forces readers to engage meta-cognitively and thereby focus on the content of the reading through deeper processing.

Past research suggests that demanding learning environments can produce long-term learning. According to this research, this effect occurs because difficulty facilitates long-term memory encoding and retrieval. Instead of passively reading information, which creates weak anchors in memory, difficult learning conditions promote generating and practicing retrieval strategies.

A recent study by Lai and Zhang (2021) compared the results of disfluent text to what they called "signaling." Lai and Zhang define signaling as pointing something out. Designers commonly use signaling through color choice, composition, size, and repetition. The entire purpose of signaling under this context is to control the user's attention and handpick where it is meant to go. The study compared the effects of signaling to the effects of disfluent text in multimedia learning. It used eye tracking to find the combined effect of text legibility and signaling. The study by Lai and Zhang found that both factors led to better performance and that there was an interaction between signaling and dysfluency. When signaling was used on material with fluent text, it guided participants' attention to important content, enhancing their perceived familiarity with the material. Disfluent text had a greater effect leading to better learning regardless of signaling.

Both disfluent text and signaling are methods that can be used to guide user attention. Based on these studies, both methods can help evade the adverse outcomes of distracting environments. One of the most significant issues affecting the ad industry is that marketers have no idea where their ads will get placed. Ads could be placed next to a highly distracting video of kittens on YouTube or next to a Facebook post denying vaccines. The present study seeks to determine if disfluent text and signaling (through color saturation) can help marketers guide users' attention back to the product and away from these distractions or potentially problematic brand associations. One study found that disfluent text can help reduce distractions by reducing the processing of irrelevant background noise (Halin, 2016). Another study by Kong found that attentional mechanisms allow us to focus on things that help us achieve our goals while ignoring irrelevant things. This same study by Kong also found that color (signaling) is easier to remember and retrieve than spatial information (where an object is in space, such as a product,

and where it is placed on a website.) (Kong, 2022). According to Kerzel and Cong (2022), signaling affects visual attention because searching for things visually is easier when participants know what to look for. The inverse is also true; search gets helped by knowing what not to look for (and ignore). People commonly avoid or ignore typical ads due to this concept. Signaling could overwrite this system to the marketer's advantage and passively guide attention to the ad by indicating to users what to look for and priming their brains to search for it subconsciously.

The present study seeks to approach signaling through color saturation (intensity). A study by Jean-Éric Pelet and Panagiota Papadopoulou (2012) found that using chromatic colors in the background or foreground increased memorability.

All In all, the literature mentioned above emphasizes that there are many ways to produce signaling, and signaling as a whole is highly effective. Disfluent text, on the other hand, tends to be more debated. However, the effects of disfluent text could contribute to signaling. The present study seeks to find whether these two concepts translate their effects to marketing. The present study has the following research question: to what degree can disfluency and signaling be used to increase product memorability and consumer perception of a product? The researchers' hypothesis based on previous literature is that using chromatic colors on the product image at around 75% added saturation will increase attention retention. The researchers also believe there will be a small effect on product memorability on the products with disfluent text copywriting.

Method

Participants

The researchers recruited 48 participants. Most participants were self-selected students at the University of Southern California (USC) or self-selected users from the internet. Participants also included family members and friends of the researchers from multiple countries. This study sampled participants by distributing a link to the study's primary survey through group chats and digital communities. It was also sent via private message to family members and friends. The mean age of participants was 29.54.

Design

To evaluate what effect disfluency and signaling can have on product memorability, participants were randomly assigned to each of the four groups in a 2 (font family) X 2 (saturation level) between-subjects experimental design. Saturation had two levels: 0% and. 75% (see table 1). Zero percent is considered "regular." In other words, the product image is unchanged. The 75% level increased the image saturation by 75%. Font family had two levels: "regular" included the Roboto font family. "Disfluent" included the Sans Forgetica font family. All independent variables are between-subjects.

The dependent variables were: "consumer preference," where the researchers evaluated whether the aesthetic changes led to greater or fewer selections on the changed product presentation. "Memorability" evaluated both memory retention and recall. Consumer preference was measured by the number of times a product was selected as a "favorite." Memorability was measured by the number of times a product price was successfully remembered.

Materials

To measure the effect of the independent variables, the researchers used a survey made in Qualtrics. This survey presented a random version of a video to each participant. Additionally, Adobe Photoshop was used to alter the saturation of the product images, and the program Figma was used to create the website mockup.

Images were brought into Photoshop, a saturation adjustment layer was added to the layer stack above the image, and saturation was increased by 75%. For the website, one of the researchers used Figma to create a rough e-commerce website mockup.

A post-survey was used, also in Qualtrics, to measure the dependent variables.

Procedure

Participants received a link to a Qualtrics survey. Within this survey, they were randomly presented with one of four videos (each representing an experimental group). This video showed a screen recording of a mouse pointer interacting with a basic e-commerce website. Video one showed the standard website with no changes. Video two had random product images at the 0% saturation level and disfluent text. Video three had random product images at the 75% saturation level and regular text. Video four had random product images at the 75% saturation level and disfluent text.

Once participants watched the assigned video, they were presented with two questions: The first question evaluated consumer preference by asking which product was their favorite (thereby evaluating whether signaling or disfluency impacted preference.) The second question evaluated memorability and the effectiveness of disfluent fonts by asking participants to type the color on a specific bag in the video.

Once the videos were shown, and the data on consumer preference and memorability was collected, it was analyzed through a univariate analysis of variance, and outliers were removed. Through this analysis, the research can pinpoint whether there was a correlation between disfluency/memorability, disfluency/consumer preference, signaling/memorability, and signaling/memorability.

Results

To analyze the data, the researchers used a Univariate Analysis of Variance with α=.05. The researchers also analyzed effect sizes. Table 2 shows the means and standard deviations for all dependent variables and conditions. The researchers removed one outlier due to the participant entering nonsensical data into the survey.

There was no main effect for disfluent text $F(1, 43) = .07$, $P=.56$, $\eta2= .002$. There was no main effect for signaling $F(1, 43) = .33$, $P= .79$, $\eta2= .008$. There was no main effect for the combination of both $F(1, 43) = .08$, $P= .77$, $\eta2= .002$. With a small effect size and no significance, there is no robust evidence in the present study that using disfluent text and signaling will improve product memorability or increase purchasing decisions in marketing.

Discussion

This study's results counter much of the signaling and disfluent text literature. The results indicate that fluent and disfluent fonts do not affect purchasing decisions. This result counters our original hypothesis, but it also counters current design practices that focus on the idea that clarity and fluency increase buying intention. This study also found no relation between disfluent text and greater memorability in a marketing setting. This result adds to the contested nature of disfluent text because it is challenging to replicate disfluent text study results.

An unexpected finding was that signaling also had negligible effects. This is unexpected because the literature on signaling is significantly less contested. Generally, studies find an effect between signaling and memorability.

Even though the researchers failed to reject the null hypothesis, future research could take this study's ideas forward in multiple ways. This study had a wide array of limitations. The most important ones were color disparities among participants, limited product types, and video presentation disparities.

The first, color disparities, occurred because modern screens have widely different ways of presenting content. Cheap displays can distort colors, some displays can boost contrast and saturation, some displays have different color profiles, and even smartphone screen protectors can change the perception of color saturation. This caused participants to, for example, confuse dark blues with black and give completely different answers.

The second significant limitation was a narrow product type. The present study focused solely on backpacks. However, these results may only generalize to some product types out there. The backpacks were also all similarly designed due to the fact they all came from the same brand.

Finally, the video presentation may have varied from participant to participant because YouTube's embed code for videos did not allow the researchers to force full screen. Therefore, some participants who held the phone vertically without manually engaging the full-screen capability may have seen an unfairly small video version.

Future research may explore different avenues, such as inverting our model, improving our model, or expanding our model. Inverting our model could mean researching the effect of fluent font on purchasing decisions and memorability. It could also mean looking into

desaturation to find effects in the same key areas. Improving our model could mean building on top of it and finding ways to replicate our methods with fewer limitations. Expanding our model could mean adding materials, such as a custom-coded website that can track mouse movements and user interactions to precisely find what products users lean toward and whether disfluent fonts and signaling affect this effect. Future research could look for alternatives to disfluent text that increase memorability without sacrificing aesthetics.

Conclusion

This study set out to explore the intuitive conceptions designers have regarding fluent fonts. The present research found no evidence against these intuitions, but it also found nothing in favor of them. So there is still a lot to explore in this area, and future research is needed to uncover more results. The present study had many limitations, but the researchers hope it sparks curiosity in other researchers interested in exploring how font types and signaling can increase buying intentions and memorability of a product.

References

Chang, M., & Brainerd, C. J. (2022). Association and dissociation between judgments of

    learning and memory: A meta-analysis of the font size effect. *Metacognition and Learning*,

    17(2), 443–476. https://doi.org/10.1007/s11409-021-09287-3

Halin, N. (2016). Distracted while reading? changing to a hard-to-read font shields against the

    effects of environmental noise and speech on text memory. *Frontiers in Psychology*, *7*.

    https://doi.org/10.3389/fpsyg.2016.01196

Kerzel, D., & Huynh Cong, S. (2022). Guidance of visual search by negative attentional

    templates depends on task demands. *Journal of Experimental Psychology: Human*

    Perception and Performance, *48*(6), 653–664. https://doi.org/10.1037/xhp0001005

Kong, G., & Fougnie, D. (2022). How selection in the mind is different from attention to the

    world. *Journal of Experimental Psychology: General*, *151*(3), 542–554.

    https://doi.org/10.1037/xge0001098

Lai, T., & Zhang, J. (2021). The influence of signaling on the disfluency effect in multimedia

    learning. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.755804

Material design. (n.d.). Retrieved December 13, 2022, from

    https://m2.material.io/design/typography/the-type-system.html

Pelet, J.-É., & Papadopoulou, P. (2012). The effect of colors of e-commerce websites on

    consumer mood, memorization and buying intention. *European Journal of Information*

    Systems, *21*(4), 438–467. https://doi.org/10.1057/ejis.2012.17

Weissgerber, S. C., & Reinhard, M.-A. (2017). Is disfluency desirable for learning? *Learning*

    and Instruction, *49*, 199–217. https://doi.org/10.1016/j.learninstruc.2017.02.004

Appendix

Table 1

Font Type	Signaling
Fluent	0%
Disfluent	75%

Table 2

Means and standard deviations

Saturation Condition	Text Condition	Mean	Standard Deviation
0% saturation		3.30	2.163
75% saturation	Fluent	3.30	1.586
Total		3.05	1.838
0% saturation		3.00	1.758
75% saturation	Disfluent	2.85	1.819
Total		2.92	1.754
0% saturation		3.14	1.910
75% saturation	Total	2.84	1.675
Total		2.98	1.775