Short Report

If It's Hard to Read, It's Hard to Do

Processing Fluency Affects Effort Prediction and Motivation

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People are more likely to engage in a given behavior the less effort it requires. As numerous studies have indicated, high perceived effort is a major impediment to behavior change, from adopting an exercise routine (e.g., DuCharme & Brawley, 1995) to changing one's diet (e.g., Sparks, Guthrie, & Shepherd, 1997). Although previous research has shown that task type (e.g., Buehler, Griffin, & Ross, 1994) and previous experience (e.g., Thomas, Handley, & Newstand, 2007) influence the accuracy of effort predictions, little is known about how people estimate the effort involved in a novel behavior. One possibility is that people run a mental simulation of the behavior and infer effort from the fluency of the simulation. If so, incidental variables that affect the ease with which information about the behavior can be processed may play a key role in effort prediction. We tested this possibility by presenting instructions in easy- or difficult-to-read print fonts. We predicted and found that people misread the difficulty of processing instructions as indicative of the difficulty of executing the behavior, and that this misperception has downstream effects on their willingness to engage in that behavior.

STUDY 1

Method
Twenty students (12 females, 8 males; average age = 20.9 years) read identical instructions for an exercise routine printed in an easy-to-read (Arial, 12 point) or difficult-to-read (Brush, 12 point) font. They estimated how many minutes the routine would take (open-ended) and how "quick" it would feel (7 = *very*). They also used 7-point rating scales to indicate whether the exercise would "flow naturally," "drag on," and feel "boring"; after recoding, these judgments were averaged (Cronbach's α = .82), with higher values indicating a more fluent exercise rou-

tine. Finally, participants reported whether they were likely to make the exercise part of their daily routine (7 = *very likely*).

At the end of the study, participants answered two factual questions as a memory test, rated the ease with which the print font could be read (7 = *very easy*), and provided demographic information.

Results and Discussion
As shown in Table 1, participants found the Arial font easier to read than the Brush font, but recalled details of the instructions equally well in the two conditions. As predicted, they estimated that the exercise would take less time and feel "quicker" and more fluent when the font was easy to read than when the font was difficult to read. Accordingly, they reported a higher willingness to make the exercise part of their daily routine when it was described in an easy-to-read font than when it was described in a difficult-to-read font. The observed effect sizes qualify as large (Cohen, 1988).

These findings provided first evidence that people misread the ease of processing instructions as bearing on the ease of executing the described behavior. Study 2 replicated this observation using a cooking recipe. Study 3 extended the findings by testing whether the ease of reading instructions influences perceptions of the skill required for executing the behavior.

STUDIES 2 AND 3

Method

Study 2
Twenty-seven students (22 females, 5 males; average age = 18.74 years) read a recipe for a Japanese roll, printed in an easy-to-read (Arial, 12 point) or difficult-to-read (Mistral, 12 point) font. They estimated the time needed to prepare the dish (in minutes, open-ended), and reported their willingness to do so (7 = *very likely*). As a memory test, they answered two yes/no

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TABLE 1

Effects of Fluency on Predicted Effort and Motivation

Measure	Easy font		Difficult font		Effect size (d)
	M	SD	M	SD	
Study 1					
Manipulation check: ease of reading (7 = *very easy*)	6.3	0.82	4.3***	1.42	1.72
Memory test score (0–2; 2 = *both correct*)	1.3	0.48	1.2	0.63	0.18
Expected quickness of the exercise (7 = *very*)	4.8	1.03	3.5*	1.35	1.08
Expected number of minutes needed (open-ended)	8.23	5.61	15.1[+]	9.28	0.9
Expected fluency of the exercise (index; 7 = *high*)	4.83	1.43	3.2**	0.83	1.39
Willingness to do the exercise (7 = *very likely*)	4.5	1.78	2.9*	1.6	0.95
Study 2					
Manipulation check: ease of reading (7 = *very easy*)	6.14	1.29	2.69***	0.75	3.27
Memory test score (0–2; 2 = *both correct*)	1.93	0.27	1.77	0.44	0.44
Expected number of minutes needed (open-ended)	22.71	13.76	36.15*	15.3	0.92
Willingness to prepare the dish (7 = *very likely*)	4.21	1.76	2.85*	1.68	0.79
Study 3					
Manipulation check: ease of reading (7 = *very easy*)	6.11	1.45	2.8***	1.03	2.63
Memory test score (0–2; 2 = *both correct*)	1.8	0.42	2.0	0	0.67
Estimated skill needed to prepare the dish (7 = *very high*)	4.11	1.27	5.2*	0.92	0.98

[+]$p < .10$. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

questions about whether carrots and avocado were used in the recipe. Finally, they rated the ease of reading the print font and provided demographic information.

Study 3

Using the recipe materials of Study 2, 19 students (11 females, 8 males; average age = 19.32 years) rated how much skill a restaurant cook would need to prepare the dish (7 = *high skill*). At the end of the study, they also rated the ease of reading the fonts and answered memory questions.

Results and Discussion

Participants in both studies rated the Arial font as easier to read than the Mistral font (Table 1), but their memory for details did not differ as a function of font.

Participants in Study 2 predicted that preparing the recipe would require less time when the font was easy to read than when the font was difficult to read. Moreover, they reported a higher willingness to prepare the recipe themselves when the font was easy to read. Participants in Study 3 reported that the recipe requires more skill from the cook when it was printed in a difficult-to-read font than when it was printed in an easy-to-read font.

CONCLUSIONS

In sum, people misread the ease of processing instructions as indicative of the ease with which the described behavior can be executed. In the present studies, participants reported that the behavior would take more time (Studies 1 and 2), would feel less

fluent and natural (Study 1), and would require more skill (Study 3), and hence were less willing to engage in it (Studies 1 and 2), when the instructions were printed in a difficult-to-read rather than an easy-to-read font. The size of the observed effects was large according to Cohen's (1988) criteria, and the same behavior was assumed to take 83% (Study 1) or 59% (Study 2) more time when described in a difficult-to-read font than when described in an easy-to-read font. In a similar vein, Kelley and Jacoby (1996) observed that fluency due to previous exposure influenced judgments of anagram difficulty.

The present findings extend the observation that people draw on their metacognitive experiences in making a wide variety of judgments (for reviews, see Schwarz, 2004; Schwarz & Clore, 2007). The numerous variables that facilitate fluent processing—from print fonts to repetition, rhyme, and the complexity of the vocabulary (for reviews, see Alter & Oppenheimer, 2008; Reber, Schwarz, & Winkielman, 2004)—provide promising avenues for designing instructions that increase the appeal of the described behavior, and have potentially beneficial effects on the likelihood that it will be adopted.

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