Decision Quicksand: When Trivial Choices Suck Us In

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ABSTRACT

People often get unnecessarily mired in trivial decisions. The current research proposes a metacognitive account for this painful phenomenon. Our central premise is that people use subjective experiences of difficulty while making a decision as a cue to how much further time and effort to spend. People generally associate important decisions with difficulty. Consequently, if a decision feels unexpectedly difficult, due to even incidental reasons, people may draw the reverse inference that it is also important, and consequently increase the amount of time and effort they expend. Ironically, this process is particularly likely for decisions that initially seemed unimportant because people expect them to be easier. In contrast, the real-time experience of difficulty tends to be less diagnostic for important decisions, which are expected to be more difficult and laborious to begin with.

People often find themselves mired in seemingly trivial decisions. We agonize over what toothbrush to buy, struggle with what flight to purchase, and labor over which shade of white to paint the kitchen. While much research (and common wisdom) suggest that people should deliberate harder the more important the decision (Chaiken & Maheswaran 1994; Petty & Wegener 1998), why do people sometimes get stuck in seemingly minor choices?

We suggest that metacognitive inference contributes to a process we name "decision quicksand," whereby people get sucked into spending more time on unimportant decisions. Research on metacognition shows that people often use the subjective difficulty with which information is processed as an input to other, even seemingly unrelated, judgments (Schwarz 2004). For example, stimuli that are harder to process are often seen as more distant (Alter & Oppenheimer 2008), instrumental (Labroo & Kim 2009), and unique (Pocheptsova, Labroo, & Dhar 2010) than their easy-to-process equivalents.

Our central premise is that people use the subjective difficulty experienced while making a decision as a cue to how much further time and effort to spend. More important decisions are often more difficult because they involve higher stakes that call for laborious scrutiny. As a result, people tend to expect decisions regarding significant matters to be difficult and decisions regarding trivial matters to be easy. Indeed, when asked 80 respondents, 91% indicated that important decisions should generally be more difficult than unimportant ones. Consequently, if a decision feels unexpectedly difficult, we propose that people may draw the reverse inference that it is also important and deserving of more attention.

But while subjective difficulty sometimes reflects genuine importance, it can also be generated by incidental factors such as too many options (Iyengar & Lepper 2000), conflicting tradeoffs (Tversky & Shafir 1992), or processing disfluency (Schwarz 2004). These factors often

have little to do with decision importance, but may nevertheless increase subjective difficulty. We argue that they can make decisions seem more important which, in turn, should increase the amount of time people spend choosing (Chaiken & Maheswaran 1994; Petty & Wegener 1998).

Ironically, we argue that this process is particularly likely for decisions that initially seemed unimportant because people *expect* them to be easier. The influence of experiential information (e.g., cognitive difficulty) on judgment is stronger the more the experience deviates from expectations (Wänke, Schwarz, & Bless 1995; Whittlesea & Williams 2000). In other words, it is not metacognitive difficulty by itself, but rather unexpected difficulty that informs judgment (e.g., "I thought this should be easy, but it's not"). Even moderate metacognitive experiences can have a stronger impact on judgment than extreme ones when the former are more unexpected than the latter (Schwarz 2004; Whittlesea & Williams 1998). Since decisions on important matters are expected to be tough, real-time experiences of difficulty provide little added information. For less important issues, however, subjective decision difficulty is more likely to be unexpected and therefore more likely to serve as a metacognitive cue for how important it is to get the decision right. Though it may not change how people see the issue as a whole, making a good decision in that particular instance may come to be seen as more important. Thus, while difficulty can mechanically cause decisions to take longer, we propose it can have an additional detriment. Especially for decisions that originally seemed unimportant, metacognitive inference from difficulty can lead people to spend even longer deciding.

Three experiments test the prediction that misattributing difficulty to decision importance can lead people to get sucked into unimportant decisions. Experiment 1 uses a field setting with real monetary consequences to examine whether difficulty resulting from tradeoff conflict (Chatterjee & Heath 1996) leads people to spend more time deciding on unimportant matters

(and whether this effect is more pronounced than for important matters). Experiment 2 manipulates difficulty through perceptual disfluency (Reber & Schwarz 1999), and tests our proposed metacognitive account by examining whether the effect of difficulty on deliberation time is mediated by perceived decision importance and disappears when people attribute difficulty to an alternative source (Labroo & Kim 2009; Novemsky et al. 2007). Finally, experiment 3 examines the spiraling nature of decision quicksand, testing whether struggling longer over an unimportant issue leads people to invest even further time deciding.

EXPERIMENT 1: REAL ASSIGNMENT CHOICES

Amazon's Mechanical Turk is an online labor market where people post assignments for "workers" to choose from. This makes it a particularly strong domain to test our hypothesis because it is incentive-compatible and workers are motivated to spend as little time as possible given a certain payment (Mason & Suri 2010). We presented workers with a real choice and observed the effect of decision importance and difficulty on the time they spent choosing.

Method

One hundred twenty one Mechanical Turkers (mean age = 32; 49% female) chose an assignment for later completion. Participants were randomly assigned to one of four conditions in a 2 (Importance: high vs. low) x 2 (Difficulty: high vs. low) between-subject design.

We varied decision importance using a manipulation validated in prior research (Schrift, Netzer, & Kivetz 2010). Half the participants (high-importance condition) were told that their

choice was binding and that they would not be able to switch once their choice was submitted. The other half (low-importance condition) were told that their choice was not binding and that they could switch whenever they wanted.

Decision difficulty was manipulated through the number of options and tradeoffs, Figure 1. Participants in the difficult condition selected among four assignments which varied on four dimensions. These options included multiple tradeoffs among attributes and no single option dominated the others. Participants in the easy condition selected among only two options, one of which nearly dominated the other (superior on three attributes and inferior on one)[1]. Our key dependent variable was the amount of time participants spent, in seconds, before submitting their decision.

Results and Discussion

Analysis of variance on time revealed a main effect of difficulty, $F(1, 117) = 25.31$, $p < .001$, $\eta^2 = .178$, qualified by the predicted importance x difficulty interaction, $F(1, 117) = 4.12$, $p < .05$, $\eta^2 = .034$, Figure 2. While difficulty increased time spent in general, it had a particularly pronounced effect in the unimportant condition ($M_{easy} = 20.2$ vs. $M_{difficult} = 47.8$), $F(1, 117) = 25.36$, $p < .001$, $\eta^2 = .318$, compared to the important condition ($M_{easy} = 28.8$ vs. $M_{difficult} = 40.5$), $F(1, 117) = 4.43$, $p < .05$, $\eta^2 = .066$.

Experiment 1 provides preliminary support of our prediction that experiences of difficulty can lead people to get stuck in unimportant decisions. Increased decision difficulty led people to spend more time deciding, but this effect was particularly pronounced when the

[1] Confirming the decision difficulty manipulation, all participants in the easy condition selected the superior option, whereas choice was distributed across all four options in the difficult condition.

decision initially seemed unimportant. The next experiment investigates whether metacognition underlies this finding and tests the mediating role of perceived decision importance.

EXPERIMENT 2: THE PROCESS UNDERLYING DECISION QUICKSAND

Experiment 2 extends experiment 1 in three important ways. First, rather than manipulating difficulty through the options themselves, we kept the options and tradeoffs difficulty the same but manipulated ease of processing by presenting them in an easy or difficult to read font (Labroo & Kim 2009). This provides an even stronger test of our theory because it allows us to examine whether inferences about decision difficulty lead people to spend more time on unimportant decisions even when difficulty is truly exogenous to the decision. Second, we collected measures of perceived decision importance to examine its hypothesized mediating role in these effects. Finally, we examined the role of misattribution by adding a condition in which participants were prompted to correctly attribute difficulty to font quality (adapted from Novemsky et al., 2007). If the effect of difficulty on deliberation time is driven by misattribution of the experience to decision importance, as we suggest, then calling attention to the true source of difficulty should eliminate the effect.

Method

Participants (N = 264, mean age = 38; 70% female) were recruited through a nationwide database of people who indicated they were interested in completing psychological experiments

on the Internet. They were randomly assigned to condition in a 2 (Importance: high vs. low) x 3 (Difficulty: low vs. high vs. high with corrected attribution) between-subject design.

They chose between two flight options described using four attributes, and decision importance was manipulated through framing. In the important [unimportant] condition, people were asked to imagine they were traveling for an important [unimportant] meeting and the journey was said to be "relatively long and tiring, so it is very important that you get the best flight possible [short and easy, so it is relatively unimportant what flight you get]."

Decision difficulty was manipulated through processing ease. The two options were presented using either a small, low-contrast font (high-difficulty condition) or a larger, high-contrast font (low-difficulty condition), (Labroo & Kim 2009). The content of the options and tradeoffs was kept the same across difficulty conditions. In the corrected attribution condition, the options were presented in hard-to-read font but participants were forewarned that the information might be difficult to read because of low font quality.

Our key dependent variable was how much time participants spent deciding. To test the mediating role of perceived decision importance of making a good decision, participants also rated the extent to which it was important to them to make a good decision and the decision seemed important (1 = Not at all important; 7 = Very important, $r = .76$, averaged to form an index). Finally, as a manipulation check, participants rated how the decision compared to expectations (1 = easier than expected; 4 = neither easier nor harder than expected; 7 = harder than expected).

Results

Manipulation check. As expected, an importance x difficulty ANOVA on perceived difficulty relative to expectations revealed a significant interaction $F(1, 258) = 3.19$, $p < .05$. *T*-tests indicated that experienced difficulty was significantly higher than expected (as represented by the neutral midpoint of the scale, 4) only in the low-importance, disfluent condition ($M = 4.69$), $t = 4.93$, $p < .01$. Experienced difficulty was no different from expectations (as measured by the neutral midpoint of the scale) in all the other conditions (all $t < 1$, *ns*), and these conditions did not differ significantly from one another, all $F(1, 258) < 1.7$, *ns*.

Effect on deliberation time. A 2 (importance) x 3 (difficulty) ANOVA on time revealed a main effect of difficulty, $F(2, 258) = 4.17$, $p < .05$, $\eta^2 = .038$, which was qualified by the predicted interaction, $F(2, 258) = 3.80$, $p < .05$, $\eta^2 = .035$. See figure 3.

As expected, when the decision seemed unimportant, decision difficulty increased deliberation time ($M_{fluent} = 35.9$ vs. $M_{disfluent} = 51.3$), $F(2, 258) = 7.92$, $p < .001$, $\eta^2 = .232$, but it did not have the same effect when the decision seemed important ($M_{fluent} = 45.2$ vs. $M_{disfluent} = 45.0$), $F < .20$, *ns*. Looked at another way, when the options were easy to process, people deliberated longer in the important condition, $F(1, 258) = 6.35$, $p < .05$, but this reversed when the options were harder to process, $F(1, 258) = 3.57$, $p < .06$.

Moreover, the corrected attribution condition reveals that the effect of increased difficulty on unimportant decisions disappeared when participants had been prompted to correctly attribute difficulty to the font ($M_{disfluent\_corrected} = 37.5$, significantly smaller than $M_{disfluent} = 51.3$, $p < .005$, but similar to $M_{fluent} = 35.9$, $p = .49$). This supports the notion that the effect of difficulty was driven by misattribution of difficulty to decision importance.

Effect on perceived importance of making a good decision. Running the same ANOVA on perceived decision importance revealed a main effect of importance framing, $F(1, 258) = 26.47$, $p < .001$, $\eta^2 = .099$, indicating that our manipulation was successful. Second, in addition to a main effect of difficulty, $F(2, 258) = 5.82$, $p < .05$, the analysis also revealed the predicted framing x difficulty interaction, $F(2, 258) = 9.28$, $p < .001$. As expected, decision difficulty increased perceived decision importance in the low-importance condition, $F(2, 258) < 14.81$, $p < .001$, but this effect was attenuated when the decision had been framed as important $F < .30$, *ns*.

Specifically, in the low-importance condition, participants perceived the decision as more important when the options were disfluent ($M_{fluent} = 3.6$ vs. $M_{disfluent} = 5.1$), $p < .001$, but this difference disappeared when participants had been forewarned that font quality might make the information difficult to read ($M_{disfluent\_attribution} = 4.1$, similar to $M_{fluent} = 3.6$, $p < .2$, but different from $M_{disfluent} = 5.1$ $p < .06$).

Moderated mediation analysis. We tested whether fluency impacted time through perceived importance, where the path from fluency to perceived importance is moderated by framing. Moderated mediation analysis was based on the approach and SPSS macro developed by Preacher, Rucker, and Hayes (2007). The results indicated that perceived importance was predicted by the fluency x framing interaction in the mediator model, $t = 4.39$, $p < .001$. In the dependent-variable model, perceived importance predicted time, $t = 3.72$, $p < .001$, whereas the fluency x framing interaction did not, $t = 1.22$, *ns*. The conditional indirect effect of fluency on time through perceived importance was significant in the low-importance framing condition, $z = 2.45$, $p < .05$, but not in the high-importance framing condition, $z = .61$, *ns*. This suggests that the effect of difficulty on decision time was mediated by increased perceived decision importance, but only in the low-importance condition.

Discussion

These results extend the findings of Experiment 1 to a situation where difficulty is entirely exogenous to the decision and provide deeper insight into the mechanism behind the effect. Increased difficulty led people to spend more time deciding because it increased the perceived importance of making a good decision, but only when the decision originally seemed unimportant (i.e., difficulty was unexpected). Consistent with our metacognitive explanation, the effect disappeared when difficulty was attributed to its true source (the font).

Importantly, our findings are inconsistent with a number of alternative accounts. First, a ceiling-effect explanation for the lack of change in deliberation time in the high-importance condition is inconsistent with the results of both experiment 1 and 2 because the amount of time participants spent in those conditions was clearly exceeded in the low-importance/difficult condition. Second, while metacognitive difficulty can lead to uncertainty and increased systematic processing (Alter et al., 2007), this cannot explain why the effect of difficulty was mediated by decision importance (experiment 2). Casting further doubt on this explanation, we asked participants to rate the extent to which they felt certain about their decision and confident while making it (on 7-point scales), using a similar set-up to experiment 2. Neither the fluency manipulation, nor the interaction between fluency and importance, impacted either certainty or confidence ratings, all $Fs < 1.2$. That said, though both alternative accounts cannot explain our results, these processes may contribute to "decision quicksand" in some instances.

The experiments so far have focused on direct effects of metacognitive inference on deliberation time, but metacognitive inferences regarding decision importance may also have other downstream consequences. In particular, we labeled this phenomenon decision quicksand

not only because it leads people to get stuck in unimportant decisions, but because, like quicksand, exerting effort to get out may lead people to get stuck even further, in several ways.

For example, increased perceptions of decision importance due to incidental difficulty could lead people to seek additional options (Kahn & Ratner 2005), further increasing deliberation time and difficulty (Iyengar & Lepper 2000; Jacoby et al. 1974). Indeed, another study we conducted found that metacognitive difficulty in unimportant decisions leads people to search for more choice options. Using the same paradigm as in Experiment 2, we asked participants (N = 183, mean age = 39; 68% female) how interested they were in seeing more options before they made their decision (1 = Not at all, 7 = Very much). Results revealed a similar importance framing x fluency interaction, $F(1, 179) = 4.06$, $p < .05$, whereby processing difficulty increased participants' tendency to request more options when the decision was framed as unimportant, $F(1, 179) = 8.29$, $p < .005$, but not when the decision was framed as important, $F < .01$, *ns*. Considering more options should not only directly increase deliberation time, but can also make the decision more difficult which could, in turn, increase perceived importance and further suck people in.

EXPERIMENT 3: PERCEPTIONS OF TIME SPENT EXACERBATE DECISION QUICKSAND

The results so far have demonstrated that metacognitive inferences about decision importance can lead people to spend more time on unimportant decisions. But if people form inferences about decision importance from their own decision efforts, then not only might increased perceived importance lead people to spend more time deciding, but increased decision time might, in turn, validate and amplify these perceptions of importance, which might further

increase deliberation time. Thus, one could imagine a recursive loop between deliberation time, difficulty, and perceived importance. Inferences from difficulty may not only impact immediate deliberation, but may kick off a quicksand cycle that leads people to spend more and more time on a decision that initially seemed rather unimportant. Quicksand sucks people in, but the worse it seems the more people struggle.

In experiment 3, we test the prediction that the more people feel they have been struggling with an unimportant decision, the more likely they are to spend additional time. We manipulate perceived elapsed time and examine the resulting consequences on further deliberation.

Method

Students (N = 261; mean age = 22; 45% females) were randomly assigned to condition in a 2 (Importance: high vs. low) x 2 (Difficulty: high vs. low) x 2 (Elapsed Time: normal vs. fast) between-subject design. They imagined selecting a university course for the following semester and chose between two options, each described using four attributes.

Decision importance was manipulated through framing. In the high [low] importance condition, participants were told "both options [neither option] would count toward your major, so it is an important [unimportant] decision." Decision difficulty was manipulated through processing ease (fluency), as in experiment 2.

We also manipulated how much time participants thought had elapsed by displaying a running clock alongside the choice options (cf. Wearden, Pilpott, & Win 1999). In the normal condition, the clock's second hand completed a full circle every 60 seconds. In the fast condition,

the hand was sped up (completed a circle every 15 seconds). Pretest results indicated that the presence of the faster (vs. normal) clock increased perceptions of elapsed time.[2]

The focal dependent variable was the amount of time it took participants to make their choice.

Results and Discussion

A 2 (importance) x 2 (difficulty) x 2 (clock) ANOVA on time replicated the importance x difficulty interaction found in our prior studies, $F(1, 253) = 35.38$, $p < .001$, $\eta^2 = .131$. Further, this effect was qualified by a 3-way importance x difficulty x perceived time interaction, $F(1, 253) = 4.37$, $p < .05$, $\eta^2 = .023$.

Looking at the low-importance condition shows that decision difficulty increased decision time in the normal time condition ($M_{easy} = 28.9$ vs. $M_{difficult} = 46.8$), $F(1, 131) = 11.8$, $p < .005$, but had an even stronger effect in the fast time condition ($M_{easy} = 28.0$ vs. $M_{difficult} = 74.9$), $F(1, 131) = 48.3$, $p < .001$, resulting in a significant difficulty x perceived time interaction, $F(1, 131) = 15.2$, $p < .001$. Thus, people spent even more time on the unimportant decision when they felt that more time had elapsed. There was no corresponding difficulty x perceived time interaction in the high-importance decision condition, $F < .9$, *ns*. Figure 4.

An importance x perceived time interaction, $F(1, 253) = 3.16$, $p < .08$, suggested that although people spent more time in general when time seemed to elapse faster, $F(1, 253) = 5.50$, $p < .05$, this effect was significant in the low-importance condition ($M_{normal} = 37.8$ vs. $M_{fast} =$

[2] Participants (N = 50) were given 60 seconds to read some text. Those in the faster clock condition estimated they spent longer reading ($M = 87.7$ seconds) than those in the normal condition ($M = 73.4$), $F(1, 48) = 6.03$, $p < .05$.

51.43), $F(1, 253) = 8.65$, $p < .005$, but disappeared in the high-importance condition (M_{normal} = 49.4 vs. M_{fast} = 51.3), $F < .3$, *ns*.

These results indicate that perceptions of time spent deciding further contribute to the tendency to get stuck in unimportant decisions. Though thinking one has spent more time could potentially suggest that one has deliberated sufficiently already, decreasing further deliberation, our results reveal an opposite pattern. Feeling like one has spent more time on an unimportant decision leads people to invest even more time, causing them to get mired even further.

GENERAL DISCUSSION

Our findings illustrate one reason that people get mired in unimportant decisions. Though they may not be as consequential, unimportant decisions are just as often plagued by incidental factors that make them difficult (e.g., trade-offs, disfluency, or information overload). Metacognitive inference can make unexpectedly difficult decisions seem more important which, in turn, increases deliberation time. Ironically, this process is more likely to occur for unimportant decisions because people expect them to be easier. Although people may recognize that they are dwelling on a trivial issue, they nevertheless feel during the decision experience that it is important to get the decision right.

The results also illustrate the strength of this effect by demonstrating that unexpected metacognitive difficulty can sometimes lead people to spend as much (experiment 1 and 3) or even more time (experiment 2 and 3) on unimportant decisions as on important ones. Though most people do not spend as much time choosing a toothbrush (less important decision) as a

house (more important decision), these effects suggest that metacognitive inferences can sometimes lead unimportant decisions to take longer than more important ones.

One thing that makes this phenomenon particularly intriguing is the discrepancy between how people generally feel about relatively unimportant decisions and how they feel when the decision is taking place. In the heat of the moment, experienced difficulty can impact how important decision makers feel it is to get the decision right, leading them to get bogged down in unimportant decisions. But once the dust has settled and choice has been made, people may wonder why they spent so long deciding on a relatively inconsequential issue. Consequently, low-level, concrete processing (Trope & Liberman 2010) should increase the likelihood that people get stuck in unimportant decisions because people are more likely to be affected by incidental metacognitive inputs under such processing (Tsai & Thomas 2011).

We have argued that experienced difficulty should have a stronger effect on less-important decisions, but whether it also impacts important decisions should depend, in part, on expectations. In experiment 2, for example, participants did not find the important condition harder than expected, even when it was difficult, and difficulty did not increase time they spent on that decision. But if the difficulty experienced in an important decision is greater than expected, it might also increase decision time. Interestingly, unexpected ease may not necessarily decrease deliberation effort for important decisions because people are motivated to expend high effort on important decisions even when they are easy (Schrift et al. 2010).

Overall, the current research demonstrates another reason choice can become difficult. While choice is generally thought to be desirable (Botti & Iyengar 2004), recent work has shown that it can often be paralyzing and fraught with regret due to factors such as too many options or information (Iyengar & Lepper 2000; Schwartz 2004). But while these external factors can

directly increase the time and effort needed to choose by increasing the amount of information to process, our work shows that they can also have indirect effects through metacognitive inference. By making decisions seem subjectively more important, these factors can further aggravate the negative consequences of choice overload.

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Figure 1: Job Options (Experiment 1)

Assignment Options, Difficult Decision

	Option 1	**Option 2**	**Option 3**	**Option 4**
Duration	25 minutes	15 minutes	15 minutes	5 minutes
Hourly Rate	$3 per hour	$3 per hour	$1.50 per hour	$6 per hour
Task type	Fun and interesting	Tedious and dull	Fun and interesting	Tedious and dull
Time flexibility	Whenever you want	Fixed time slots	Whenever you want	Fixed time slots

Assignment Options, Easy Decision

	Option 1	**Option 2**
Duration	5 minutes	15 minutes
Hourly Rate	$3 per hour	$1.50 per hour
Task type	Fun and interesting	Tedious and dull
Time flexibility	Whenever you want	Fixed time slots

Figure 2: The Effect of Choice Difficulty and Importance Framing on Deliberation Time (Experiment 1)

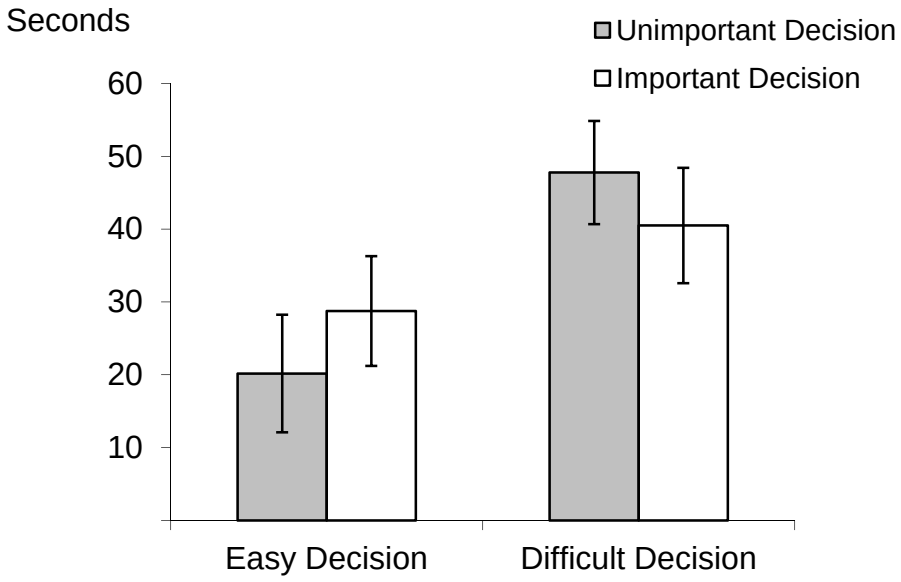

Figure 3: The Effect of Disfluency and Importance Framing on Deliberation Time (Experiment 2)

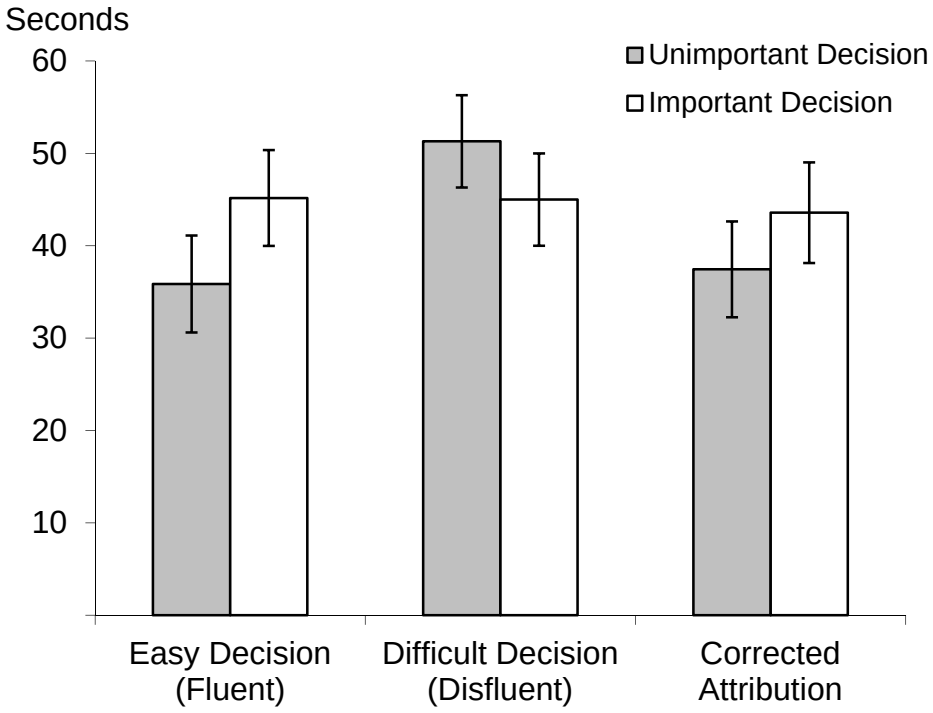

Figure 4: The Effect of Perceived Elapsed Time (Experiment 3)