Decision Quicksand: How Trivial Choices Suck Us In

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People often get unnecessarily mired in trivial decisions. Four studies support 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 (whereas important decisions are expected to be difficult to begin with). Our studies demonstrate that unexpected difficulty not only causes people to get caught up in unimportant decisions but also to voluntarily seek more options, which can increase decision difficulty even further.

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 common wisdom and much research suggest that people should deliberate harder the more important the decision (Chaiken and Maheswaran 1994; Petty and 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. 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. Consequently, if a decision feels unexpectedly difficult, due to even incidental reasons, we propose that people may draw the reverse inference that it is also important and deserving of more attention. This, in turn, should increase the amount of time people spend choosing (Chaiken and Maheswaran 1994; Petty and Wegener 1998).

Ironically, we argue that this process is particularly likely for decisions that initially seemed unimportant because people expect them to be easier. Since decisions on important matters are *expected* to be tough, real-time experiences of difficulty provide little added information about them. 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. 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.

In the next sections, we develop hypotheses about how unexpected cognitive difficulty affects the amount of time people spend deciding. Four experiments test these hypotheses and explore the mediating role of perceived decision importance in these effects. Finally, we discuss the implications of our findings for choice difficulty, decision making, and well-being.

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Debbie MacInnis and Mary Frances Luce served as editors and Gavan Fitzsimons served as associate editor for this article.

Electronically published October 27, 2011

 0093-5301/2012/3902-0008$10.00. DOI: 10.1086/662997

CHOICE DIFFICULTY AND DECISION IMPORTANCE

Both common sense and a great deal of research suggest that people should spend more effort deliberating about important decisions than unimportant ones. Research in the persuasion tradition, for example, indicates that cognitive effort generally increases the more involving the decision is (Chaiken and Maheswaran 1994; Petty and Wegener 1998). When a decision has direct consequences for people, they spend more time and effort scrutinizing the information and optimizing their decision.

One could also argue that, because important decisions involve higher stakes by definition, they should take more time from a normative viewpoint as well. Indeed, when 80 respondents were asked, 91% indicated that important decisions should generally be more difficult and time consuming than unimportant ones. In fact, the tendency to associate decision importance with decision difficulty is so strong that people sometimes artificially complicate important decisions that "feel" too easy, in order to feel they have conducted appropriate due diligence (Schrift, Netzer, and Kivetz 2011).

Importantly, however, unimportant decisions can also be difficult. While subjective difficulty sometimes reflects genuine importance, relatively trivial decisions (i.e., decisions with no apparent important consequences) can also be difficult for various reasons. Subjective difficulty can be generated by rather incidental factors such as having too many options to choose from (Iyengar and Lepper 2000), information overload (Jacoby, Speller, and Kohn 1974), conflicting trade-offs (Chatterjee and Heath 1996; Tversky and Shafir 1992), and perceptual or processing disfluency (Schwarz 2004). These factors often have little to do with the actual merit of the decision, or with genuine decision importance, but may nevertheless increase subjective difficulty.

We propose that the subjective experience of difficulty or effort in decision making can make decisions seem more important through metacognitive inference. 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 and Oppenheimer 2008), instrumental (Labroo and Kim 2009), and unique (Pocheptsova, Labroo, and Dhar 2010) than their easy-to-process equivalents. We suggest that people also use subjective experiences of cognitive difficulty as a metacognitive cue for decision importance. Because the intuitive association between importance and difficulty or effort is so salient, people may misattribute difficulty resulting from even irrelevant factors to decision importance. This, in turn, should increase the amount of time they spend deciding (Chaiken and Maheswaran 1994; Petty and Wegener 1998).

THE ROLE OF EXPECTATIONS

Ironically, we argue that metacognitive inferences of decision importance from decision effort are particularly likely for decisions that initially seemed unimportant because people expect them to be easier. The influence of metacognitive experiences, such as processing effort, on judgment is stronger the more the experience deviates from expectations, and 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 and Williams 2000). For example, ease of recall often serves as a source of information in making frequency judgments (Tversky and Kahneman 1973) but only when people do not expect recall to be easy. Participants who expected finding 10 words beginning with the letter "t" to be difficult, due to the specific nature of their task, provided higher estimates of the relative frequency of such words than participants who did not expect recall to be difficult (Wänke, Schwarz, and Bless 1995). Similarly, metacognitive fluency often produces feelings of familiarity but only under unexpected circumstances (Whittlesea and Williams 1998).

In summary, effects of metacognitive experiences are driven by the perceived diagnosticity of the experience (Wänke et al. 1995). 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"). Consequently, we argue that, because decisions on important matters are expected to be tough, real-time experiences of difficulty provide little added information about their importance. For less important issues, however, subjective decision difficulty is more 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, leading them to spend more time deciding.

Notably, the extent to which an unexpected boost in perceived decision importance actually influences decision time could vary. Prior work on flexible correction processes in judgment (Petty and Wegener 1993; Wegener and Petty 1995) suggests that when people correct their behavior in response to an unexpected change in judgment, the behavioral response may exceed the extent implicated by the perceptual change alone, resulting in overcorrection. Thus, people may sometimes spend an excessive amount of time particularly in response to an unexpected increase in perceived decision importance.

THE CURRENT RESEARCH

While decision difficulty can mechanically cause decisions to take longer, we propose it can also have additional detrimental effects on decision time. Specifically, we argue that it can lead people to spend even longer deciding due to metacognitive inferences about the importance of getting the decision right.

Four experiments test the prediction that misattributing difficulty to decision importance can lead people to get mired, especially in unimportant decisions. Experiment 1 uses a field setting with real monetary consequences to examine whether difficulty resulting from trade-off conflict

(Chatterjee and Heath 1996) leads people to spend too much time deciding on unimportant matters and whether this effect is more pronounced than for important matters. Experiment 2 manipulates difficulty through perceptual disfluency (Reber and Schwarz 1999). It also 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 and Kim 2009; Novemsky et al. 2007). Experiment 3 begins to examine downstream consequences of this process. It demonstrates that disfluency in unimportant decisions drives people to voluntarily expand the consideration set, which should further increase decision effort. Finally, experiment 4 examines the spiraling nature of decision quicksand. It tests whether struggling longer over an unimportant issue leads people to invest even further time deciding.

EXPERIMENT 1: CHOICE IN THE FIELD

Experiment 1 provides a preliminary demonstration of decision quicksand. Amazon's Mechanical Turk is an online labor market where people post job 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 and Suri 2010). We presented workers with a real choice and observed the effect of decision importance and difficulty on the time they spent choosing. Our expectation was that difficulty would increase decision time but that this effect would be stronger for decisions that initially seemed less important.

Method

One hundred six Mechanical Turkers (mean age = 28, 41% female) chose an assignment for completion at a later date. Participants were randomly assigned to one of four conditions in a 2 (importance: high vs. low) × 2 (difficulty: high vs. low) between-subjects design.

We varied decision importance using a manipulation validated in prior research (Schrift et al. 2011). 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 trade-offs (see the appendix). Participants in the difficult condition selected among four assignments, which varied on four dimensions. These options included multiple trade-offs 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). 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. Our key dependent variable was the amount of time participants spent, in seconds, before submitting their decision.

Results

A 2 (importance) × 2 (difficulty) ANOVA examined the amount of time participants spent on the decision. In addition to a main effect of difficulty ($F(1, 102) = 12.06$, $p < .001$), results revealed the predicted importance × difficulty interaction ($F(1, 102) = 4.90$, $p < .05$; see fig. 1).

While difficulty had a small but nonsignificant effect on decision time when the decision had been framed as important ($M_{easy} = 22.7$ vs. $M_{difficult} = 30.1$; $F(1, 102) < 2$, NS), it had a particularly pronounced effect on decision time when the decision had been framed as unimportant. There, people spent more than twice as much time on the relatively unimportant decision when it was difficult compared to when it was easy ($M_{easy} = 18.9$ vs. $M_{difficult} = 47.1$; $F(1, 102) = 15.38$, $p < .001$).

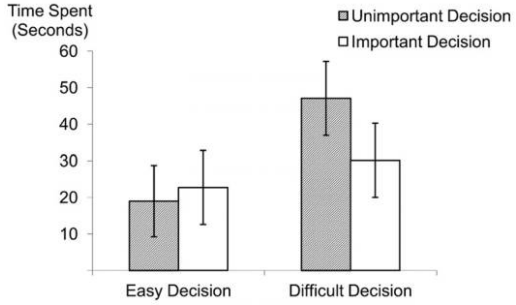
Discussion

Experiment 1 provides a field demonstration that experiences of difficulty can lead people to get sucked into unimportant decisions. Increased decision difficulty led people to spend more time deciding, but this effect was particularly pronounced when the decision initially seemed unimportant. Moreover, when faced with difficult trade-offs, people actually spent more time on a less important decision than they did on a more important one.

While these results support our perspective, one important question is whether the observed effects are actually harmful in some way. While participants certainly spent more time on an unimportant decision, one could argue that the increase was not large enough to actually hurt satisfaction or well-being or, alternatively, that the increased time investment actually made people happier or more satisfied.

FIGURE 1

THE EFFECT OF CHOICE DIFFICULTY AND IMPORTANCE FRAMING ON DELIBERATION TIME (EXPERIMENT 1)



In contrast, we suggest that this experience should be frustrating and reduce satisfaction. To test this possibility, we examined how importance framing and decision difficulty in experiment 1 impacted participants' satisfaction with the decision experience. After participants submitted their decision, we thanked them, reminded them that their decision was [not] binding (depending on condition), and asked them to rate how satisfied they were with the selection experience (1 = not at all satisfied, 7 = totally satisfied), the extent to which the task caused them to spend more time than they originally wanted to spend (1 = not at all more time, 7 = definitely more time; reverse coded), and the extent to which it took too long to select an assignment (1 = not at all too long, 7 = definitely too long; reverse coded). These measures were averaged to form a decision satisfaction index ($\alpha = .80$).

Effects on Decision Satisfaction. Analysis of variance on decision satisfaction revealed the predicted importance × difficulty interaction ($F(1, 102) = 4.66$, $p < .05$). While increased choice difficulty decreased participants' satisfaction in the unimportant condition ($M_{\text{easy}} = 4.50$ vs. $M_{\text{difficult}} = 3.38$; $F(1, 102) = 8.67$, $p < .005$), there was no corresponding effect in the important condition ($M_{\text{easy}} = 4.47$ vs. $M_{\text{difficult}} = 4.53$; NS). This suggests that decision quicksand is aversive. Not only does it lead people to spend more time deciding, but it makes them less happy in the process.

Further, this negative impact on decision satisfaction is driven by increased decision time. A mediated moderation analysis (Baron and Kenny 1986) shows that the moderated effect of choice difficulty and importance framing on satisfaction was mediated by the amount of time participants actually spent making the decision. As predicted, a series of linear regression analyses revealed a significant indirect effect of the importance × difficulty interaction on decision satisfaction (Sobel's $z = 2.19$, $p < .05$). Specifically, importance × difficulty predicted time spent ($B = 20.67$, SE = 7.22, $p < .05$) which, in turn, predicted satisfaction controlling for importance × difficulty ($B = .017$, SE = .005, $p < .001$). The direct effect of importance × difficulty on satisfaction, controlling for time, was no longer significant in the second model ($B = .82$, SE = .53, NS).

In sum, experiment 1 demonstrates a number of things. First, unexpected difficulty leads people to get caught up in unimportant decisions. Second, by doing so it decreases people's satisfaction with the decision process. The next experiment investigates whether metacognition underlies these findings 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 trade-offs difficulty the same but manipulated ease of processing by presenting the options in an easy- or difficult-to-read font (Labroo and 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. Third, 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) × 3 (difficulty: low vs. high vs. high with corrected attribution) between-subjects 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; adapted from Labroo and Kim 2009). The content of the options and trade-offs 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 importance of making a good decision immediately after submitting their decision, participants rated the extent to which it was important to them to make a good decision and the extent to which the decision seemed important (1 = not at all important, 7 = very important, $r = .76$; averaged to form an index).

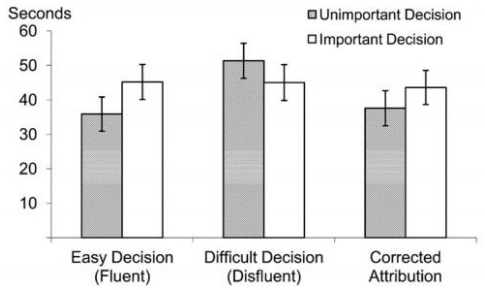
Results

Effect on Deliberation Time. A 2 (importance) × 3 (difficulty) ANOVA on time revealed a main effect of difficulty ($F(2, 258) = 4.17$, $p < .05$), which was qualified by the predicted interaction ($F(2, 258) = 3.80$, $p < .05$; see fig. 2).

As expected, when the decision seemed unimportant, de-

FIGURE 2

THE EFFECT OF DISFLUENCY AND IMPORTANCE FRAMING ON DELIBERATION TIME (EXPERIMENT 2)



cision difficulty increased deliberation time ($M_{\text{fluent}} = 35.9$ vs. $M_{\text{disfluent}} = 51.3$; $F(2, 258) = 7.92$, $p < .001$), but it did not have the same effect when the decision seemed important ($M_{\text{fluent}} = 45.2$ vs. $M_{\text{disfluent}} = 45.0$; $F < .20$, 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 actually 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 ($M_{\text{disfluent\_corr}} = 37.5$, significantly smaller than $M_{\text{disfluent}} = 51.3$; $p < .005$, but similar to $M_{\text{fluent}} = 35.9$; $p = .49$). 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 ($F(1, 258) = 26.47$, $p < .001$), 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 × difficulty interaction ($F(2, 258) = 9.28$, $p < .001$). As expected, decision difficulty increased perceived decision importance in the low-importance condition ($F(2, 258) < 14.81$, $p < .001$). Specifically, in the low-importance condition, participants perceived the decision as more important when the options were disfluent ($M_{\text{fluent}} = 3.6$ vs. $M_{\text{disfluent}} = 5.1$; $p < .001$), but this difference disappeared when participants had been forewarned that font quality might make the information difficult to read ($M_{\text{disfluent\_corr}} = 4.1$, similar to $M_{\text{fluent}} = 3.6$; $p < .2$, but different from $M_{\text{disfluent}} = 5.1$; $p < .06$). However, this effect was attenuated when the decision had been framed as important ($M_{\text{fluent}} = 5.0$ vs. $M_{\text{disfluent}} = 4.8$ vs. $M_{\text{disfluent\_corr}} = 5.2$; $F < .30$, NS).

Moderated Mediation Analysis. We tested whether fluency impacted time through perceived importance, where the path from fluency to perceived importance is moderated by importance 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 × framing interaction in the mediator model ($B = -1.73$, $t = 4.39$, $p < .001$). In the dependent-variable model, perceived importance predicted time ($B = 5.46$, $t = 3.72$, $p < .001$), whereas the fluency × framing interaction was no longer significant, ($t = 1.22$, 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 fully 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 quality of the font).

Ancillary analyses further support our suggestion about the important role of expectation violation in this phenomenon. At the end of the experiment, we asked participants to rate how the decision compared to their expectations (1 = easier than expected, 4 = neither easier nor harder than expected, 7 = harder than expected). An importance × 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). Thus consistent with our conceptualization, decision difficulty only differed from participants' expectations in the low-importance, difficult condition, where it was higher than expected.

More broadly, it is important to note that our main findings (effects on decision time) 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 experiments 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. To further test this account, however, 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 setup to experiment 2. The results cast further doubt on this alternative explanation. Neither the fluency manipulation nor the interaction between fluency and importance impacted either certainty or confidence ratings (all $F < 1.2$).

Follow-Up Studies: Manipulating Expectations Directly

To further bolster the evidence supporting our theory, according to which decision difficulty influences decision time especially when it is unexpected, we conducted two follow-up experiments that directly manipulate expectations of difficulty. Rather than manipulating expectations indirectly through task importance, we explicitly told half the participants that the decision should be easy and the other half that the decision should be difficult. We predicted that the decision should take longer when participants expected it to be easy than when they expected it to be difficult.

The first version was based on the paradigm used in experiment 1. Participants ($N = 48$, mean age = 33, 61% female) consisted of Mechanical Turk workers who selected an assignment among the four options described in the difficult condition of experiment 1. We manipulated participants' expectations directly. Half were told that "this choice should be easy!" whereas the other half were told that "this choice might be difficult!" Our key dependent variable was how much time participants spent deciding. As predicted, an ANOVA revealed that expected difficulty affected time spent. While participants who expected the decision to be difficult spent only 31.4 seconds, on average, this jumped to 56.2 seconds among participants who expected the decision to be easy ($F(1, 46) = 9.36$, $p < .005$).

We found similar results using the paradigm from experiment 2. Participants ($N = 75$, mean age = 31, 66% female) chose between the two flight options used in the disfluent (i.e., difficult-to-read) condition. Half were told that the choice should be very easy and the other half that choice might be difficult because of low font quality. Again, we found that expected difficulty affected decision time. While participants spent only 31.4 seconds, on average, in the difficulty expectation condition, this jumped to 56.2 seconds in the ease expectation condition ($F(1, 46) = 9.36$, $p < .005$).

Thus, bolstering our theory and consistent with our corrected-attribution results from experiment 2, both follow-up experiments demonstrate that the decision took longer when participants expected it to be easy than when they expected it to be difficult.

EXPERIMENT 3: DOWNSTREAM CONSEQUENCES OF DECISION QUICKSAND

The experiments so far have focused on how metacognitive inference impacts deliberation time and resulting satisfaction, but metacognitive inferences regarding decision importance may also have other negative downstream consequences. In particular, we labeled this phenomenon decision quicksand not only because it leads people to spend more time on unimportant decisions but because, like quicksand, exerting effort to get out may lead people to sink down even further.

For example, because the experience makes the decision seem more important, it might drive people to expand their search and voluntarily seek additional options (Kahn and Ratner 2005). Such increased search should further increase deliberation time, however, and sifting through additional options and information often increases decision difficulty and regret (Iyengar and Lepper 2000; Jacoby et al. 1974). Along these lines, experiment 3 examined how experiencing metacognitive difficulty in unimportant decisions can increase people's desire to see more choice options.

Method

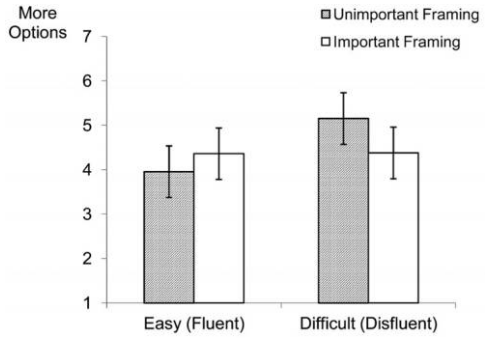
We used a methodology similar to experiment 2. Participants ($N = 183$, mean age = 39, 68% female) were randomly assigned to a condition in a 2 (importance: high vs. low) × 2 (difficulty: high vs. low) between-subjects design. They chose between two flight options. Decision importance was manipulated through framing, and difficulty was manipulated through processing ease (i.e., fluency), as described in experiment 2. However, rather than measuring how much time participants spent on the decision, we asked them to indicate how interested they were in seeing more options before making their decision (1 = not at all, 7 = very much).

Results

A 2 (importance) × 2 (difficulty) ANOVA on the tendency to seek additional options revealed the predicted importance framing × fluency interaction ($F(1, 179) = 4.06$, $p < .05$; see fig. 3). Processing difficulty did not influence participants' tendency to request more options when the decision was framed as important ($M_{\text{fluent}} = 4.3$ vs. $M_{\text{disfluent}} = 4.4$; $F < .01$, NS). When the decision was framed as unim-

FIGURE 3

SEEKING ADDITIONAL OPTIONS (EXPERIMENT 3)



portant, however, processing difficulty increased participants' tendency to request more options ($M_{\text{fluent}} = 4.0$ vs. $M_{\text{disfluent}} = 5.2$; $F(1, 179) = 8.29$, $p < .005$).

Looked at another way, while participants in the easy (fluent) choice condition were slightly more likely to seek additional options under a high- than under a low-importance framing, participants in the difficult (disfluent) condition were actually more likely to seek additional options when the decision was framed as unimportant ($F(1, 179) = 3.48$, $p < .06$).

Discussion

Combined with the first two studies, experiment 3 suggests that metacognitive inferences from decision difficulty can contribute to decision quicksand in a number of ways. Not only do they lead people to get caught up in unimportant decisions but they can further suck people in by leading them to seek additional options and thus complicate the task even further. Considering more options should not only directly increase deliberation time (i.e., mechanically requiring more time to sort through the available information) but also have a number of additional negative downstream consequences (e.g., increasing difficulty, regret, and choice deferral; see Chernev 2003; Iyengar and Lepper 2000; Schwartz 2004), all of which may reduce well-being.

EXPERIMENT 4: 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 cycle that leads people to spend more and more time on a decision that initially seemed rather unimportant.

Experiment 4 tests this possibility. In addition to manipulating decision importance and difficulty, we also manipulated perceived elapsed time and examined the resulting consequences on further deliberation. We predicted that the more people feel they have been struggling unexpectedly, the more likely they are to spend additional time.

Method

Participants ($N = 261$, mean age = 22, 45% females) were randomly assigned to condition in a 2 (importance: high vs. low) × 2 (difficulty: high vs. low) × 2 (clock: normal vs. fast) between-subjects 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, Philpott, and 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 on a reading task. The focal dependent variable was the amount of time it took participants to make their choice.

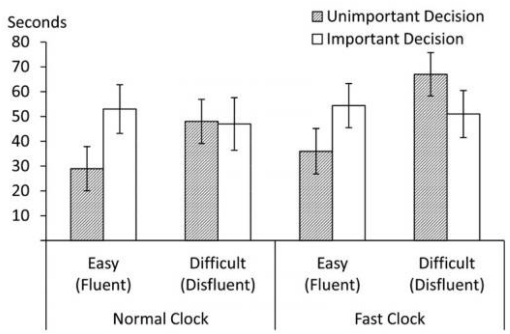
Results

A 2 (importance) × 2 (difficulty) × 2 (clock) ANOVA on time replicated the importance × difficulty interaction found in our prior studies ($F(1, 253) = 35.38$, $p < .001$). Further, this effect was qualified by a three-way importance × difficulty × clock interaction ($F(1, 253) = 4.37$, $p < .05$; see fig. 4).

Examining the high and low importance conditions separately helps clarify the pattern of results. Among participants who saw the decision as less important, there was a significant difficulty × clock interaction ($F(1, 131) = 15.2$, $p < .001$). Specifically, decision difficulty increased decision time in the normal clock condition ($M_{\text{easy}} = 28.9$ vs. $M_{\text{difficult}} = 46.8$; $F(1, 131) = 11.8$, $p < .005$), but it had an even stronger effect in the fast clock condition ($M_{\text{easy}} = 36.0$ vs. $M_{\text{difficult}} = 67.9$; $F(1, 131) = 48.3$, $p < .001$). Thus, people spent even more time on the unimportant decision when they felt that more time had elapsed. There was no corre-

FIGURE 4

THE EFFECT OF PERCEIVED ELAPSED TIME (EXPERIMENT 4)



sponding difficulty × clock interaction in the high-importance decision condition ($F < .9$, NS).

Further, while a main effect of the clock manipulation shows that people spent more time in general when time seemed to elapse faster ($F(1, 253) = 5.50$, $p < .05$), this effect was qualified by a significant importance × clock interaction ($F(1, 253) = 3.16$, $p < .08$). Specifically, while people spent more time on the unimportant decision when more time seemed to have elapsed ($M_{normal} = 37.8$ vs. $M_{fast} = 51.43$; $F(1, 253) = 8.65$, $p < .005$), this effect was muted in the high-importance condition ($M_{normal} = 49.4$ vs. $M_{fast} = 51.3$; $F < .3$, NS).

Discussion

These results indicate that perceptions of time spent deciding further contribute to the tendency to spend excessive time in unimportant decisions. Increased difficulty again led people to spend more time making a relatively unimportant decision, relative to whether the decision was important, but this increase was exacerbated when time seemed to go by faster (i.e., when participants felt that more time had elapsed). 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 led people to invest even more time, causing them to get mired even further in an unimportant decision.

GENERAL DISCUSSION

People often get unnecessarily mired in trivial decisions. We struggle with what toothbrush to buy and agonize over which flight to choose. But while it makes sense to spend time on more important matters, why do people get caught up in unimportant decisions?

Our findings illustrate one reason for this painful phenomenon. 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.

Four experiments support this theoretical perspective. First, they demonstrate that misattributing difficulty to decision importance can lead people to get mired in unimportant decisions. While difficulty had relatively little effect on decisions that already seemed important, it led people to spend more time on unimportant decisions. Further, demonstrating these effects both in the field (experiment 1) and laboratory (experiment 2) and using difficulty resulting from trade-offs (experiment 1) or perceptual disfluency (experiment 2) speaks to their generalizability. Finally, the fact that they were mediated by perceived decision importance and disappeared when people attributed difficulty to an alternative source (experiment 2) provides further evidence for the role of metacognition in these effects.

These effects are not static, however, and the studies also demonstrate the spiraling nature of decision quicksand. Specifically, experiencing difficulty in unimportant decisions can drive people to voluntarily expand the consideration set, which should further increase decision difficulty and effort (experiment 3). Further, as illustrated in experiment 4, the longer people feel they have spent on an unimportant issue, the more they sometimes invest even further time deciding. Taken together, these studies show not only that unexpected difficulty in decision making can lead people to spend more time but also that, like quicksand, the additional effort that people exert to resolve the situation can lead them to get caught up even further.

The fact that increased difficulty caused participants to spend more time, in absolute terms, on unimportant than on important decisions (experiments 1–2) rules out an alternative explanation based on a ceiling effect in the high-importance condition. We also did not find evidence supporting an alternative account based on increased uncertainty in the low-importance condition (Alter et al. 2007), and such an account cannot explain why the effect of difficulty was mediated by decision importance. That said, though both these alternative accounts cannot explain our results, the processes they represent may contribute to decision quicksand in some instances.

Moderators and Boundary Conditions

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 caught up 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. Indeed, one may wonder why people consider investing more time in a decision they have construed as trivial in the first place. A major theoretical implication of our conceptualization is that perceptions of decision importance are not static and determined by top-down processes only, as they have often been treated in prior research (e.g., Chaiken and Maheswaran 1994) but, rather, are dynamic and susceptible to real-time, bottom-up metacognitive experiences, as well.

Consistent with this conceptualization, our experiments reveal that participants perceived unexpectedly difficult decisions as more important immediately after making the decision, while still "hot" (experiment 2). But once they have regained their perspective and realized that the decision in fact was inconsequential, they end up feeling dissatisfied with the amount of time they spent on a relatively unimportant decision (experiment 1).

Consequently, we suggest that low-level, concrete processing (Trope and Liberman 2010) should increase the likelihood that people spend too much time on unimportant decisions because people are more likely to be affected by incidental metacognitive inputs under such processing (Tsai and Thomas 2011). Similarly, a local (as opposed to global) scope of attention (Gasper and Clore 2002; Kimchi 1992) should increase the decision quicksand effect because it increases the likelihood that people miss the forest from the trees. That is, people might overly focus on their current cognitive experiences at the expense of a more general understanding of actual decision importance.

The experiments also illustrate that unexpected difficulty can sometimes lead people to spend more time on unimportant decisions than 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.

This finding is consistent with prior work on flexible correction processes (Petty and Wegener 1993; Wegener and Petty 1995), which indicates that when people correct their behavior in response to an unexpected change in judgment, they sometimes overcorrect it (i.e., change behavior more than is presumably necessary based on the judgment change alone). Whether people actually overcorrect their behavior (i.e., time spent) in response to an unexpected change in judgment (i.e., perceived decision importance), and by how much, may depend on additional factors such as people's accessible naive theories about bias and bias correction (Wegener and Petty 1995, 2001) and their ability and willingness to expend effort in forming the impression (Martin, Seta, and Crelia 1990). Overcorrection likelihood may increase also as a function of decision characteristics: people might be more sensitive to unexpected changes in importance impressions in certain domains, and consequently their behavioral response to the same judgmental input might increase, resulting in overcorrection. People should also be more prone to overcorrecting their behavior when certain cues are present that make it more salient that perceptions have shifted unexpectedly. While these and other potential moderators are not unique to decision quicksand effects and are therefore beyond the scope of our current investigation, we believe they represent a promising direction for future research.

Finally, 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 the 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. 2011).

Implications

The ideas examined here have obvious implications for people's welfare and well-being. From a time management perspective, spending longer on a particular decision leaves less time for other, more enjoyable things. Further, as demonstrated in experiment 1, decision quicksand not only left people spending longer on unimportant decisions but also made them less satisfied in the process.

One important question, then, is how to mitigate this frustrating phenomenon. This is a fruitful area for future research, but one potential strategy may be to encourage adherence to decision rules. For example, before even considering the options, people might set out a specific amount of time they are willing to spend, based on the importance of the decision (e.g., "I will place my order in 5 minutes, no matter what"). Alternatively, people might consider delegating the choice to others. While these strategies may not be practical when deciding about consequential issues, for less consequential choices they might help reduce the tendency to fall into decision quicksand without compromising decision quality.

Another approach might be to step back from the decision in an attempt to maintain a more global focus. While submerging oneself in the details of a decision is sometimes necessary, it may cause people to lose sight of the big picture. Consequently, taking brief breaks in the course of draining decisions might be useful. Even minor interruptions, short breaks, or momentary task switching can change information processing from a local, bottom-up focus to a top-down, goal-directed mode (Liu 2008). This should help people to regain their perspective about what is important and what is not, allocate their time and processing resources accordingly, and move on with their decisions.

In conclusion, the current research demonstrates another reason that choice can become difficult. While choice is generally thought to be desirable (Botti and 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 and 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.

APPENDIX

JOB OPTIONS (EXPERIMENT 1)

DIFFICULT DECISION

	Option 1	Option 2	Option 3	Option 4
Duration	25 minutes	15 minutes	15 minutes	5 minutes
Hourly rate	$3.00 per hour	$3.00 per hour	$1.50 per hour	$6.00 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

EASY DECISION

	Option 1	Option 2
Duration	5 minutes	15 minutes
Hourly rate	$3.00 per hour	$1.50 per hour
Task type	Fun and interesting	Tedious and dull
Time flexibility	Whenever you want	Fixed time slots

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