# Perceptual Fluency Effects on Status-quo Response Styles

**Introduction**

The topic of decision-making has been explored extensively in psychology. One main concern for psychologists has been to develop a model of how decisions are made. The primary model used in classical economics, the rational actor model has been widely criticized as a model for human decision-making (for example, Teske, 1997). The study of human cognition has revealed that we often use heuristics, or mental shortcuts, instead of purely rational processes or more normative processes (e.g., Tversky & Kahneman, 2002).

Heuristics to judge probability have been demonstrated, such as the representativeness heuristic or the availability heuristic (Tversky & Kahneman, 2002). Similarly, other researchers have shown that we use our feelings as information in making decisions (Schwarz, 2002). For example, the study of processing fluency has revealed that we use the feeling of difficulty in processing stimuli as information in evaluating the stimuli. Studies have shown that making stimuli easier to process influences subjects to rate statements as being truer (Reber & Schwarz, 1999) and figures as more beautiful (Reber et al., 2004). Clearly, we use heuristics as shortcuts, instead of more purely rational or normative decision processes.

Past research has sought to extend the concept of processing fluency into the domain of decision-making. Riis showed that subjects were more likely to choose a deferral-type or status-quo decision after having made a difficult decision (Riis, 2003).

Riis presented participants with moral dilemmas in which breaking a promise could lead to a greater utilitarian benefit, at the expense of breaking the prior commitment. For example, one dilemma asked participants whether they would choose to send a convoy of food-relief trucks to a second refugee camp where 250 people's lives could be saved, although at the expense of their original destination where 100 people would die as a result. When participants responded to this question as the second of a pair of questions, they were more likely to decide to send the convoy to the original camp. This could be seen in terms of a commission/omission bias, as per Ritov and Baron (1999). These authors suggest that people show a bias toward indirect harm, as long as the harm is not directly caused by the actor (a commission), but rather as the result of the inaction of the actor (omission). In the example of the refugee camp dilemma, by choosing to keep the convoy going to the first camp, the actor is only causing indirect harm to the second. On the other hand, by choosing to divert the convoy toward the second camp, the actor is taking a more active choice in which the act has direct negative consequences for the first camp.

Alternatively, the results can be conceptualized in terms of decision deferral, as per Dhar (1997). Dhar has shown that when faced with the feeling of difficulty, participants are more likely to choose to postpone or defer making a decision. This could explain Riis's results by claiming that allowing the relief convoy to continue on their way to the first camp, the participants are effectively deferring their decision. In essence, the subjects may be deciding to let the status-quo, or the process as already dictated, simply run its course.

In fact, these two views might be compatible; they might be getting at the same underlying variable, simply in different terms. In either conceptualization, the processing-fluency heuristic can easily account for the effect of difficulty. However, one shortcoming of the Riis study is that the results may be equally well explained by a resource-depletion model of the self (e.g., Baumeister et al., 1999). Under this view, we have limited cognitive resources, and we conserve these resources and are subject to growing tired, much like a muscle. This model could explain Riis's results by arguing that the first decision depleted cognitive resources, influencing participants to use choice-deferral or to commit the omission bias in subsequent decisions. (Does this require that the second strategy be less taxing?)

The present research seeks to test these two explanations against each other by inducing the subjective feeling of difficulty in participants without depleting cognitive resources. To induce the feeling of difficulty without using multiple questions that could deplete the cognitive self, we chose to utilize the method used by Sanna and his colleagues (2002). In their experiment, Sanna and his colleagues induced difficulty by having participants contract their brow, under the cover story of an investigation of tension headaches that are caused by working on computers. With this method, the feeling of difficulty can be induced without the depletion of cognitive resources associated with the Riis method. If the preference for status-quo (or choice-deferral) options persists, it suggests that the concept of processing fluency is a better explanation of the decision process at use by subjects in deciding the moral dilemmas.

## Study 1

### Method

A total of 157 (101 males, 55 females) undergraduates participated in the study for course credit. Participants were run in groups of 1-4, although each participant completed the experiment in his or her own computer cubicle. Participants were randomly assigned to either the brow or control conditions (described below).

In choosing the moral dilemmas to be presented, the aforementioned refugee problem from Riis's study was used, as was his cancer moral dilemma (Riis, 2003). The cancer problem was similar to the refugee in that it contained the status-quo option of keeping a promise to cure 200 people of cancer, while breaking the initial commitment could free up resources to provide a cure to 400 people of another equally severe form of cancer (see the appendix for the full text of the dilemmas). The questions were isomorphic in that both represented same underlying theme of status-quo/choice-deferral option as opposed to the more utilitarian choice. Two questions were presented to test the appearance of both processing-fluency effects (on choice 1) and the ego-depletion or processing-effects (on choice 2). The refugee problem was presented before the cancer dilemma. Both questions were taken verbatim from Riis's study.

The brow manipulation was used in the brow condition and was based on the procedure used by Sanna and his colleagues (2002). In Sanna's experiment, participants were presented with all materials in pencil-and-paper format, with the following cover story for the brow manipulation:

> We are interested in the tension that can be caused by working on a computer. In order to test this, we have therefore developed a method to find out if people are prone to tenseness caused by

> this type of work. We would like you to simulate tension by making the facial expression depicted below.

This basic description was retained in the current experiment, although subjects were presented with all materials on a computer—except that subjects recorded their answers on paper. Participants were instructed to navigate the instructions on the computer. In addition, the cover story was lengthened to increase the plausibility of the cover story. The cover story was elaborated as follows:

> Thank you for participating in this study. Our main interest is in how people make policy choices, which we will tell you about below.
> In addition, our lab is interested in the facial tension that can be caused by working on a computer. In order to test this, we have developed a method to find out if people are prone to tenseness caused by working with computers. Later, you will be asked to simulate this tension.

In addition to the moral dilemmas, brow-condition subjects were presented with a manipulation check of the perceived difficulty of the questions ("Not at all difficult" to "extremely difficult," on a 7-point scale). Control subjects were presented with identical materials, except for the brow manipulation and the corresponding instructions. Finally, demographic questionnaires were administered; then participants were thanked and debriefed.

**Results**

According to the manipulation check, participants in the brow condition rated the questions as somewhat *less* difficult, contrary to the intent of the manipulation (t=-.722 df=32 p=.475). In other words, the brow manipulation seems to have had a slight effect in the opposite direction than intended. This calls into question the effect of the brow manipulation on the moral dilemmas.

In fact, data from 34 subjects showed that, contrary to expectations, participants in the brow condition were somewhat *less* likely to choose the status-quo option for the first moral dilemma ($X^2$=.624 df=1 p=.429). Subjects showed a similar results pattern for the second dilemma question ($X^2$=.384 df=1 p=.536). Results can be seen in Tables 1.1 and 1.2. Because of the limited number of participants included, analyses of gender were not reliable. These results seemed to contradict the processing-fluency model since no increase in status-quo decision-making was observed.

| Condition | Refugee Problem | | Total |
|---|---|---|---|
| | Non-Status Quo | Status Quo | |
| Brow | 10 | 5 | 15 |
| | 66.7% | 33.3% | |
| Control | 10 | 8 | 18 |
| | 55.6% | 44.4% | |
| Total | 20 | 13 | 33 |
| | 60.6% | 39.4% | |

Table 1.1: Responses to the refugee problem in study 1, $X^2$=.624 df=1 p=.429.

| Condition | Cancer Problem | | Total |
|---|---|---|---|
| | Non-Status Quo | Status Quo | |
| Brow | 12 | 3 | 15 |
| | 80.0% | 20.0% | |
| Control | 13 | 5 | 18 |
| | 72.2% | 27.8% | |
| Total | 25 | 8 | 33 |
| | 75.8% | 24.2% | |

Table 1.2: Responses to the cancer problem in study 1, $X^2$=.384 df=1 p=.536.

These results may seem to contradict the very premise of processing fluency: that perceived difficulty affects decision-making, in this case by leading to more status-quo responses. However, analyses showed that perceived difficulty likely moderated status-quo responses, as participants who responded with at least one status-quo response rated the problems as significantly more difficult (t=-2.256 df=32 p=.031). This suggests that perceived difficulty is still moderating status-quo responses (as predicted by the processing-fluency model), although the brow manipulation is not influencing the feeling of difficulty as intended.

## Study 2

### Method

Due to these initial results, the instructions were slightly modified to introduce the brow manipulation as the central interest of the study and the moral dilemmas as a pretest. Participants were told of the moral dilemmas: "In the meantime, proceed with the instructions and complete the pretest materials." In addition, the moral dilemmas were presented on paper, as opposed to on the computer, as had been previously done. These alterations were designed to manipulate the strength of the attribution of the participants.

Past experiments have shown that the subjective feeling of difficulty is only effective when the feeling is attributed to the problem or decision, and not the manipulation or other situational factors. Sanna and Schwarz, for example, showed that the attribution of the feeling of difficulty to the manipulation effectively erases the effect of the manipulation on the processing-fluency heuristic (2003). In fact, even subtle cues have been shown to affect the attributions of participants. In Schwarz's now-famous study, the effect of unseasonably sunny and warm weather influenced participants' ratings of their overall life well-being, except when the interviewer asked the interviewee how the weather was (Schwarz & Clore, 1983). Although this short, off-hand comment did not address attribution, it was enough to influence participants to attribute their immediate feelings of happiness to the weather and not to their decisions about the happiness of their lives as a whole. Therefore, this small comment effectively erased the influence the weather had on response styles.

Because of the inherently sensitive nature of participants' attributions of the feeling of difficulty, this slight variation in design was aimed at changing attribution

styles such that the feeling of difficulty would be attributed to the dilemmas, and not the computer manipulation. If this is this case, the originally hypothesized increase in status-quo responses is expected from the brow manipulation.

A total of 49 participants (30 males and 19 females) completed the study in exchange for course credit. Participants were again run in groups of 1-4, with each participant run in an individual cubicle with a computer. Participants were randomly assigned to either the brow or control condition. After completing the questions, participants were thanked and debriefed.

**Results**

The manipulation check showed that the introduction of the moral dilemmas as a pretest was ineffective in achieving the desired manipulation. Participants in the brow condition rated the questions as somewhat *less* difficult than participants in the control condition (t=-.98 df= 47 p=.332). Similar to study 1, participants in the brow condition were, if anything, more likely to choose the non-status-quo response to both the first dilemma ($X^2$=3.6 df=1 p=.058) and the second dilemma ($X^2$=.191 df=1 p=.662). Results can be seen in table 2.1 and 2.2. As in study 1, participants with at least one status-quo response rated the questions as more difficult (t=-1.536 df=47 p=.131).

| Condition | Refugee Problem | | Total |
|---|---|---|---|
| | Non-Status Quo | Status Quo | |
| Brow | 17 | 7 | 24 |
| | 70.8% | 29.2% | |
| Control | 11 | 14 | 25 |
| | 44.0% | 56.0% | |
| Total | 28 | 21 | 49 |
| | 57.1% | 42.9% | |

Table 2.1: Responses to the refugee problem in study 2, $X^2$=3.6 df=1 p=.058.

| Condition | Cancer Problem | | Total |
|---|---|---|---|
| | Non-Status Quo | Status Quo | |
| Brow | 19 | 5 | 24 |
| | 79.2% | 20.8% | |
| Control | 21 | 4 | 25 |
| | 84.0% | 16.0% | |
| Total | 40 | 9 | 49 |
| | 81.6% | 18.4% | |

Table 2.2: Responses to the cancer problem in study 2, $X^2$=.191 df=1 p=.662

Again, the results seemed to suggest that the introduction of the dilemmas as a pretest and the reading of the dilemmas on paper was not enough to influence participants' attribution of the difficulty to the computer. The results are consistent with the view that the computer-related tension-headache cover story was plausible enough to participants that the manipulation actually had the opposite effect from that intended. In essence, the participants seemed to have attributed any feelings of difficulty to the tension-headache cover story, and not to the questions, skewing the results in the opposite direction than hypothesized.

## Study 3

### Method

A total of 73 participants (50 male and 23 female) participated in the experiment in exchange for course credit. The method was nearly identical to that in study 2, except that any reference the dilemmas as a pretest was eliminated. Furthermore, the additions to Sanna et al.'s tension-headache cover story were pared down to only include the story as presented in Sanna's experiment (2002). Finally, all materials were presented on pencil and paper, in an attempt to reduce the plausibility of the tension-headache cover story. Unfortunately, it was not possible to find alternate accommodations that did not involve placing participants at a computer and filling our all materials right next to a computer. Therefore, the plausibility of the manipulation might have still remained since participants completed all materials while seated directly in front of a computer. If successful in cutting the plausibility of the tension-headache cover story, the participants in the brow condition would be expected to rate the dilemmas as more difficult, and to use more status-quo responses to the dilemmas.

**Results**

The manipulation check showed that participants in the brow condition rated the dilemmas as difficult as did the participants in the control condition (t=.379 df=71 p=.706). While the changes seemed to have lessened the plausibility of the cover story, the participants still seem to be attributing the induced difficulty to the computer. In sum, the brow manipulation did not seem to be effective.

Consistent with the ineffectiveness of the brow manipulation, participants in the brow condition were not significantly more likely to choose the status-quo option, as compared with the control participants for the first dilemma ($X^2$=.019 df=1 p=.892) and the second dilemma ($X^2$=1.185 df=1 p=.276). Results can be seen in tables 3.1 and 3.2. Similar to the previous studies, the participants who responded with at least one status-quo response rated the questions as more difficult, in the direction predicted, although it failed to reach significance (t=-.859 df=71 p=.393).

| Condition | Refugee Problem | | Total |
|---|---|---|---|
| | Non-Status Quo | Status Quo | |
| Brow | 22 | 16 | 38 |
| | 57.9% | 42.1% | |
| Control | 21 | 15 | 36 |
| | 58.3% | 41.7% | |
| Total | 43 | 31 | 74 |
| | 58.1% | 41.9% | |

Table 3.1: Responses to the refugee problem in study 3, $X^2$=.019 df=1 p=.892.

| Condition | Cancer Problem | | Total |
|---|---|---|---|
| | Non-Status Quo | Status Quo | |
| Brow | 26 | 11 | 37 |
| | 70.3% | 29.7% | |
| Control | 29 | 7 | 36 |
| | 80.6% | 19.4% | |
| Total | 55 | 18 | 73 |
| | 75.3% | 24.7% | |

Table 3.2: Responses to the cancer problem in study 3, $X^2$=1.19 df=1 p=.276.

By examining the effect of difficulty across all 3 studies, a more comprehensive view can be achieved. Across all 3 studies, there was a strong relationship between perceived difficulty and status-quo responses. Participants who responded with at least

one status-quo response rated the questions as significantly more difficult (t=-2.456 df=154 p=.015). Furthermore, an ANOVA analysis showed a significant trend the difficulty-moderation model would predict with participants who responded with no status-quo responses rating the questions the least difficult (4.616); participants who responded with 1 status-quo responses rating the questions as more difficult (5.167); and participants who responded with 2 status-quo responses rating the questions as most difficult (5.412) (F=3.179 df=2 p=.044). These trends lend stronger support to the conclusion that perceived difficulty moderated status-quo responses.

Consistent with the explanation that the brow manipulation actually had the slight tendency to work in the opposite direction, across all 3 studies, participants in the brow condition rated the questions as slightly more difficult (t=-.626 df=154 p=.532). By extension, brow participants were somewhat, although not significantly, less likely to have status-quo responses for the first question ($X^2$=1.759 df=1 p=.185), as well as the second question ($X^2$=.499 df=1 p=.48).

**Discussion**

Because the brow manipulation failed to have the intended effect on participants' feeling of difficulty, the results cannot faithfully distinguish between the processing-fluency model and the ego-depletion model. The brow manipulation seems to have even had a slightly opposite effect on the subjective feeling of difficulty, consistent with the idea that participants may have over-attributed their feeling of difficulty to the computer, due to the plausibility of the manipulation. While the manipulation did not work as expected, two themes are illustrated by the present research.

First, this research demonstrates the sensitive nature of the attribution process. Attributions are often implicit, and previous research has shown that small, off-hand remarks by experimenters can significantly affect participants' attributions (Schwarz & Clore, 1983). This simply demonstrates our surprising sensitivity to contextual clues that can influence attributions. For example, one study demonstrated that a small poster, placed relatively inconspicuously in the room of an experiment can eliminate cognitive dissonance by causing participants to attribute their decisions to social pressure (Kitayama et al., 2004). If something as small as an inconspicuous poster can significantly influence participants' attributions, it is plausible that working next to a computer could cause participants to attribute the feeling of difficulty to the manipulation. The mere presence of computers may raise the plausibility of the manipulation. This explanation would predict that the brow manipulation would work as hypothesized, if presented without computers present. This line of research is worth exploring in the future, although appropriate accommodations could not be secured in time for the present research to test this possibility.

Second, the research lends support to the idea that perceived difficulty moderates the selection of status-quo responses (which could also be conceptualized as choice-deferral). The strong relationship between perceived difficulty and the number of status-quo responses across conditions and experiments suggests that the effect of perceived difficulty is rather robust. While this finding cannot directly rule out the ego-depletion model, it does seem to suggest that the feeling of difficulty can affect responses to the first question in a series. Because questions were not presented in counterbalanced order, as in Riis's study, the effect of order on status-quo responses could not be effectively

tested. Future research could counterbalance the order of the questions across participants in order to replicate Riis's finding that answering one difficult moral dilemma increases status-quo responses on subsequent dilemmas. Additionally, future research analyses could look at the possible effects of gender, ethnicity, or nationality. However, it must be noted that gender differences were not present in Riis's study, nor does this author predict any meaningful interaction with these demographic variables.

## Appendix

**1. Refugees:**
A convoy of food trucks is on its way to a refugee camp during a famine in Africa (airplanes cannot be used). While the convoy is en route, you find that a second camp has even more refugees. If you tell the convoy to go to the second camp instead of the first, you will save 250 people from death, but 100 people from the first camp will die as a result.

The area has suffered an extended drought, and in addition, fighting between government and rebel forces has forced families to flee their communities. You know the following about the camp scheduled to receive the food: Very many of the 100 people in the camp are young children who are most vulnerable to malnutrition. They have been receiving very limited food supplies for several months, but many have now been without any food for more than a week. Some adults have been without food for longer as they have fed their rations to their children.

REMEMBER: Imagine that you are the official who has to make such life-and-death decisions.

Would you send the convoy to the second camp?

**2. Cancer**:
Millions of Americans do not have medical insurance. Many cannot get treatment for very serious conditions simply because they are poor and the treatments are too expensive. Right now, a program covers an expensive treatment that cures 200 people of a particularly severe kind of cancer each year. There are many people on the waiting list hoping to receive this coverage.

The official in charge of the program has recently learned that if coverage for this treatment is stopped, the same money can be used for another, less expensive treatment. This other treatment can cure 400 people suffering from a different, but equally severe, kind of cancer. Both treatments are the only effective ones known, and the patients are too poor to pay on their own.

REMEMBER: Imagine that you are the official who has to make such life-and-death decisions.

Would you stop covering the original treatment?

## References

Baumeister, R.F., Bratslavsky, E., Muraven, M. (1999). Ego depletion: Is the active self a limited resource? In: The self in social psychology. New York: Psychology Press.

Dhar, R. (1997). Consumer preference for a no-choice option. *Journal of Consumer Research*, 24(2), 215-231.

Kitayama, S., Snibbe, A.C. & Markus, H.R. (2004). Is There Any 'Free' Choice?: Self and Dissonance in Two Cultures. *Psychological Science*, 15(8) 527-533.

Reber, R. & Schwarz, N. (1999). Effects of perceptual fluency on judgments of truth. *Consciousness and Cognition: An International Journal*, 8(3), 338-342.

Reber, R., Schwarz, N. & Winkielman, P. (2004). Processing Fluency and Aesthetic Pleasure: Is Beauty in the Perceiver's Processing Experience? *Personality and Social Psychology Review*, 8(4), 364-382.

Riis, Jason (2003). Experienced difficulty in sequential decision making. Doctoral Dissertation.

Ritov, I. & Baron, J. (1999). Protected values and omission bias. *Organizational Behavior and Human Decision Processes*, 79(2), 79-94.

Sanna, L.J. & Schwarz, N. (2003). Debiasing the hindsight bias: The role of accessibility experiences and (mis)attributions. *Journal of Experimental Social Psychology*, 39(3), 287-295.

Sanna, L.J., Schwarz, N. & Small, E.M. (2002). Accessibility experiences and the hindsight bias: I knew it all along versus it could never have happened. *Memory & Cognition*, 30(8), 1288-1296.

Schwarz, N. (2002). Feelings as information: Moods influence judgments and processing strategies. In Gilovich, T., Griffin, D. & Kahneman, D. (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 534-547). New York: Cambridge University Press.

Schwarz, N. & Clore, G.L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45(3), 513-523.

Teske, Nathan (1997). Beyond altruism: Identity-construction as moral motive in political explanation. *Political Psychology*, 18(1), 71-91.

Tversky, A. & Kahneman, D. (2002). Extensional versus intuitive reasoning: The conjunction fallacy in probability judgment. In Gilovich, T., Griffin, D. & Kahneman, D. (Eds.), *Heuristics and biases: The psychology of intuitive judgment* (pp. 19-48). New York: Cambridge University Press.

Tversky, A. & Kahneman, D. (2002). Judgment under uncertainty: Heuristics and biases. In Levitin, D.J. (Ed.), *Foundations of cognitive psychology: Core readings* (pp. 585-600). Cambridge: MIT Press.