

## **Supplementary Material**

The supplementary material is composed of the following sections:

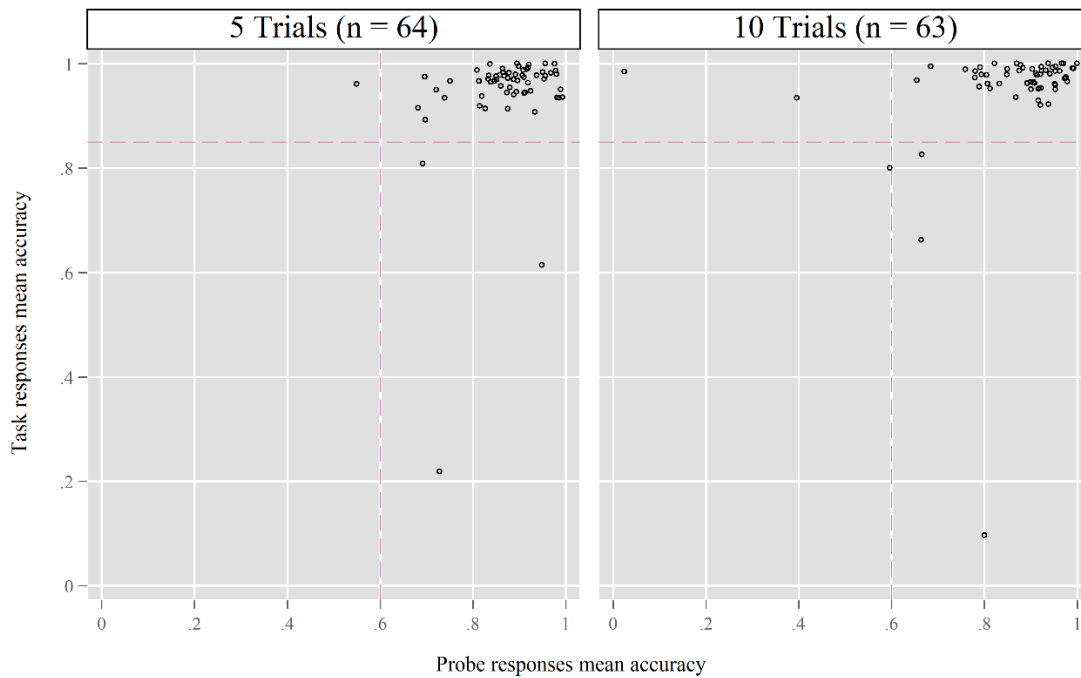
1. Data Screening process.
  - a. Experiment 1
  - b. Experiment 2
2. Descriptive Statistics
  - a. Experiment 1
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3. Bayesian Model Comparison
  - a. Experiment 1
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4. Unfiltered Results
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  - c. Bayesian Model Comparison
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## 1. Data screening process

Our screening process was based part on data observation and plotting and part on criteria obtained in previous studies employing the paradigm.

### a. Experiment 1

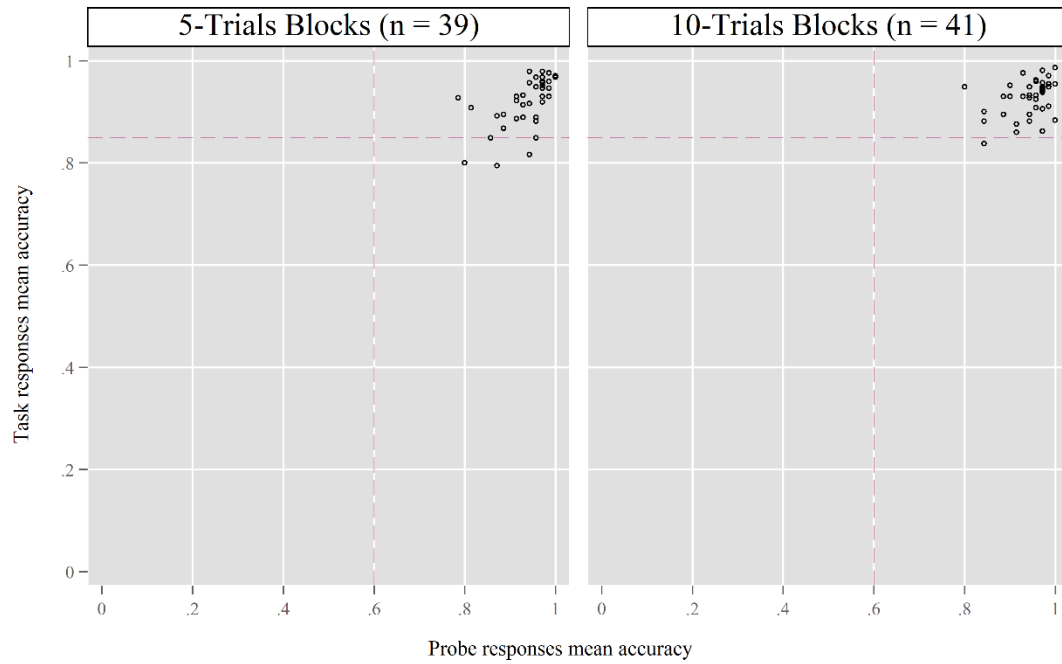
Figure S1 depicts the screening of outlier participants, regarding task and probe trials accuracy.



**Figure S1: Scatter plot of mean task and probed trials accuracy (proportion), by participant. Dashed lines indicate actual filters employed in study.**

## b. Experiment 2

Figure S2 depicts the screening of outlier participants, regarding task and probe trials accuracy.



**Figure S2: Scatter plot of mean task and probed trials accuracy (proportion), by participant. Dashed lines indicate actual filters employed in study.**

## 2. Descriptive Statistics

### a. Experiment 1

		Prior Trial		
Block Length	Context		No-Feedback	Feedback
	5	0	443.8 (75.6)	435.2 (74.6)
		1	444.4 (77.8)	435.2 (74.8)
		2	442.6 (75.8)	432.4 (76.2)
		3	443.4 (76)	428 (74.2)
	10	0	443.8 (76)	437.4 (74.2)
		1	444.2 (75.8)	434.8 (75)
		2	447.2 (75.6)	431 (76)
		3	450.8 (75.4)	423 (73.4)

**Table S1: Means (and standard deviation) for response time data, by Block Length, Context and Feedback on Prior Trial.**

### b. Experiment 2

		Prior Trial		
Block Length	Context		No-Feedback	Feedback
	5	0	456.8 (76.4)	442.6 (73.8)
		1	443.4 (73.8)	440.4 (75.6)
		2	439.6 (71)	439 (75.2)
		3	442 (72)	436.2 (72.8)
	10	0	454 (71.6)	442.2 (71.4)
		1	441.8 (68.8)	441.4 (69.6)
		2	445.4 (69.8)	439.6 (69.4)
		3	440.2 (68)	430.2 (67.2)

**Table S2: Means (and standard deviation) for response time data, by Block Length, Context and Feedback on Prior Trial.**

### 3. Bayesian Model Comparison

#### a. Experiment 1

Additionally to the Frequentist ANOVA brought in the Results section of Experiment 1 we ran a similar repeated measures Bayesian ANOVA. Table S3 below contains the comparison of all models produced by the permutations of factors, assuming equal probability of each model.

The model which best describes the data is the one in which Feedback on trial  $n-1$ , Context (Feedback on trials  $n-4$  through  $n-2$ ) and their interaction are entered into the model, with a probability of 0.64 given the data and a Bayes-Factor<sub>1:0</sub> of  $1.53 * 10^{46}$ , compared with the null model (containing only participant). The model does not include the between subject factor of Block Length.

Please note that in order to improve the readability of the Table S3, each variable in the ANOVA has been recoded into a numeric value, as specified below:

<b>Factor</b>	<b>Factor Numbering</b>
<i>Prior: Feedback Type on Trial <math>n-1</math></i>	<i>1</i>
<i>Context: Recent Feedback Occurrences Count</i>	<i>2</i>
<i>Block Length</i>	<i>3</i>

Models	P(M)	P(M data)	BF <sub>M</sub>	BF <sub>10</sub>	error %
Null model (incl. Participant)	0.05	4.16e -47	7.49e -46	1	
1	0.05	6.40e -8	1.15e -6	1.54e +39	0.87
2	0.05	1.54e -48	2.78e -47	0.04	0.71
1 + 2	0.05	4.37e -9	7.86e -8	1.05e +38	0.93
1 + 2 + 1 * 2	0.05	0.64	31.64	1.53e +46	29.45
3	0.05	1.52e -47	2.74e -46	0.37	4.09
1 + 3	0.05	2.76e -8	4.97e -7	6.63e +38	4.77
2 + 3	0.05	5.32e -49	9.57e -48	0.01	8.28
1 + 2 + 3	0.05	2.23e -9	4.02e -8	5.37e +37	10.37
1 + 2 + 1 * 2 + 3	0.05	0.16	3.47	3.89e +45	12.13
1 + 3 + 1 * 3	0.05	1.50e -8	2.70e -7	3.60e +38	5.88
1 + 2 + 3 + 1 * 3	0.05	7.81e -10	1.41e -8	1.88e +37	11.91
1 + 2 + 1 * 2 + 3 + 1 * 3	0.05	0.09	1.69	2.06e +45	13.15
2 + 3 + 2 * 3	0.05	1.93e -50	3.47e -49	4.64e -4	12.92
1 + 2 + 3 + 2 * 3	0.05	7.09e -11	1.28e -9	1.70e +36	23.6
1 + 2 + 1 * 2 + 3 + 2 * 3	0.05	0.01	0.19	2.54e +44	22.65
1 + 2 + 3 + 1 * 3 + 2 * 3	0.05	5.37e -11	9.66e -10	1.29e +36	19.81
1 + 2 + 1 * 2 + 3 + 1 * 3 + 2 * 3	0.05	4.26e -3	0.08	1.02e +44	18.28
1 + 2 + 1 * 2 + 3 + 1 * 3 + 2 * 3 + 1 * 2 * 3	0.05	0.1	2.01	2.41e +45	30.79

*Note. All models include Participant.*

**Table S3: Bayesian model comparison of the ANOVA used in Experiment 1. Each factor had been recorded (see previous page). The highest-ranking model in the comparison is the one in which Feedback on previous trial, Context (recent feedback occurrences) and their interaction are entered to the model.**

## b. Experiment 2

Additionally to the Frequentist ANOVA brought in the Results section of Experiment 2 we ran a repeated measures Bayesian ANOVA. Table S4 below contains the comparison of all models produced by the permutations of factors, assuming equal probability of each model.

Similarly to Experiment 1, The model which best describes the data is the one in which Feedback Type on trial  $n-1$  (Unperturbed Feedback, Perturbed Feedback), Context (Unperturbed Feedback on trials  $n-4$  through  $n-2$ ) and their interaction are entered into the model, with a probability of 0.51 given the data and a Bayes-Factor<sub>1:0</sub> of  $7.1 * 10^{34}$  compared with the null model (including participant). The model does not include the between subject factor of Block Length.

Please note that in order to improve the readability of the Table S4, each variable in the ANOVA has been recoded into a numeric value, as specified below:

<b>Factor</b>	<b>Factor Numbering</b>
<i>Prior: Feedback Type on Trial <math>n-1</math></i>	<i>1</i>
<i>Context: Recent Unperturbed Feedback Occurrences Count</i>	<i>2</i>
<i>Block Length</i>	<i>3</i>

Models	P(M)	P(M data)	BF <sub>M</sub>	BF <sub>10</sub>	error %
Null model (incl. Participant)	0.05	7.20e -36	1.30e -34	1	
1	0.05	2.68e -4	4.82e -3	3.72e +31	2.76
2	0.05	2.08e -37	3.74e -36	0.03	0.87
1 + 2	0.05	1.23e -5	2.21e -4	1.71e +30	1.06
1 + 2 + 1 * 2	0.05	0.51	18.82	7.10e +34	1.4
3	0.05	3.67e -36	6.60e -35	0.51	3.51
1 + 3	0.05	1.28e -4	2.31e -3	1.78e +31	4.46
2 + 3	0.05	9.29e -38	1.67e -36	0.01	7.76
1 + 2 + 3	0.05	6.51e -6	1.17e -4	9.04e +29	8.89
1 + 2 + 1 * 2 + 3	0.05	0.3	7.78	4.19e +34	10.68
1 + 3 + 1 * 3	0.05	4.94e -5	8.89e -4	6.86e +30	5.13
1 + 2 + 3 + 1 * 3	0.05	2.94e -6	5.29e -5	4.08e +29	12.15
1 + 2 + 1 * 2 + 3 + 1 * 3	0.05	0.14	3.05	2.01e +34	11.74
2 + 3 + 2 * 3	0.05	3.15e -39	5.66e -38	4.37e -4	10.77
1 + 2 + 3 + 2 * 3	0.05	3.04e -7	5.47e -6	4.22e +28	13.84
1 + 2 + 1 * 2 + 3 + 2 * 3	0.05	0.03	0.47	3.52e +33	26.03
1 + 2 + 3 + 1 * 3 + 2 * 3	0.05	1.61e -7	2.90e -6	2.24e +28	13.77
1 + 2 + 1 * 2 + 3 + 1 * 3 + 2 * 3	0.05	7.80e -3	0.14	1.08e +33	21.59
1 + 2 + 1 * 2 + 3 + 1 * 3 + 2 * 3 + 1 * 2 * 3	0.05	8.56e -3	0.16	1.19e +33	22.93

*Note. All models include Participant.*

**Table S4: Bayesian model comparison of the ANOVA used in Experiment 2. Each factor had been recorded (see previous page). The highest-ranking model in the comparison is the one in which Feedback Type on previous trial, Context (recent Unperturbed Feedback Occurrences) and their interaction are entered to the model.**

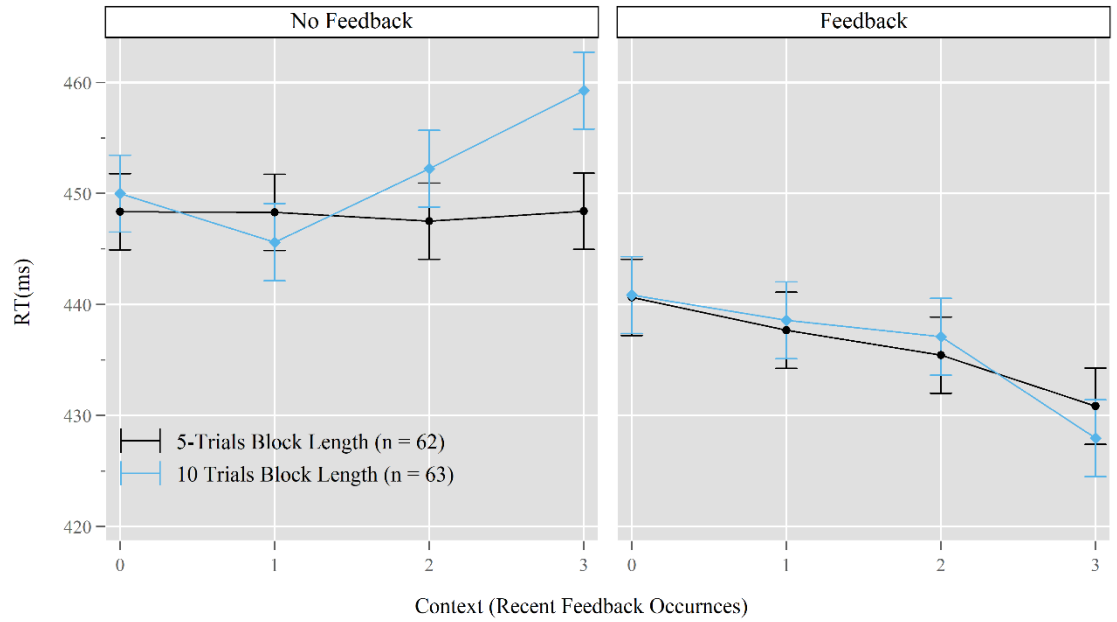


## 4. Unfiltered Results

### a. Experiment 1

**DATA PREPARATION AND SCREENING** In the unfiltered analysis we filtered incorrect task trials and response omissions (5.3%), but initially did not impose any other filters. Due to the parsing of trials, we were forced to remove two participants with very low accuracy on task trials (9% and 23%; lower than chance) with had 1-3 empty cells out of the 8 possible trial types (e.g, had no occurrence of 3 consecutive feedback occurrences), which their correct responses consisted of 0.6% of data. Total filtration of task trials data amounted to ~5.9%.

**STATISTICAL ANALYSES** In order to test the joint effects of Block Length (5 or 10 trials), Feedback on prior trial  $n-1$  (Present, Absent) and Context of feedback on trials  $n-4$  through  $n-2$  (0, 1, 2, 3) on response speed, we ran a 2 X 2 X 4 repeated measures ANOVA with Block Length as a between subject factor. The estimated marginal means and 95% confidence intervals are shown in Figure S3.



**Figure S3: The effect of feedback on trial  $n-1$  (separate plots) is dependent on the ‘Context’ (number of action-effect occurrences in trials  $n-4$  through  $n-2$ ). Slowing of response time following sudden loss of feedback occurrence is accentuated by Block Length.**

The effect of Feedback on trial  $n-1$  on response time was significant and large [ $F_{(1, 123)} = 185.83$ ,  $p < 0.001$ ,  $\eta^2 = 0.6_{[0.49, 0.68]}$ ], which is a replication of the facilitation effect found by our paradigm (e.g, Eitam et al., 2013; Karsh et al., 2016; , n.d.). The effect of Context of Recent Feedback Occurrences [ $F_{(3, 121)} = 2.77$ , Greenhouse-Geisser  $p = 0.09$ ,  $\eta^2 = 0.02_{[<0, 0.05]}$ ] was small and significant, but the effect of Block Length [ $F_{(1, 123)} = 0.08$ ,  $p = 0.78$ ,  $\eta^2 = 0.00_{[<0, 0.03]}$ ] was less-than-small and insignificant.

As per interactions, The effect of Feedback on trial  $n-1$  had a medium and significant interaction with the number of Feedback Occurrences on trials  $n-4$  through  $n-2$  [ $F_{(3, 121)} = 18.08$ ,  $p < 0.001$ ,  $\eta^2 = 0.13_{[0.07, 0.19]}$ ] of but it had a small and insignificant interaction with

Block Length [ $F_{(1, 123)} = 3.25$ ,  $p = 0.07$ ,  $\eta^2 = 0.03_{[<0, 0.1]}$ ]. The Interaction of Context of Recent Feedback Occurrences with Block Length was small and insignificant on response time [ $F_{(3, 123)} = 1.71$ ,  $p = 0.16$ ,  $\eta^2 = 0.02_{[<0, 0.04]}$ ]. The 3-Way interaction had a significant but small effect on response time [ $F_{(3, 72)} = 4.32$ ,  $p = 0.005$ ,  $\eta^2 = 0.04_{[0.00, 0.07]}$ ].

As we explored the pattern described above, two specific contrasts were identified as more interesting, because of their centrality to a dynamic pattern – the contrast of sudden ‘gain’ of effectiveness (‘Prior’ feedback while ‘Context’ is held constant at 0 recent feedback occurrences) and ‘loss’ of effectiveness (‘Prior’ feedback while ‘Context’ is held constant at 3 recent feedback occurrences). Therefore, as post-hoc contrasts (Bonferroni corrected for multiple comparisons) we tested the difference in mean response time difference between the cells of Feedback occurrence on trial  $n-1$  and No-Feedback on trial  $n-1$ , while holding the Recent Feedback count constant.

For the first contrast we held the Recent Feedback count constant at 0, in order to test the effect of ending a block of Feedback Trials and beginning a block of No Feedback Trials. In accordance with our hypothesis, we found that receiving feedback following a streak of No-Feedback trials significantly facilitated response time for both Block Length conditions - 5-Trials [ $t_{(62)} = -3.99$ ,  $p < .004$ , Cohen’s  $d = -0.5_{(-0.72, -0.28)}$ ,  $BF_{1:0} = 252.06$ ] and 10-Trials [ $t_{(61)} = -3.89$ ,  $p < .004$ , Cohen’s  $d = -0.49_{(-0.71, -0.27)}$ ,  $BF_{1:0} = 186.41$ ], which resulted in mean facilitation of -7.72ms (SE of difference = 1.94) and -9.15ms (SE of difference = 2.35) respectively.

For the second contrast we held the Recent Feedback count constant at 3. This contrast captures the response time change as participants go from a Feedback block to an No-Feedback block – receiving no feedback after a series of feedback occurrences. In

line with out theory, we found significant slowing of response speed in both the 5-Trials Block Length group [ $t_{(62)} = 5.93$ ,  $p < .004$ , Cohen's  $d = 0.89_{(0.57, 1.21)}$ ,  $BF_{1:0} = 164575.68$ ], and the 10-Trials Block Length group [ $t_{(61)} = 10.15$ ,  $p < .004$ , Cohen's  $d = 1.29_{(1.00, 1.58)}$ ,  $BF_{1:0} = 1.38 * 10^{12}$ ] , which resulted in mean inhibition of 15.99ms (SE = 2.89) and 31.29ms (SE = 3.08) respectively.

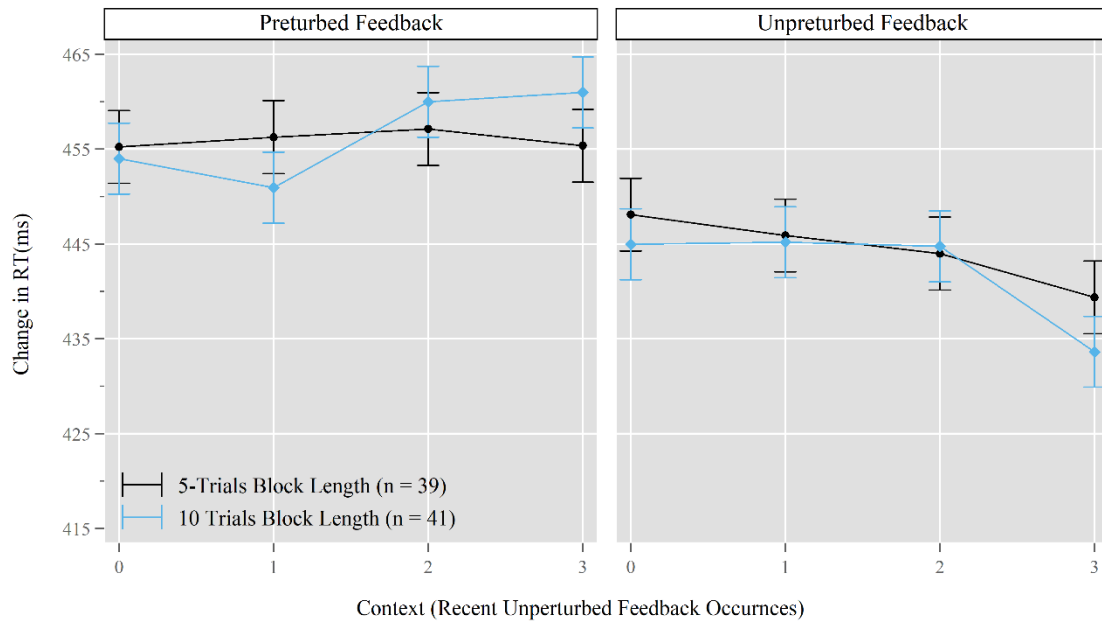
## b. Experiment 2

**DATA PREPARATION AND SCREENING** Data was filtered according to the following criteria – incorrect responses on task trials (7.56%).

**STATISTICAL ANALYSES** In order to test the joint effects of Block Length (5 or 10 trials), Type of Feedback on trial  $n-1$  (Perturbed, Unperturbed) and Count of Unperturbed Feedback on trials  $n-4$  through  $n-2$  (0, 1, 2, 3) on response speed, we ran a 2 X 2 X 4 repeated measures ANOVA with Block Length as a between subject factor. Estimated marginal means and 95%-CI are plotted in Figure S4.

The effect of Unperturbed Feedback on trial  $n-1$  on response time was significant and large [ $F_{(1, 79)} = 158.76$ ,  $p < 0.001$ ,  $\eta^2 = 0.67_{[0.54, 0.75]}$ ], which is a replication of the facilitation effect found by Karsh et al (2016, Experiment 2b). In contrast, the effects of Recent Unperturbed Feedback Occurrences [ $F_{(3, 77)} = 3.17$ , Greenhouse-Geisser  $p = 0.03$ ,  $\eta^2 = 0.04_{[<0, 0.09]}$ ] was significant but small, while the effect of Block Length [ $F_{(1, 79)} = 0.01$ ,  $p = 0.92$ ,  $\eta^2 = 0.00_{[<0, 0.03]}$ ] had no effect on response time.

As per interactions, The effect of Feedback Type on trial  $n-1$  had a medium and significant interaction with the number of Unperturbed Feedback Occurrences on trials  $n-4$  through  $n-2$  [ $F_{(3, 77)} = 11.29$ ,  $p < 0.005$ ,  $\eta^2 = 0.13_{[0.05, 0.19]}$ ] of and a small and insignificant interaction with Block Length [ $F_{(1, 79)} = 1.7$ ,  $p = 0.19$ ,  $\eta^2 = 0.02_{[<0, 0.12]}$ ]. The Interaction of Recent Feedback Occurrences with Block Length had a small and insignificant effect on response time [ $F_{(3, 77)} = 1.19$ ,  $p = 0.32$ ,  $\eta^2 = 0.01_{[<0, 0.05]}$ ]. The 3-Way interaction had a significant and small effect on response time [ $F_{(3, 76)} = 2.93$ ,  $p = 0.03$ ,  $\eta^2 = 0.04_{[0.00, 0.08]}$ ].



**Figure S4: The effect of unperturbed feedback on trial  $n-1$  (separate plots) is dependent on the ‘Context’ (X-Axis; number of unperturbed action-effect occurrences in trials  $n-4$  through  $n-2$ ). Slowing of response time following sudden perturbed feedback occurrence is accentuated by Block Length (separate lines).**

As planned post-hoc contrasts we tested the difference in mean response time difference between the cells of Unperturbed Feedback on trial  $n-1$  and Perturbed Feedback on trial  $n-1$ , while holding the Recent Feedback count constant.

For the first contrast we held the Recent Feedback count constant at 0, in order to test the effect of going from a ‘Ineffective’ block to an ‘Effective’ block. In accordance with our hypothesis, we found that Unperturbed feedback following a series of Perturbed feedback trials significantly facilitated response time for both Block Length conditions - 5-Trials [ $t_{(38)} = -3.38$ ,  $p < .001$ , Cohen’s  $d = -0.54_{(-0.82, -0.26)}$ ,  $BF_{1:0} = 38.91$ ] and 10-Trials [ $t_{(40)} = -3.38$ ,  $p < .001$ ,

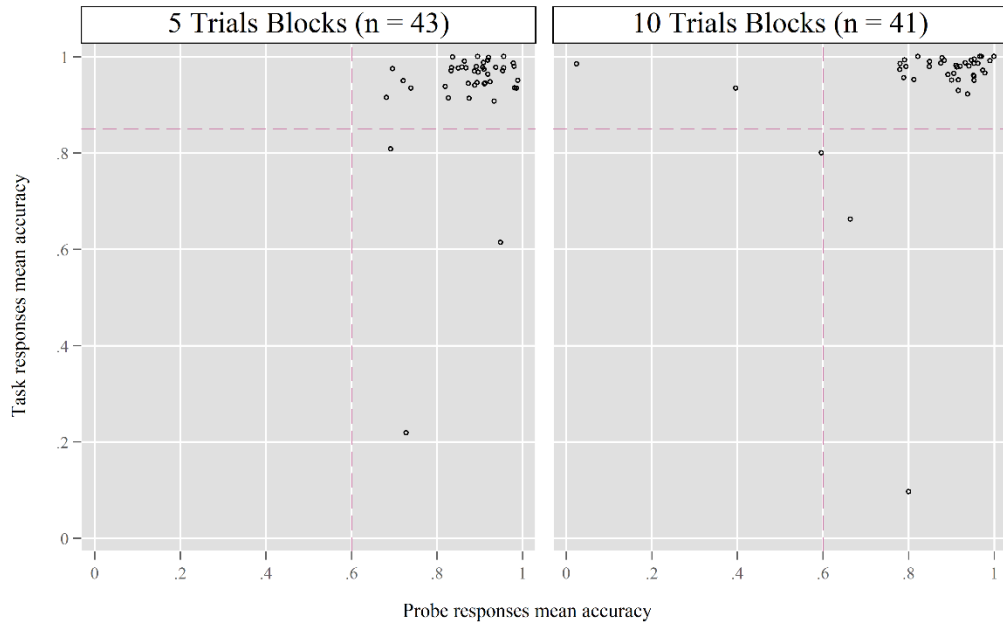
Cohen's  $d = -0.53_{(-0.81, -0.25)}$ ,  $BF_{1:0} = 39.43$ ], which resulted in mean facilitation of -7.13ms (SE of difference = 2.11) and -9.02ms (SE of difference = 2.67) respectively..

For the first contrast we held the Recent Feedback count constant at 3. This contrast captures the response time change as participants go from an 'effective' block to an 'ineffective' block – receiving a Perturbed feedback after a series of Unperturbed feedback occurrences. As predicted, we found significant slowing of response speed in both the 5-Trials Block Length group [ $t_{(38)} = 5.93$ ,  $p < .001$ , Cohen's  $d = 0.89_{(0.57, 1.21)}$ ,  $BF_{1:0} = 14727.41$ ], and the 10-Trials Block Length group [ $t_{(40)} = 11.22$ ,  $p < .004$ , Cohen's  $d = 1.75_{(1.33, 2.17)}$ ,  $BF_{1:0} = 2.37 * 10^{11}$ ] , which resulted in mean inhibition of 15.99ms (SE = 2.89) and 27.35ms (SE = 2.44) respectively.

## 5. Pre-registered sample (Experiment 1)

### a. Data Screening Process

Figure S5 depicts the screening of outlier participants, regarding task and probe trials accuracy.



**Figure S5: Scatter plot of mean task and probed trials accuracy (proportion), by participant in Experiment 1 (Pre-registered sample). Dashed lines indicate actual filters employed in study.**



**b. Descriptive Statistics**

		<b>Prior Trial</b>		
<b>Block Length</b>		<b>Context</b>	<i>No-Feedback</i>	<i>Feedback</i>
		<i>0</i>	448.2 (77.4)	439.8 (77.4)
	5	<i>1</i>	448.2 (79.4)	438.2 (77.8)
		<i>2</i>	447 (77.6)	437 (80)
		<i>3</i>	449 (78)	434.2 (77.8)
		<i>0</i>	440.4 (76.4)	434 (73)
	10	<i>1</i>	439.8 (74.6)	430 (74)
		<i>2</i>	440.4 (73.8)	424.2 (74.4)
		<i>3</i>	447.8 (73.8)	419.8 (73.8)

**Table S5: Means (and standard deviation) for response time data, by Block Length, Context and Feedback on Prior Trial.**

c. Bayesian model comparison

Additionally to the Frequentist ANOVA brought in the Results section of Experiment 1 we ran a similar repeated measures Bayesian ANOVA. Table S6 below contains the comparison of all models produced by the permutations of factors, assuming equal probability of each model.

The model which best describes the data is the one in which Feedback on trial  $n-1$ , Context (Feedback on trials  $n-4$  through  $n-2$ ) and their interaction are entered into the model, with a probability of 0.55 given the data and a Bayes-Factor<sub>1:0</sub> of  $1.25 * 10^{28}$ . The model does not include the between subject factor of Block Length.

Please note that in order to improve the readability of the Table S6, each variable in the ANOVA has been recoded into a numeric value, as specified below:

<b>Factor</b>	<b>Factor Numbering</b>
<i>Prior: Feedback Type on Trial <math>n-1</math></i>	<i>1</i>
<i>Context: Recent Feedback Occurrences Count</i>	<i>2</i>
<i>Block Length</i>	<i>3</i>

Models	P(M)	P(M data)	BF <sub>M</sub>	BF <sub>10</sub>	error %
Null model (incl. Participant)	0.05	4.40e -29	7.92e -28	1	
1	0.05	2.66e -4	4.79e -3	6.05e +24	3.66
2	0.05	2.36e -30	4.24e -29	0.05	1.71
1 + 2	0.05	2.47e -5	4.45e -4	5.62e +23	1.27
1 + 2 + 1 * 2	0.05	0.55	21.9	1.25e +28	26.92
3	0.05	2.83e -29	5.09e -28	0.64	1.18
1 + 3	0.05	1.88e -4	3.38e -3	4.27e +24	6.6
2 + 3	0.05	1.49e -30	2.68e -29	0.03	1.03
1 + 2 + 3	0.05	1.82e -5	3.27e -4	4.13e +23	7.35
1 + 2 + 1 * 2 + 3	0.05	0.24	5.75	5.50e +27	4.67
1 + 3 + 1 * 3	0.05	9.16e -5	1.65e -3	2.08e +24	3.01
1 + 2 + 3 + 1 * 3	0.05	8.97e -6	1.61e -4	2.04e +23	4.57
1 + 2 + 1 * 2 + 3 + 1 * 3	0.05	0.13	2.77	3.03e +27	2.9
2 + 3 + 2 * 3	0.05	6.32e -32	1.14e -30	1.44e -3	1.33
1 + 2 + 3 + 2 * 3	0.05	9.36e -7	1.68e -5	2.13e +22	2.32
1 + 2 + 1 * 2 + 3 + 2 * 3	0.05	0.02	0.28	3.45e +26	8.57
1 + 2 + 3 + 1 * 3 + 2 * 3	0.05	5.28e -7	9.51e -6	1.20e +22	8.27
1 + 2 + 1 * 2 + 3 + 1 * 3 + 2 * 3	0.05	8.24e -3	0.15	1.87e +26	3.39
1 + 2 + 1 * 2 + 3 + 1 * 3 + 2 * 3 + 1 * 2 * 3	0.05	0.05	0.98	1.17e +27	4.58

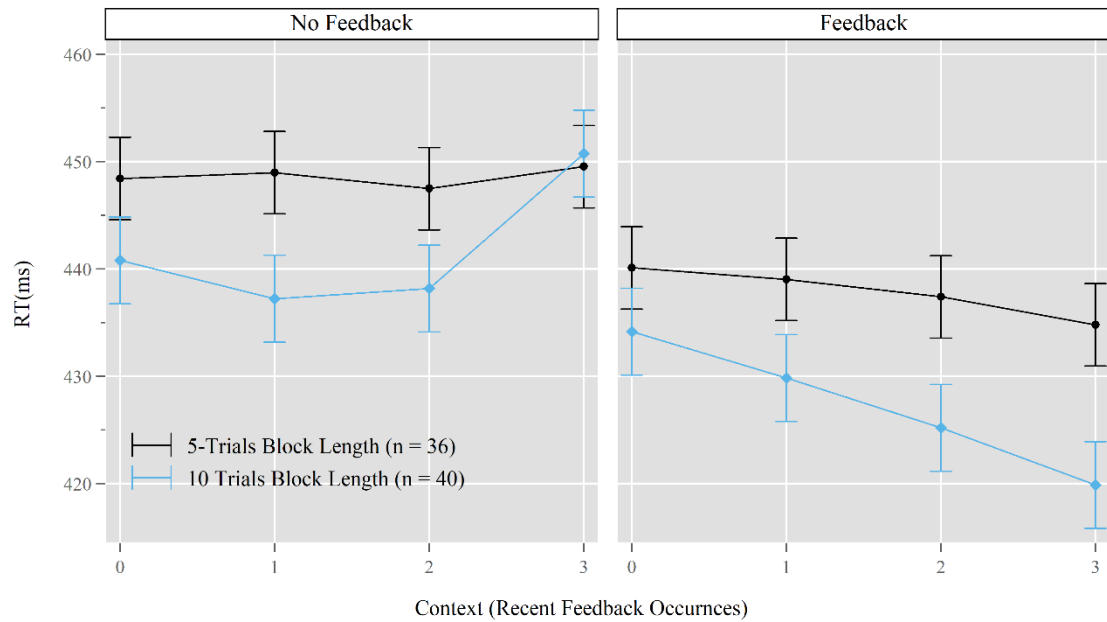
*Note. All models include Participant.*

**Table S6: Bayesian model comparison of the ANOVA used in Experiment 1 (Pre-registered sample). Each factor had been recorded (see previous page). The highest-ranking model in the comparison is the one in which Feedback on previous trial, Context (recent feedback occurrences) and their interaction are entered to the model.**

#### **d. Results**

**DATA PREPARATION AND SCREENING** Data was filtered according to the following criteria – 6 participants with insufficient accuracy in the main task (< 85% correct, ~7%); 2 participants with low accuracy on the probed trials (<60% correct, ~2%); incorrect responses on task trials (616/31,080 data points, ~2%); and very fast or very slow task trials (<200MS or >700ms, 646/31,080 data points, ~2%). Total filtration of task trials data amounted to ~13%. See supplementary material for plotting of mean response accuracy on task and probed trials.

**STATISTICAL ANALYSES** In order to test the joint effects of Block Length (5 or 10 trials), Feedback on prior trial  $n-1$  (Present, Absent) and Context of feedback on trials  $n-4$  through  $n-2$  (0, 1, 2, 3) on response speed, we ran a 2 X 2 X 4 repeated measures ANOVA with Block Length as a between subject factor. In order to highlight the change in response speed we centered each participants data on the mean of RT for the cell of Absent feedback on the trial  $n-1$  and 0 feedback occurrences on the preceding trials, as representing the baseline of the most trials without feedback occurrence. The estimated marginal means and 95% confidence intervals are shown in Figure S6.



**Figure S6: The effect of feedback on trial  $n-1$  (separate plots) is dependent on the ‘Context’ (number of action-effect occurrences in trials  $n-4$  through  $n-2$ ). Slowing of response time following sudden loss of feedback occurrence is accentuated by Block Length.**

The effect of Feedback on trial  $n-1$  on response time was significant and large [ $F_{(1, 74)} = 124.56$ ,  $p < 0.001$ ,  $\eta^2 = 0.63_{[0.54, 0.71]}$ ], which is a replication of the facilitation effect found by our paradigm (e.g, Eitam et al., 2013; Karsh et al., 2016;). In contrast, the Context of Recent Feedback Occurrences [ $F_{(3, 72)} = 2.29$ , Greenhouse-Geisser  $p = 0.08$ ,  $\eta^2 = 0.02_{[<0, 0.08]}$ ] had a small and insignificant effect on response time while Block Length [ $F_{(1, 74)} = 1.13$ ,  $p = 0.29$ ,  $\eta^2 = 0.02_{[<0, 0.1]}$ ] had no such effect.

As per interactions, The effect of Feedback on trial  $n-1$  had a large and significant interaction with the number of Feedback Occurrences on trials  $n-4$  through  $n-2$  [ $F_{(3, 72)} = 12.24$ ,  $p < 0.001$ ,  $\eta^2 = 0.14_{[0.06, 0.22]}$ ] and had a small and insignificant interaction with Block Length [ $F_{(1, 74)} = 2.69$ ,  $p = 0.11$ ,  $\eta^2 = 0.04_{[<0, 0.015]}$ ]. The Interaction of Context of Recent Feedback Occurrences with Block Length had a small and insignificant effect on response time [ $F_{(3, 72)} = 1.13$ ,  $p = 0.33$ ,  $\eta^2 = 0.02_{[<0, 0.05]}$ ]. The 3-Way interaction had a significant but small effect on response time [ $F_{(1, 72)} = 4.65$ ,  $p = 0.001$ ,  $\eta^2 = 0.06_{[0.00, 0.12]}$ ].

As we explored the pattern described above, two specific contrasts were identified as more interesting, because of their centrality to a dynamic pattern – the contrast of sudden 'gain' of effectiveness ('Prior' feedback while 'Context' is held constant at 0 recent feedback occurrences) and 'loss' of effectiveness ('Prior' feedback while 'Context' is held constant at 3 recent feedback occurrences). Therefore, as post-hoc contrasts (Bonferroni corrected for multiple comparisons) we tested the difference in mean response time difference between the cells of Feedback occurrence on trial  $n-1$  and No-Feedback on trial  $n-1$ , while holding the Recent Feedback count constant.

For the first contrast we held the Recent Feedback count constant at 0, in order to test the effect of ending a block of Feedback Trials and beginning a block of No Feedback Trials. In accordance with our hypothesis, we found that receiving feedback following a streak of No-Feedback trials significantly facilitated response time for both Block Length conditions - 5-Trials [ $t_{(59)} = -3.96$ ,  $p < .004$ , Cohen's  $d = -0.63_{(-0.92, -0.34)}$ ,  $BF_{1:0} = 173.64$ ] and 10-Trials [ $t_{(35)} = -2.42$ ,  $p = .04$ , Cohen's  $d = -0.4_{(-0.69, -0.11)}$ ,  $BF_{1:0} = 4.46$ ], which resulted in mean facilitation of -8.33ms (SE of difference = 2.1) and -6.64ms (SE of difference = 2.75) respectively.

For the second contrast we held the Recent Feedback count constant at 3. This contrast captures the response time change as participants go from a Feedback block to an No-Feedback block – receiving no feedback after a series of feedback occurrences. In line with our theory, we found significant slowing of response speed in both the 5-Trials Block Length group [ $t_{(39)} = 4.22$ ,  $p < .004$ , Cohen's  $d = 0.67_{(0.38, 0.96)}$ ,  $BF_{1:0} = 359.7$ ], and the 10-Trials Block Length group [ $t_{(35)} = 8.28$ ,  $p < .004$ , Cohen's  $d = 1.38_{(0.99, 1.77)}$ ,  $BF_{1:0} = 2.46 * 10^7$ ], which resulted in mean inhibition of 14.74ms (SE of difference = 3.49) and 30.88ms (SE of difference = 3.73) respectively.