Supplementary information for "Beyond reach: Do symmetric changes in motor costs affect decision making? A registered report"

Results of frequentist regressions

Hypothesis 1: Preregistered analyses (λ as an IV)

Table 1: Walking task: maximum deviation as a function of λ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	0.52	0.015	91	35	7.5×10^{-55}
choiceSS	-0.065	0.018	82	-3.7	0.0004
choiceLL:lambda	-0.011	0.0018	2.4×10^3	-5.9	3.8×10^{-9}
choiceSS:lambda	0.0099	0.0017	2.4×10^3	5.6	2×10^{-8}

Table 2: Walking task: response time as a function of λ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	5.2	0.12	68	44	6.2×10^{-52}
choiceSS	-0.41	0.07	1.4×10^2	-5.8	5×10^{-8}
choiceLL:lambda	-0.063	0.01	2.4×10^3	-6.1	1.5×10^{-9}
choiceSS:lambda	0.054	0.0098	2.4×10^3	5.5	4.1×10^{-8}

Table 3: Mouse-tracking task: maximum deviation as a function of λ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	2.6×10^2	16	91	17	3.5×10^{-29}
choiceSS	-74	18	83	-4.2	7.3×10^{-5}
choiceLL:lambda	-11	1.9	2.4×10^3	-5.5	3.8×10^{-8}
choiceSS:lambda	2.2	1.7	2.4×10^3	1.3	0.19

Table 4: Mouse-tracking task: response time as a function of λ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	3.6	0.14	90	25	1.3×10^{-42}
choiceSS	-1.1	0.11	1.6×10^2	-10	1.8×10^{-19}
choiceLL:lambda	-0.16	0.017	2.4×10^3	-9.4	1.4×10^{-20}
choiceSS:lambda	0.11	0.015	2.4×10^3	7.2	1.1×10^{-12}

Hypothesis 1: Exploratory analyses (Δ as an IV)

Table 5: Walking task: maximum deviation as a function of Δ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	0.48	0.012	53	40	5.3×10^{-41}
choiceSS	0.0016	0.015	59	0.11	0.91
choiceLL:Delta	-0.1	0.015	2.4×10^3	-6.9	9.1×10^{-12}
choiceSS:Delta	0.058	0.0096	2.4×10^3	6.1	1.6×10^{-9}

Table 6: Walking task: response time as a function of Δ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	5	0.11	53	46	6.9×10^{-45}
choiceSS	-0.0082	0.047	74	-0.17	0.86
choiceLL:Delta	-0.67	0.083	2.3×10^3	-8.1	1.1×10^{-15}
choiceSS:Delta	0.42	0.053	2.4×10^3	7.9	4.6×10^{-15}

Table 7: Mouse-tracking task: maximum deviation as a function of Δ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	2.3×10^2	14	55	17	5.2×10^{-23}
choiceSS	-19	15	58	-1.3	0.21
choiceLL:Delta	-75	15	2.4×10^3	-4.9	1×10^{-6}
choiceSS:Delta	50	8.9	2.4×10^3	5.6	2.8×10^{-8}

Table 8: Mouse-tracking task: response time as a function of Δ and choice

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	3.1	0.12	55	26	1.2×10^{-32}
choiceSS	-0.16	0.065	90	-2.5	0.014
choiceLL:Delta	-1.3	0.13	2.4×10^3	-9.6	2.8×10^{-21}
choiceSS:Delta	0.78	0.078	2.4×10^3	10	6.1×10^{-23}

Hypothesis 2

Table 9: Preregistered k-value as a function of task and session

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	0.82	0.037	67	22	1.1×10^{-32}
taskwalking	-0.03	0.053	67	-0.57	0.57
sessionsecond	-0.055	0.053	67	-1	0.31
taskwalking:sessionsecond	0.027	0.099	52	0.27	0.79

Table 10: $k_{\log}$-value as a function of task and session

	Estimate	Std. Error	df	t value	Pr(>|t|)
(Intercept)	0.54	0.031	63	18	3.8×10^{-26}
taskwalking	-0.04	0.044	63	-0.9	0.37
sessionsecond	-0.094	0.044	63	-2.1	0.038
taskwalking:sessionsecond	0.056	0.084	52	0.67	0.51

Analysis of sensitivity of Bayes factors to prior distributions

Hypothesis 1

Table 11: Results of testing Hypothesis 1: Bayes factors in favor of $M_{choice \times \lambda}$ over M_{choice}. Narrow priors were used (scale parameter of the Cauchy distribution set to 1/2)

		max-d	RT
walking	All data	1.5×10^{11}	1.1×10^{11}
	CoM excluded	7.8×10^{10}	6.8×10^{9}
mouse-tracking	All data	9.2×10^{3}	1.5×10^{25}
	CoM excluded	2.7×10^{-2}	1.3×10^{22}

Table 12: Results of testing Hypothesis 1: Bayes factors in favor of $M_{choice \times \lambda}$ over M_{choice}. Wide priors were used (scale parameter of the Cauchy distribution set to 1)

		max-d	RT
walking	All data	8.0×10^{10}	3.8×10^{10}
	CoM excluded	2.1×10^{10}	2.2×10^{9}
mouse-tracking	All data	3.5×10^{3}	8.7×10^{24}
	CoM excluded	7.5×10^{-3}	5.2×10^{21}

Table 13: Results of testing Hypothesis 1 using Δ instead of λ to measure relative values of the options: Bayes factors in favor of $M_{choice \times \Delta}$ over M_{choice}. Narrow priors were used (scale parameter of the Cauchy distribution set to 1/2)

		max-d	RT
walking	All data	1.4×10^{15}	1.2×10^{24}
	CoM excluded	2.9×10^{14}	7.6×10^{22}
mouse-tracking	All data	1.5×10^{9}	2.1×10^{37}
	CoM excluded	1.3×10^{1}	2.4×10^{30}

Table 14: Results of testing Hypothesis 1 using Δ instead of λ to measure relative values of the options: Bayes factors in favor of $M_{choice \times \Delta}$ over M_{choice}. Wide priors were used (scale parameter of the Cauchy distribution set to 1)

		max-d	RT
walking	All data	5.0×10^{14}	4.4×10^{23}
	CoM excluded	8.7×10^{13}	2.4×10^{22}
mouse-tracking	All data	5.7×10^{8}	7.3×10^{36}
	CoM excluded	3.6	1.1×10^{30}

Hypothesis 2

Table 15: Results of testing Hypothesis 2 with narrow priors (scale parameter of the Cauchy distribution set to 1/2): Bayes factors of the task-only and session-only models over the null model produced by the preregistered analysis ($k \sim$ Gaussian) and two exploratory analyses

dependent variable	M_{task}	$M_{session}$
$k \sim$ Gaussian	1/8.6	1/1.4
$k \sim$ Weibull	1/2.1	0.7
$k_{log} \sim$ Gaussian	1/8.1	733.1

Table 16: Results of testing Hypothesis 2 with wide priors (scale parameter of the Cauchy distribution set to 1): Bayes factors of the task-only and session-only models over the null model produced by the preregistered analysis ($k \sim$ Gaussian) and two exploratory analyses

dependent variable	M_{task}	$M_{session}$
$k \sim$ Gaussian	1/14.3	1/2.4
$k \sim$ Weibull	1/3.6	0.9
$k_{log} \sim$ Gaussian	1/17.1	363.1