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Minho Hwang Dongil Chung

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Title:

Reproduction report of Garcia et al. (2023) "Experiential values are underweighted in decisions involving symbolic options"

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Abstract

Classical decision theory assumes a central valuation system in which the brain encodes subjective values-or utilities-for all available options in a given choice set, regardless of how different the options are (common currency). Garcia et al. (2023) pointed out that although there has been experimental evidence for differential properties between experience-based (experiential) and description-based (symbolic) choices, the alternative possibility suggesting the existence of separate valuation systems for each modality has not been directly assessed. The authors reported empirical results supporting the alternative hypothesis that participants recruit different valuation systems for each modality. Here, we reproduced the results of this original paper and performed robustness checks. Overall, we reproduced most of the statistical results and model-based results of the original study. We employed two additional methods to test the robustness of the computational modeling used in the original study: parameterrecovery using the scripts shared by the authors and parameter estimations using different model fitting methods (maximum log-likelihood estimation (MLE) and hierarchical Bayesian estimation). Our parameter-recovery method successfully recovered most of the original model parameters, estimated from choice between experiential and symbolic values (ES phase) and between two experiential values (EE phase). Through consecutive analyses, including alternative parameter estimation methods, we confirmed that the issue does not compromise the original study's conclusions, and that all results directly related to the main conclusion (i.e., indifference points) are reproducible.

1. Introduction

Garcia et al. (2023) investigated the decision-making processes between options with which individuals have prior experience and options for which the associated value is explicitly described. Standard models of economic decision-making assume that regardless of the source from which individuals derive the value of each option, the central valuation system in the brain encodes subjective values for all available options. Authors pointed out that although there has been experimental evidence for differential properties between experience- and description- based choices, the alternative possibility suggesting the existence of separate valuation systems for each modality has not been directly assessed.

To address this issue, Garcia and colleagues used a decision-making task where participants made a series of choices between two options. There were two types of options: experiential and symbolic options. Experiential options were represented as abstract image cues, with their associated probabilistic rewards learned during the learning phase ('LE phase' therein), whereas symbolic options were depicted as probabilistic lottery cues, with probabilities and payoffs explicitly described. Across nine different experiments, the authors first conducted a probabilistic instrumental learning task (LE) and then collected participants' behavioral choices between one experiential and one symbolic options ('ES phase') and between two experiential options ('EE phase'). The authors used a computational modeling approach to test their hypothesis that experiential values might be represented differently from symbolic values. As proxies for individuals' subjective valuation of experiential options, the authors estimated indifference points, defined as the point where the probability of choosing one option over the other is 50%. By comparing the indifference points alongside the expected values of symbolic options, the authors examined whether the two types of subjective values were compared with each other without any biases and whether the values of experiential options were specifically neglected. Overall, the data suggested that experiential values were neglected when compared with symbolic options, indicating that different types of values might be represented in different systems.

In this report prepared for the Institute for Replication (Brodeur et al., 2024), our first aim was to verify computational reproducibility by comparing the statistical results from the original study with those calculated using the code provided by the authors. In addition, to verify reproducibility of the computational models, we compared the estimated parameters obtained using the source codes provided by the authors with the model parameters reported in the original study. The second aim was to assess the robustness of the computational models employed by the authors. Specifically, we conducted a parameter recovery analysis and tested the appropriateness of the estimation method used by the authors by applying two different methods for parameter estimation.

2. Computational reproducibility

This section aims to test whether the statistical results provided by the authors can be reproduced both the source codes using they provided (https://github.com/bsgarcia/RetrieveAndCompareAnalysis) and our independently developed codes (https://github.com/dongilchung/i4r-Garcia2023-reproduction). We first examined all the model-agnostic results from the original study, including learning performance and choice patterns. Except for the main results mentioned on the main text, a lot of statistical results were not explicitly provided in text. Instead, the authors provided a Jupyter Notebook file (stats.ipvnb file located in ./python/ directory), which all test results can be reproduced. We reran this file to acquire the original results and in addition wrote custom MATLAB codes that conduct corresponding statistical test results. The results of our statistical analyses indicate that all of the original study's statistical results, except for those in Table A.3, were reproducible. Specifically, the codes were intended to conduct ANOVA over the correct choice rate in the LE phase across different levels of choice difficulties (referred to as conditions 1-4 where condition 1 being the most difficult). However, we found an error on the code that the task performance data pooled across Experiments 1-4 were duplicated and entered as data for Experiments 2, 3, and 4. Due to this error, both the original and reproduced results did not match the reports on the main text (Table A.3-2). We confirmed that a simple fix of this data duplication error resolved the issue and generated statistical results that match the patterns consistent with the main text (i.e., individuals showed superior learning performance for easier pairs of experiential options). Note that the failed reproduction of the results in Table A.3 do not affect the main conclusions and interpretations of the original paper. We have detailed and summarized the original study's statistical results along with the corresponding reproduced results in Appendix A. For all other statistical tests, despite some numerical differences in a few statistical values, the statistical significance and direction were consistent with the claims of the original study and were successfully reproduced.

Throughout the original study, the authors used computational modeling and estimated model parameters that best explain participants' learning and choice behaviors. We reran the model estimation codes provided by the authors (*fit_LE.m*, *fit_logistic_ES.m*, and *fit_logistic_EE.m*) and calculated correlations between the estimated parameters and those uploaded by the authors (located in the ./data/fit/ directory). Across all experiments (LE and ES: Exp 1-9; EE: Exp 5-9), model parameters were successfully reproduced (Spearman correlation, β_{EE} : $\rho = 0.39$, p = 2.99e-25; all other parameters: r = 1.00, p < 10e-16; **Fig. 1**). We also calculated correlations for each experiential option to assess whether the reproducibility was influenced by the specific identity of the option. For both the ES and EE phases, the indifference points for each experiential option were successfully reproduced (Spearman correlation, all $\rho = 1.00$, p < 10e-16). Although the individual differences within the EE phase were preserved (significant correlation), range and variance of the reproduced parameters did not match the parameter data shared by the authors (Original: $\beta_{EE} = (0.02, 1537280.69)$, std = 134769.97; Reproduction: $\beta_{EE} = (0.021, 245643.60)$, std = 170853.94). Note that while this result may not affect the main

conclusion of the original study, it indicates that the EE phase estimation results are unstable and might be susceptible to subtle changes in the parameter estimation procedures.



Figure 1. Computational reproducibility. Scatter plots illustrate the associations between the model parameters in the original study (x-axis) and the reproduced parameters (y-axis). (a) Inverse temperature (inverse of choice stochasticity) and (b) learning rate estimated from the LE phase (Exp 1-9), and (c) inverse temperature and (d) eight indifference points (for each experiential option) from the ES phase (Exp 1-9) were successfully reproduced. (e) Inverse temperature and (f) eight indifference points estimated from the EE phase (Exp 5-9) were also reproduced. Each point in panels a, b, c and e represents an individual participant per experiment. Parameters estimated from each individual per experiment contributed eight points in panels d and f.

3. Robustness to specification

This section aims to verify whether the estimation methods employed in the original study were appropriate. To assess this, we used two approaches to test whether the reported results could be reproduced using different specifications in the estimation methods. First, we conducted parameter recovery analyses. Parameter recovery is essential to ensure that the estimated model parameters accurately represent the underlying behavioral characteristics (Wilson & Collins, 2019). Specifically, we simulated pseudo-behavioral choices using the model parameters from the original study (true parameters), and then re-estimated the parameters that best explain the data (recovered parameters) using the estimation codes provided by the authors. If the true parameters are recovered (i.e., positively correlated with the re-estimated parameters), it confirms that the computational model is sensitive enough to capture individuals' behavioral differences in the task. Second, we examined the impact of the estimation methods on the

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extraction of model parameters. Specifically, we wrote custom codes for maximum likelihood estimation (MLE) and hierarchical Bayesian estimation, and examined the estimated model parameters against the model parameters reported in the original study.

Parameter recovery analyses. Parameter recovery was conducted using two different methods to simulate pseudo-behavioral choices. The first method, as implemented in the original authors' parameter recovery code, involved generating pseudo-behavioral choices using individuals' parameters and an argmax decision rule, assuming that the decision-maker always chooses the option with the higher value. We noted that the authors' provided code only reports recovery results for the ES and EE phases (LE phase omitted), and that the implemented decision rule (i.e., argmax) does not match the rule used in the parameter estimation process (softmax). To address these issues, we employed a second method, generating pseudo-behavioral choices using a softmax decision rule to simulate probabilistic choices, and applied this method to all three phases (LE, ES, and EE).

Based on the first method, most of the model parameters were succefully recovered (**Fig. 2**). Within the ES and EE phases, the authors estimated two types of model parameter: inverse temperature (i.e., choice stochasticity; β) and indifference points (λ). For the ES phase, all parameters were recovered, indicating that any existing individual differences, along with each model parameter, could be distinguished from one another (Spearman correlation, β_{ES} : $\rho = 0.40$, p < 10e-16; $\lambda_{ES, 1-8}$: $\rho = 0.99$, p < 10e-16; **Fig. 2a,b**). In the EE phase, parameters were only partially recovered. Specifically, indifference points across eight experiential options were successfully recovered (Spearman correlation, $\lambda_{EE, 1-8}$: $\rho = 0.96$, p < 10e-16; **Fig. 2d**), while the inverse temperature was not recovered (Spearman correlation, β_{EE} : $\rho = -0.11$, p = 0.0046; **Fig. 2c**). Given that parameter recoverability is sensitive to the specifics of the task, we also examined the recoverability of parameters for each experiential option in the ES and EE phases. All eight indifference point parameters were successfully recovered in both the ES and EE phases.



Figure 2. Parameter recovery analysis: using choices simuluated based on an argmax decision rule. Scatter plots illustrate the associations between the model parameters reported in the original study (x-axis) and the parameters recovered from the simulated pseudo-behaviors (y-axis). (a) Inverse temperature and (b) eight indifference points (for each experiential option) from the ES phase (Exp 1-9) were successfully recovered. (c,d) On the contrary, in the EE phase (Exp 5-9), only the eight indifference points were successfully recovered. Each point in panels a and c represents an individual participant per experiment. Parameters estimated from each individual per experiment contributed eight points in panels b and d.

						Robustne	ess to sepc	ificaiton: me	ethod 1 - Pa	arameter Re	ecovery (1)						
				ES									EE				
	mid-point												mid-point				
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
ρ	0.98	0.98	0.98	0.98	0.99	0.99	0.98	0.98	ρ	0.93	0.95	0.96	0.95	0.93	0.95	0.92	0.86
P	0	0	0	0	0	0	0	0	Р	3 E-270	8.9e-322	0 E+00	0 E+00	6.E-288	0 E+00	7 E-270	2.E-189

Table 1. Parameter recovery for each experiential option: using choices simulated based on an argmax decision rule. The indifference point for each experiential option was reestimated from the pseudo-behaviors simulated using the corresponding parameters. All eight indifference points in the ES and EE phases were successfully recovered.

Based on the second method, all of the model parameters were successfully recovered (**Fig. 3**). Within each task phase, the authors estimated two types of model parameter: for the LE phase, inverse temperature (β) and learning rate (α), and for the ES/EE phases, inverse temperature (β) and indifference points (λ). For both the LE and ES phases, all parameters were recovered, indicating that any existing individual differences, along with each model parameter, could be distinguished from one another (Spearman correlation, LE, β_{LE} : $\rho = 0.91$, p < 10e-16; α_{LE} : $\rho = 0.55$, p < 10e-16; ES, β_{ES} : $\rho = 0.82$, p < 10e-16; $\lambda_{ES, 1-8}$: $\rho = 0.93$, p < 10e-16; **Fig. 3a-d**). In the EE phase, both parameters were also successfully recovered (Spearman correlation, β_{EE} : $\rho = 0.92$, p < 10e-16; $\lambda_{EE, 1-8}$: $\rho = 0.84$, p < 10e-16; **Fig. 3e,f**). As examined for the first method, the recoverability of parameters for each experiential option in the ES/EE phases were examined.

All eight indifference point parameters were successfully recovered in both the ES and EE phases (**Table 2**). As noted in the previous section, range and variance of the recovered parameters differed from the parameter data estimated using the authors' code (Original: $\beta_{EE} = (0.020, 1537280.69)$, std = 134769.97; Recovered: $\beta_{EE} = (0.85, 5263278.51)$, std = 376258.85). These results again suggest that the estimated inverse temperature parameters for the EE phase may not be reliable and are susceptible to changes in the parameter estimation procedures.



Figure 3. Parameter recovery analysis: using choices simulated based on a softmax decision rule. Scatter plots illustrate the associations between the model parameters reported in the original study (x-axis) and the parameters recovered from the simulated pseudobehaviors (y-axis). (a) Inverse temperature and (b) learning rate estimated from the LE phase (Exp 1-9), and (c) inverse temperature and (d) eight indifference points (for each experiential option) from the ES phase (Exp 1-9) were successfully recovered. (e) Inverse temperature and (f) eight indifference points estimated from the EE phase (Exp 5-9) were also successfully recovered. Each point in panels a, b, c and e represents an individual participant per experiment. Parameters estimated from each individual per experiment contributed eight points in panels d and f.

						Robu	stness to se	epcificaiton	method 1	 Parameter 	Recovery (2	2)					
				ES									EE				
mid-point													mid-point				
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
ρ	0.90	0.90	0.90	0.91	0.93	0.95	0.95	0.95	ρ	0.79	0.81	0.76	0.81	0.78	0.80	0.78	0.73
Р	0	0	0	0	0	0	0	0	Р	4.26E-136	2.55E-149	7.76E-124	7.69E-150	2.92E-133	4.20E-142	8.23E-131	1.83E-107

Table 2. Parameter recovery for each experiential option: using choices simulated based on a softmax decision rule. The indifference point for each experiential option was reestimated from the pseudo-behaviors simulated using the corresponding parameters. All eight indifference points in the ES and EE phases were successfully recovered.

MLE with multiple initial points. The MLE approach used in the original study estimates each model's parameters from a single initial point (LE, β_{LE} : 1; α_{LE} : 0.5; ES, β_{ES} : 1, $\lambda_{ES,1}$ - $\lambda_{ES,8}$: 0.5; EE, β_{EE} : 1, $\lambda_{EE,1}$ - $\lambda_{EE,8}$: 0.5). However, relying on a single initial point in Maximum Likelihood Estimation (MLE) poses a significant risk of converging to a local minimum rather than the global optimum. This occurs because the optimization process can become trapped in a locally optimal point, depending on the initial point chosen. To mitigate this risk, it is important to attempt optimization multiple times with various initial points. Here, we set a grid of parameters and iteratively tested pairs of parameters to reduce the risk of converging to a local minimum. Specifically, for all inverse temperature parameters (β_{LE} , β_{ES} , and β_{EE}), we used the transformation $\beta(x) = c^{*}[1+exp(-x)]^{-1}$ where the constant c was tailored for each task based on the original report (LE: 50, ES: 600, EE: $2.5*10^6$), and for α_{LE} , we used a transformation of $\alpha_{\text{LE}}(x) = [1 + \exp(-x)]^{-1}$. We tested initial values (x) across a range from -5 to 5 in a step size of 0.5. For the indifference point parameters (λ) in the ES and EE phases, we fixed the initial value at 0.5. A custom MATLAB scripts using *fminsearch* function (maximum iteration = 25,000, maximum function evaluations = 25,000) was used to conduct MLE at the individual subject level. We compared the results of the MLE approach in this study with those of the original report to verify the consistency of the model parameters.

All of the model parameters were successfully reproduced using MLE with multipleinitial values (**Fig. 4**). Specifically, for both the LE and ES phases, the model parameters were significantly correlated with those reported in the original study (Spearman correlation, LE, β_{LE} : $\rho = 0.83$, p < 0.001; α_{LE} : $\rho = 0.77$, p < 0.001; ES, $\beta_{\text{ES}} \rho = 0.91$, p < 0.001; $\lambda_{\text{ES}, 1-8}$: $\rho = 0.99$, p < 10e-16). In addition, both parameters in the EE phase were also successfully recovered (Spearman correlation, β_{EE} : $\rho = 0.99$, p < 10e-16; $\lambda_{\text{EE}, 1-8}$: $\rho = 0.95$, p < 10e-16; **Fig. 4e,f**). By examining each experiential option separately, we confirmed that these reproduction results were not induced by a particular option value. All indifference point parameters were successfully reproduced for both the ES and EE phases (**Table 3**).



Figure 4. Parameter estimation using MLE with multiple initial points. Scatter plots illustrate the associations between the model parameters reported in the original study (x-axis) and the parameters estimated using MLE with multiple initial points (y-axis). (a) Inverse temperature and (b) learning rate estimated from the LE phase (Exp 1-9), and (c) inverse temperature and (d) eight indifference points (for each experiential option) from the ES phase (Exp 1-9) were successfully reproduced. (e) Inverse temperature and (f) eight indifference points estimated from the EE phase (Exp 5-9) were also successfully recovered. Each point in panels a, b, c and e represents an individual participant per experiment. Parameters estimated from each individual per experiment contributed eight points in panels d and f.

				ES									EE				
				mid-point									mid-point				
	1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
ρ	0.98	0.98	0.98	0.99	0.99	0.99	0.99	0.99	ρ	0.94	0.93	0.93	0.96	0.94	0.94	0.92	0.94
Р	0	0	0	0	0	0	0	0	Р	9.E-302	2.E-286	5.E-288	0	1.2E-310	0	8.E-261	1.E-299

Table 3. Parameter estimation for each experiential option using MLE with multiple initial points. The indifference point for each experiential option was estimated using MLE with multiple initial points. We observed that all of the indifference points in the ES phase and EE phase were recovered.

Hierarchical Bayesian estimation. We showed that the reported parameter estimation results for the ES and EE phases were reproducible. However, the range of the inverse temperature parameter did not align with the original report. This might be due to the inherent limitation of the MLE algorithm in estimating individual-level parameters from small number of observation data. To address this issue, we used hierarchical Bayesian estimation where behavioral choices not only from each individual inform the fitness of the model parameter, but also do those from other participants, under the assumption of hierarchical relationship between the group and all individuals (Ahn et al., 2017; Daw, 2011). Specifically, for all parameters, the group-level distributions were set as Gaussian distributions with free group-level means, standard deviations (STD), and a standard normal distribution (*Normal*(0, 1))

capturing random effects. The priors for the group-level distributions were set: means ~ Normal (0, 10), STD ~ Cauchy (0, 2.5) with lower bound of zero. As we set for the MLE method, we applied parameter transformations to constrain the parameter range. For all inverse temperature parameters (β_{LE} , β_{ES} , and β_{EE}), we used the transformation $\beta(x) = c^*[1+\exp(-x)]^{-1}$ where the constant c was tailored for each task based on the original report (LE: 50, ES: 600, EE: 2.5*10⁶), and for α_{LE} , we used a transformation of $\alpha_{LE}(x) = [1 + \exp(-x)]^{-1}$. For all indifference point parameters (λ_{ES} and λ_{EE}), we used the transformation $\lambda(x) = [1 + \exp(-x)]^{-1}$. Markov Chain Monte Carlo (MCMC) sampling then iteratively generated samples from the posterior distribution. To improve efficiency, the No-U-Turn Sampler (NUTS), a variant of the Hamiltonian Monte Carlo technique, implemented in Stan (Carpenter et al., 2017) and its interface to R (Stan Development, 2018) was used. A custom R script using the *R-stan* package (number of chains = 4, number of samples = 5000, burn-in samples = 2000) was used to conduct the hierarchical Bayesian estimation. We expected that this alternative estimation method may bypass the lack of observation in each individual if it were the source of the unstable parameter estimation. The parameter estimation results using the hierarchical Bayesian estimation were then compared with those of the MLE approach in the original study to verify the consistency of the model parameters.

Comparable to our previous attempts, most of the model parameters were successfully reproduced (**Fig. 5**). For both the LE and ES phases, all parameters showed significant correlations with those reported in the original study (Spearman correlation, LE, β_{LE} : $\rho = 0.96$, p < 0.001; α_{LE} : $\rho = 0.75$, p < 0.001; ES, β_{ES} : $\rho = 0.92$, p < 0.001; $\lambda_{ES, 1-8}$: $\rho = 0.32$, p < 0.001). In the EE phase, although the effect sizes were small, indifference points estimated using the hierarchical Bayesian estimation were positive associated with those in the original report (Spearman correlation, $\lambda_{EE, 1-8}$: $\rho = 0.064$, p < 0.001). The inverse temperature parameter result was successfully recovered (Spearman correlation, β_{EE} : $\rho = 0.71$, p < 0.001). Assessing each of the experiential options, we found that all indifference points parameters in the ES phase were reproduced, while only four out of the eight indifference points in the EE phase were reproduced (**Table 4**).



Figure 5. Parameter estimation using hierarchical Bayesian estimation. Scatter plots illustrate the associations between the model parameters reported in the original study (x-axis) and the parameters estimated using hierarchical Bayesian estimation (y-axis). (a) Inverse temperature and (b) learning rate estimated from the LE phase (Exp 1-9), and (c) inverse temperature and (d) eight indifference points (for each experiential option) from the ES phase (Exp 1-9) were successfully reproduced. From the EE phase (Exp 5-9), (e) inverse temperature and (f) the eight indifference points were successfully reproduced. Each point in panels a, b, c and e represents an individual participant per experiment. Parameters estimated from each individual per experiment contributed eight points in panels d and f.

			ES									EE				
			mid-point									mid-point				
1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
0.21	0.24	0.21	0.25	0.59	0.46	0.34	0.32	ρ	0.09	0.16	0.02	0.03	0.16	0.03	0.10	-0.05
2.45E-11	3.04E-14	3.71E-11	1.10E-14	3.49E-91	3.18E-50	9.14E-27	5.41E-24	Р	0.03	3.17E-05	0.70	0.50	3.65E-05	0.45	0.01	0.18
	1 0.21 2.45E-11	1 2 0.21 0.24 2.45E-11 3.04E-14	1 2 3 0.21 0.24 0.21 2.45E-11 3.04E-14 3.71E-11	ES mid-point 1 2 3 4 0.21 0.24 0.21 0.25 2.45E-11 3.04E-14 3.71E-11 1.10E-14	ES mid-point 1 2 3 4 5 0.21 0.24 0.21 0.25 0.59 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91	ES mid-point 1 2 3 4 5 6 0.21 0.24 0.21 0.25 0.59 0.46 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50	ES mid-point 1 2 3 4 5 6 7 0.21 0.24 0.21 0.25 0.59 0.46 0.34 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27	ES mid-point 1 2 3 4 5 6 7 8 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24	ES mid-point 1 2 3 4 5 6 7 8 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 p 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P	ES mid-point 1 2 3 4 5 6 7 8 1 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 p 0.09 2.45E-11 3.04E-14 3.7TE-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P 0.03	ES mid-point 1 2 3 4 5 6 7 8 1 2 0.21 0.22 0.25 0.59 0.46 0.34 0.32 p 0.09 0.16 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P 0.03 3.17E-05	ES mid-point 1 2 3 4 5 6 7 8 1 2 3 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 ρ 0.09 0.16 0.02 2.45E-11 3.04E-14 3.7TE-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P 0.03 3.17E-05 0.70	ES EE mid-point mid-point 1 2 3 4 5 6 7 8 1 2 3 4 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 p 0.09 0.16 0.02 0.03 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P 0.03 3.17E-05 0.70 0.50	Line ES EE EE EE mid-point 1 2 3 4 5 6 7 8 1 2 3 4 5 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 ρ 0.09 0.16 0.02 0.03 0.16 2.45E-11 3.04E-14 3.7TE-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P 0.03 3.17E-05 0.70 0.50 3.65E-05	ES EE mid-point mid-point 1 2 3 4 5 6 7 8 1 2 3 4 5 6 0.21 0.24 0.21 0.25 0.59 0.46 0.34 0.32 ρ 0.09 0.16 0.02 0.03 0.16 0.02	ES EE mid-point 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 0.21 0.24 0.21 0.25 0.59 0.46 0.32 p 0.09 0.16 0.02 0.03 0.16 0.03 0.10 2.45E-11 3.04E-14 3.71E-11 1.10E-14 3.49E-91 3.18E-50 9.14E-27 5.41E-24 P 0.03 3.17E-05 0.70 0.50 3.65E-05 0.45 0.01

Table 4. Parameter estimation for each experiential option using hierarchical Bayesian estimation. The indifference point for each experiential option was estimated using hierarchical Bayesian estimation. All eight indifference points in the ES phase were reproduced, while only four out of the eight indifference points in the EE phase were reproduced. Note that most of the reproduced indifference points showed small to medium effect sizes.

It was unexpected that the hierarchical Bayesian estimation (HBE) approach yielded poorer parameter recovery. HBE assumes that individual participants are sampled from a shared group distribution. We believe that this assumption may not be ideal for independently estimating midpoints and their inverse temperatures, particularly given the skewed levels of noisiness observed across individuals. This issue is likely related to the original authors' technical and practical decision to use the softmax rule in parameter estimation. Specifically, a large proportion of individuals adhered to expected value maximization (resulted in choices that align with a discontinuous function), while a small subset exhibited partial violations, demonstrating noisy behavior. Ultimately, the characteristics of HBE, which tend to shrink individual parameters toward the group mean, may have influenced midpoint estimations. As a result, these estimations might not have aligned with the true EVs. Impact of the inverse temperature parameter. Given that the recoverability of the inverse temperature parameter was relatively weak across various estimation approaches, we conducted additional analysis to evaluate its impact on the recoverability of indifference points. The inverse temperature allows decision-making models to account for stochasticity in behavioral choices. Typically, when the inverse temperature is small (i.e., indicating noisier behavior), it becomes more challenging to estimate other related behavioral characteristics. In Figure 6, we present the sorted log-transformed inverse temperature estimates obtained using the author provided code (left; from Exp 5 as an example). For each individual, we calculated the correlation coefficient between the true expected values of the E options and their corresponding estimated midpoints (right). As expected-consistent with typical findingsindividuals with small inverse temperatures were more likely to show inconsistent midpoint estimates. However, the overall correlation remained positive, explaining why midpoint estimation, on average, was not affected despite the weak recoverability of the inverse temperature. Since the original work does not specifically aim to make claims about individual differences, the weak recoverability of the inverse temperature should not be used to challenge its conclusions.



Figue 6. The impact of the inverse temperature parameter on the association between true and estimated indifference points (midpoints). The association tended to be weaker in individuals with lower inverse temperature estimates.

4. Conclusion

In this report, we examined whether the findings reported in Garcia et al. (2023) can be reproduced. We were able to successfully reproduce most of the major statistical results and confirmed that for one set of model-agnostic statistical results, we failed to reproduce because of simple data entry error in the authors' original code.

The authors suggested that participants may have difficulty comparing the values of the options with different modalities (experiential vs. symbolic). This claim was supported by the slope differences between task phases, each of which representing the associations between the actual versus the estimated values within each task (LE vs. ES, ES vs. EE). After assessing the model-based approach of the study, we identified some issues with the recovery of the inverse temperature parameter (a mismatch in its range). However, through consecutive analyses

including alternative parameter estimation methods, we confirmed that the issue does not compromise the original study's conclusions and all results directly related to the main conclusion (i.e., indifference points) are reproducible.

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Appendix A. Reproduced statistical results along with the original results

Table A.1 Correct choice rate analysis in the LE phase: Comparing individual performance against chance level (0.5) using t-tests across Experiments 1-4

	exp_num	cond	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power
T-test	1	1	10.98	75.00	two-sided	0.00	0.70	0.81	1.26	2.10E+14	1.00
T-test	1	2	6.99	75.00	two-sided	0.00	0.62	0.74	0.80	10.93E+6	1.00
T-test	1	3	7.00	75.00	two-sided	0.00	0.61	0.73	0.80	11.43E+6	1.00
T-test	1	4	1.51	75.00	two-sided	0.14	0.48	0.61	0.17	37.20E-2	0.32
T-test	2	1	19.44	70.00	two-sided	0.00	0.80	0.88	2.31	4.82E+26	1.00
T-test	2	2	11.66	70.00	two-sided	0.00	0.71	0.81	1.38	12.06E+14	1.00
T-test	2	3	7.72	70.00	two-sided	0.00	0.63	0.73	0.92	1.62E+8	1.00
T-test	2	4	3.63	70.00	two-sided	0.00	0.53	0.64	0.43	44.47E+0	0.95
T-test	3	1	27.05	82.00	two-sided	0.00	0.87	0.94	2.97	15.49E+38	1.00
T-test	3	2	19.91	82.00	two-sided	0.00	0.82	0.90	2.19	73.65E+28	1.00
T-test	3	3	13.02	82.00	two-sided	0.00	0.74	0.84	1.43	3.98E+18	1.00
T-test	3	4	9.37	82.00	two-sided	0.00	0.68	0.80	1.03	53.50E+10	1.00
T-test	4	1	20.99	87.00	two-sided	0.00	0.85	0.94	2.24	3.10E+32	1.00
T-test	4	4	7.07	87.00	two-sided	0.00	0.63	0.75	0.75	27.35E+6	1.00

Table A.1-1 (Original). Comparing individual performance against chance level (0.5) using t-tests across Experiments 1-4. exp_num, study number; cond, option pairs in the ES phase (P(win) = [10:90, 20:80, 30:70, 40:60]%) where condition 1 being the most difficult; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

	exp_num	cond	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power
T-test	1	1	10.98	75.00	'two-sided'	0.00	0.70	0.81	1.26	2.10E+14	1.00
T-test	1	2	6.99	75.00	'two-sided'	0.00	0.62	0.74	0.80	1.09E+07	1.00
T-test	1	3	7.00	75.00	'two-sided'	0.00	0.61	0.73	0.80	1.14E+07	1.00
T-test	1	4	1.51	75.00	'two-sided'	0.14	0.48	0.60	0.17	3.72E-01	0.32
T-test	2	1	19.44	70.00	'two-sided'	0.00	0.80	0.88	2.31	4.82E+26	1.00
T-test	2	2	11.66	70.00	'two-sided'	0.00	0.71	0.81	1.38	1.21E+15	1.00
T-test	2	3	7.72	70.00	'two-sided'	0.00	0.63	0.73	0.92	1.62E+08	1.00
T-test	2	4	3.63	70.00	'two-sided'	0.00	0.53	0.64	0.43	4.45E+01	0.95
T-test	3	1	27.05	82.00	'two-sided'	0.00	0.87	0.94	2.97	1.55E+39	1.00
T-test	3	2	19.91	82.00	'two-sided'	0.00	0.82	0.90	2.19	7.37E+29	1.00
T-test	3	3	13.02	82.00	'two-sided'	0.00	0.74	0.84	1.43	3.98E+18	1.00
T-test	3	4	9.37	82.00	'two-sided'	0.00	0.68	0.80	1.03	5.35E+11	1.00
T-test	4	1	20.99	87.00	'two-sided'	0.00	0.85	0.94	2.24	3.10E+32	1.00
T-test	4	4	7.07	87.00	'two-sided'	0.00	0.63	0.75	0.75	2.73E+07	1.00

Table A.1-1 (Reproduced). Comparing individual performance against chance level (0.5) using t-tests across Experiments 1-4. exp_num, study number; cond, option pairs in the ES phase (P(win) = [10:90, 20:80, 30:70, 40:60]%) where condition 1 being the most difficult; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report

Table A.2 Correct choice rate comparison in the LE phase: Pairwise t-tests of performance across Experiments 1-3 and four experiential options (Condition 1: smallest EV difference; Condition 4: largest EV difference)

							All							
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	1	2	FALSE	TRUE	-2.69	143.24	two-sided	0.01	0.02	bonf	4.70E+00	-0.44
2	exp_num	-	1	3	FALSE	TRUE	-7.65	156.48	two-sided	0.00	0.00	bonf	3.52E+09	-1.21
3	exp_num	-	2	3	FALSE	TRUE	-5.49	151.56	two-sided	0.00	0.00	bonf	7.32E+04	-0.87
4	cond	-	1	2	TRUE	TRUE	5.74	229.00	two-sided	0.00	0.00	bonf	3.01E+05	0.35
5	cond	-	1	3	TRUE	TRUE	9.04	229.00	two-sided	0.00	0.00	bonf	7.78E+13	0.62
6	cond	-	1	4	TRUE	TRUE	11.61	229.00	two-sided	0.00	0.00	bonf	4.36E+21	0.97
7	cond	-	2	3	TRUE	TRUE	3.40	229.00	two-sided	0.00	0.00	bonf	1.95E+01	0.25
8	cond	-	2	4	TRUE	TRUE	7.43	229.00	two-sided	0.00	0.00	bonf	3.03E+09	0.62
9	cond	-	3	4	TRUE	TRUE	4.43	229.00	two-sided	0.00	0.00	bonf	8.01E+02	0.38
10	exp_num * cond	1	1	2	TRUE	TRUE	2.83	75.00	two-sided	0.01	0.11	bonf	4.97E+00	0.36
11	* cond	1	1	3	TRUE	TRUE	3.77	75.00	two-sided	0.00	0.01	bonf	6.95E+01	0.41
12	* cond	1	1	4	TRUE	TRUE	5.81	75.00	two-sided	0.00	0.00	bonf	9.58E+04	0.95
13	* cond	1	2	3	TRUE	TRUE	0.23	75.00	two-sided	0.82	1.00	bonf	1.29E-01	0.03
14	exp_num * cond	1	2	4	TRUE	TRUE	3.57	75.00	two-sided	0.00	0.01	bonf	3.73E+01	0.58
15	exp_num * cond	1	3	4	TRUE	TRUE	3.31	75.00	two-sided	0.00	0.03	bonf	1.78E+01	0.56
16	exp_num * cond	2	1	2	TRUE	TRUE	4.40	70.00	two-sided	0.00	0.00	bonf	5.13E+02	0.48
17	exp_num * cond	2	1	3	TRUE	TRUE	6.26	70.00	two-sided	0.00	0.00	bonf	4.66E+05	0.93
18	exp_num * cond	2	1	4	TRUE	TRUE	8.81	70.00	two-sided	0.00	0.00	bonf	1.37E+10	1.42
19	exp_num * cond	2	2	3	TRUE	TRUE	3.08	70.00	two-sided	0.00	0.05	bonf	9.64E+00	0.42
20	exp_num * cond	2	2	4	TRUE	TRUE	5.00	70.00	two-sided	0.00	0.00	bonf	3.99E+03	0.88
21	exp_num * cond	2	3	4	TRUE	TRUE	2.64	70.00	two-sided	0.01	0.18	bonf	3.21E+00	0.46
22	exp_num * cond	3	1	2	TRUE	TRUE	3.47	82.00	two-sided	0.00	0.01	bonf	2.82E+01	0.31
23	exp_num * cond	3	1	3	TRUE	TRUE	5.68	82.00	two-sided	0.00	0.00	bonf	6.67E+04	0.67
24	exp_num * cond	3	1	4	TRUE	TRUE	6.18	82.00	two-sided	0.00	0.00	bonf	5.14E+05	0.84
25	exp_num * cond	3	2	3	TRUE	TRUE	3.12	82.00	two-sided	0.00	0.04	bonf	1.06E+01	0.38
26	exp_num * cond	3	2	4	TRUE	TRUE	4.56	82.00	two-sided	0.00	0.00	bonf	9.75E+02	0.57
27	exp_num * cond	3	3	4	TRUE	TRUE	1.60	82.00	two-sided	0.11	1.00	bonf	4.11E-01	0.21
						Exp	. 1: 60/40 vs 90)/10						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power		_	_		
T-test	5.81	75.00	two-sided	0.00	0.13	0.30	0.95	9.58E+04	1.00					
						Exp	. 2: 60/40 vs 90)/10						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	8.81	70.00	two-sided	0.00	0.19	0.32	1.42	1.37E+10	1.00					

Table A.2-1 (Original). Pairwise t-tests of performance across Experiments 1-3 and four experiential options. #, number of t-tests; exp_num, study number; cond, option pairs in the ES phase (P(win) = [10:90, 20:80, 30:70, 40:60]%) where condition 1 being the most difficult; Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-

sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'padjust' cell; bonf, Bonferroni correction method; CI, confidence interval for each t-test; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

						A	11							
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	1	2	FALSE	TRUE	-2.69	143.24	two-sided	0.01	0.02	bonf	4.70E+00	-0.44
2	exp_num	-	1	3	FALSE	TRUE	-7.65	156.48	two-sided	0.00	0.00	bonf	3.48E+09	-1.21
3	exp_num	-	2	3	FALSE	TRUE	-5.49	151.56	two-sided	0.00	0.00	bonf	7.29E+04	-0.88
4	cond	-	1	2	TRUE	TRUE	5.74	229.00	two-sided	0.00	0.00	bonf	3.01E+05	0.35
5	cond	-	1	3	TRUE	TRUE	9.04	229.00	two-sided	0.00	0.00	bonf	7.78E+13	0.62
6	cond	-	1	4	TRUE	TRUE	11.61	229.00	two-sided	0.00	0.00	bonf	4.36E+21	0.97
7	cond	-	2	3	TRUE	TRUE	3.40	229.00	two-sided	0.00	0.00	bonf	1.95E+01	0.25
8	cond	-	2	4	TRUE	TRUE	7.43	229.00	two-sided	0.00	0.00	bonf	3.03E+09	0.62
9	cond	-	3	4	TRUE	TRUE	4.43	229.00	two-sided	0.00	0.00	bonf	8.01E+02	0.38
10	exp_num * cond	1	1	2	TRUE	TRUE	2.83	75.00	two-sided	0.01	0.11	bonf	4.97E+00	0.36
11	exp_num * cond	1	1	3	TRUE	TRUE	3.77	75.00	two-sided	0.00	0.01	bonf	6.95E+01	0.41
12	exp_num * cond	1	1	4	TRUE	TRUE	5.81	75.00	two-sided	0.00	0.00	bonf	9.58E+04	0.95
13	exp_num * cond	1	2	3	TRUE	TRUE	0.23	75.00	two-sided	0.82	1.00	bonf	1.29E-01	0.03
14	exp_num * cond	1	2	4	TRUE	TRUE	3.57	75.00	two-sided	0.00	0.01	bonf	3.73E+01	0.58
15	exp_num * cond	1	3	4	TRUE	TRUE	3.31	75.00	two-sided	0.00	0.03	bonf	1.78E+01	0.56
16	exp_num * cond	2	1	2	TRUE	TRUE	4.40	70.00	two-sided	0.00	0.00	bonf	5.13E+02	0.48
17	exp_num * cond	2	1	3	TRUE	TRUE	6.26	70.00	two-sided	0.00	0.00	bonf	4.66E+05	0.93
18	exp_num * cond	2	1	4	TRUE	TRUE	8.81	70.00	two-sided	0.00	0.00	bonf	1.37E+10	1.42
19	exp_num * cond	2	2	3	TRUE	TRUE	3.08	70.00	two-sided	0.00	0.05	bonf	9.64E+00	0.42
20	exp_num * cond	2	2	4	TRUE	TRUE	5.00	70.00	two-sided	0.00	0.00	bonf	3.99E+03	0.88
21	exp_num * cond	2	3	4	TRUE	TRUE	2.64	70.00	two-sided	0.01	0.18	bonf	3.21E+00	0.46
22	exp_num * cond	3	1	2	TRUE	TRUE	3.47	82.00	two-sided	0.00	0.01	bonf	2.82E+01	0.31
23	exp_num * cond	3	1	3	TRUE	TRUE	5.68	82.00	two-sided	0.00	0.00	bonf	6.67E+04	0.67
24	exp_num * cond	3	1	4	TRUE	TRUE	6.18	82.00	two-sided	0.00	0.00	bonf	5.14E+05	0.84
25	exp_num * cond	3	2	3	TRUE	TRUE	3.12	82.00	two-sided	0.00	0.04	bonf	1.06E+01	0.38
26	exp_num * cond	3	2	4	TRUE	TRUE	4.56	82.00	two-sided	0.00	0.00	bonf	9.75E+02	0.57
27	exp_num * cond	3	3	4	TRUE	TRUE	1.60	82.00	two-sided	0.11	1.00	bonf	4.11E-01	0.21
	1					Exp. 1: 60/4	40 vs 90/10			n				
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	5.81	75.00	'two-sided'	0.00	0.13	0.30	0.95	9.58E+04	1.00					
						Exp. 2: 60/4	40 vs 90/10							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	8.81	70.00	'two-sided'	0.00	0.19	0.32	1.42	1.37E+10	1.00					

Table A.2-1 (Reproduced). Pairwise t-tests of performance across Experiments 1-3 and four experiential options. #, number of t-tests; exp_num, study number; cond, option pairs in the ES phase (P(win) = [10:90, 20:80, 30:70, 40:60]%) where condition 1 being the most difficult; Paired, TRUE = a pairwise t-test, FALSE = a two

sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, onesided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'padjust' cell; bonf, Bonferroni correction method; CI, confidence interval for each t-test; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

exp_num	names	coef	se	Т	pval	r2	adj_r2	CI2.5%	CI97.5%	dof_model	dof_resid
1	Intercept	0.82	0.03	26.49	0.00	0.10	0.09	0.76	0.88	1.00	302.00
1	cond	-0.06	0.01	-5.68	0.00	0.10	0.09	-0.09	-0.04	1.00	302.00
2	Intercept	0.92	0.03	34.69	0.00	0.21	0.20	0.87	0.98	1.00	282.00
2	cond	-0.08	0.01	-8.56	0.00	0.21	0.20	-0.10	-0.06	1.00	282.00
3	Intercept	0.96	0.03	37.99	0.00	0.10	0.10	0.91	1.01	1.00	330.00
3	cond	-0.06	0.01	-6.01	0.00	0.10	0.10	-0.07	-0.04	1.00	330.00
4	Intercept	0.97	0.03	30.43	0.00	0.19	0.18	0.90	1.03	1.00	174.00
4	cond	-0.07	0.01	-6.36	0.00	0.19	0.18	-0.09	-0.05	1.00	174.00

Table A.3 Correct choice rate in the LE phase: Within-experiment regression and ANOVA analyses of performance across four experiential options (Condition 1: smallest EV difference; Condition 4: largest EV difference)

Table A.3-1 (Original). Within-experiment regression analyses of performance across four experiential options. exp_num, study number; cond, option pairs in the ES phase (P(win) = [10:90, 20:80, 30:70, 40:60]%) where condition 1 being the most difficult; se, standard error of each regressor; r2, the proportion of the variance in the dependent variable explained by the independent variables; adj_r2, r-square adjusted for the number of predictors; CI, confidence interval for each t-test. A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the ANOVA.

exp_num	Source	SS	DF	MS	F	p-unc	p-corr	ηg2	eps	sphericity	W-spher	p-spher
1	cond	5.23	3.00	1.74	56.85	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
1	Error	21.06	687.00	0.03	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
2	cond	5.23	3.00	1.74	56.85	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
2	Error	21.06	687.00	0.03	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
3	cond	5.23	3.00	1.74	56.85	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
3	Error	21.06	687.00	0.03	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN
4	cond	5.23	3.00	1.74	56.85	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
4	Error	21.06	687.00	0.03	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Table A.3-2 (Original). Within-experiment ANOVA analyses of performance across four experiential options. exp_num, study number; ss, sum of squares, which measures the total variation in the data; DF, degree of freedom for ANOVA; MS, mean square, which is the average variation within the data; ηg2, a measure of effect size (generalized etal squared), the proportion of the total variance in the dependent variable that is associated with the independent variable; eps, the correction factor used in repeated measures ANOVA to adjust for violations of sphericity; sphericity, the assumption that the variances of the differences between all pairs of related groups being equal; W-spher, Mauchly's W, a test statistic used to assess the assumption of sphericity; p-spher, p-value from Mauchly's test of sphericity; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/directory) using the *Pingouin* package was used to conduct the ANOVA. The cells in red represent the statistical analyses used in the main analysis of the original paper, but were not replicated in this report.

exp_num	names	coef	se	Т	pval	r2	adj_r2	CI2.5%	CI97.5%	dof_model	dof_resid
1	Intercept	0.82	0.03	26.49	0.00	0.10	0.09	0.75	0.89	1.00	302.00
1	cond	-0.06	0.01	-5.68	0.00	0.10	0.09	-0.09	-0.04	1.00	302.00
2	Intercept	0.92	0.03	34.69	0.00	0.21	0.20	0.86	0.98	1.00	282.00
2	cond	-0.08	0.01	-8.56	0.00	0.21	0.20	-0.11	-0.06	1.00	282.00
3	Intercept	0.96	0.03	37.99	0.00	0.10	0.10	0.91	1.02	1.00	330.00
3	cond	-0.06	0.01	-6.01	0.00	0.10	0.10	-0.08	-0.03	1.00	330.00
4	Intercept	0.97	0.03	30.43	0.00	0.19	0.18	0.89	1.04	1.00	174.00
4	cond	-0.07	0.01	-6.36	0.00	0.19	0.18	-0.09	-0.04	1.00	174.00

Table A.3-1 (Reproduced). Within-experiment regression analyses of performance across four experiential options. exp_num, study number; cond, option pairs in the ES phase (P(win) = [10:90, 20:80, 30:70, 40:60]%) where condition 1 being the most difficult; se, standard error of each regressor; r2, the proportion of the variance in the dependent variable explained by the independent variables; adj_r2, r-square adjusted for the number of predictors; CI, confidence interval for each t-test. A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the ANOVA.

exp_num	Source	SS	DF	MS	F	p-unc	p-corr	ng2	eps	sphericity	W-spher	p-spher
1	cond	1.76	3.00	0.59	14.36	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
1	Error	9.21	225.00	0.04	1.00	0.50	NaN	NaN	NaN	NaN	NaN	NaN
2	cond	2.46	3.00	0.82	28.79	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
2	Error	5.99	210.00	0.03	1.00	0.50	NaN	NaN	NaN	NaN	NaN	NaN
3	cond	1.30	3.00	0.43	19.15	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
3	Error	5.57	246.00	0.02	1.00	0.50	NaN	NaN	NaN	NaN	NaN	NaN
4	cond	1.90	1.00	1.90	64.30	0.00	0.00	0.11	0.81	FALSE	0.68	0.00
4	Error	2.56	87.00	0.03	1.00	0.50	NaN	NaN	NaN	NaN	NaN	NaN

Table A.3-2 (Reproduced) . Within-experiment ANOVA analyses of performance across four experiential options. exp_num, study number; ss, sum of squares, which measures the total variation in the data; DF, degree of freedom for ANOVA; MS, mean square, which is the average variation within the data; $\eta g2$, a measure of effect size (generalized etal squared), the proportion of the total variance in the dependent variable that is associated with the independent variable; eps, the correction factor used in repeated measures ANOVA to adjust for violations of sphericity; sphericity, the assumption that the variances of the differences between all pairs of related groups being equal; W-spher, Mauchly's W, a test statistic used to assess the assumption of sphericity; p-spher, p-value from Mauchly's test of sphericity; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the ANOVA. The cells in red represent the statistical analyses used in the main analysis of the original paper, but were not replicated in this report.

Table A.4 Correct choice rate in the LE phase: Regression analysis of performance across Experiments 1-4 and four experiential options (Condition 1: smallest EV difference; Condition 4: largest EV difference)

	Coef.	Std.Err.	z	P> z	CI2.5%	CI97.5%
Intercept	0.54	0.03	21.47	0.00	0.49	0.59
C(cond)[T.2]	0.13	0.03	3.90	0.00	0.06	0.19
C(cond)[T.3]	0.14	0.03	4.12	0.00	0.07	0.20
C(cond)[T.4]	0.21	0.03	6.47	0.00	0.15	0.28

Table A.4-1 (Original). Regression analysis of performance across four experiential options. coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Statsmodels* package was used to conduct the regression. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

	Coef.	Std.Err.	z	P> z	CI2.5%	CI97.5%
Intercept	0.66	0.02	39.91	0.00	0.63	0.69
C(exp_num)[T.2]	0.05	0.02	2.28	0.02	0.01	0.10
C(exp_num)[T.3]	0.16	0.02	7.17	0.00	0.12	0.21
C(exp_num)[T.4]	0.13	0.02	5.81	0.00	0.09	0.18

Table A.4-2 (Original). Regression analysis of performance across Experiments 1-4. coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Statsmodels* package was used to conduct the regression. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%
Intercept	0.54	0.03	19.53	0.00	0.48	0.60
C(cond)[T.2]	0.13	0.04	3.33	0.00	0.04	0.21
C(cond)[T.3]	0.14	0.04	3.59	0.00	0.05	0.22
C(cond)[T.4]	0.21	0.04	5.85	0.00	0.13	0.29

Table A.4-1 (Reproduced). Regression analysis of performance across four experiential options. coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A custom MATLAB code, equivalent to the function of the *Statsmodels* package, was used to conduct the regression. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%
Intercept	0.66	0.02	39.90	0.00	0.62	0.70
C(exp_num)[T.2]	0.05	0.02	2.28	0.02	0.00	0.11
C(exp_num)[T.3]	0.16	0.02	7.17	0.00	0.11	0.22
C(exp_num)[T.4]	0.13	0.02	5.81	0.00	0.08	0.18

Table A.4-2 (Reproduced). Regression analysis of performance across Experiments 1-4. coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A custom MATLAB code, equivalent to the function of the *Statsmodels* package, was used to conduct the

regression. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Exp. # mean sem 0 0.02 1 0.66 1 2 0.01 0.72 2 3 0.83 0.02 0.79 0.02 3 4

Table A.5 Correct choice rate in the LE phase: Descriptive statistics of learning performance across Experiments 1-4

Table A.5-1 (Original). Descriptive statistics of learning performance across Experiments 1-4. #, number of t-tests; Exp, study number; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) was used to estimate the mean and sem. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

#	Exp.	mean	sem
0	1	0.66	0.01
1	2	0.72	0.01
2	3	0.83	0.01
3	4	0.79	0.02

Table A.5-1 (Reproduced). Descriptive statistics of learning performance across Experiments 1-4. #, number of t-tests; Exp, study number; A custom MATLAB code was used to estimate the mean and sem. The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Modality used as reference≓ L	E					
	Coef.	Std.Err.	z	P> z	CI2.5%	C197.5%
Intercept	0.59	0.04	14.47	0.00	0.51	0.67
C(exp_num)[T.2]	0.16	0.06	2.66	0.01	0.04	0.27
C(exp_num)[T.3]	0.29	0.06	5.06	0.00	0.18	0.40
C(exp_num)[T.4]	0.31	0.06	5.56	0.00	0.20	0.42
C(modality, Treatment("LE"))[T.ES]	-0.37	0.05	-7.71	0.00	-0.46	-0.27
C(modality, Treatment("LE"))[T.SP]	-0.27	0.05	-5.70	0.00	-0.36	-0.18
C(exp_num)[T.2]:C(modality, Treatment("LE"))[T.ES]	-0.26	0.07	-3.77	0.00	-0.39	-0.12
C(exp_num)[T.3]:C(modality, Treatment("LE"))[T.ES]	-0.26	0.07	-3.99	0.00	-0.39	-0.13
C(exp_num)[T.4]:C(modality, Treatment("LE"))[T.ES]	-0.20	0.07	-3.04	0.00	-0.32	-0.07
C(exp_num)[T.2]:C(modality, Treatment("LE"))[T.SP]	-0.25	0.07	-3.66	0.00	-0.38	-0.12
C(exp_num)[T.3]:C(modality, Treatment("LE"))[T.SP]	-0.19	0.07	-2.95	0.00	-0.32	-0.07
C(exp_num)[T.4]:C(modality, Treatment("LE"))[T.SP]	-0.13	0.07	-1.98	0.05	-0.26	0.00
subject Var	0.04	0.02				

Table A.6 Slope analysis between the inferred P(win) and the actual values: Regression analysis of slope across Experiments 1-4 and task modalities (LE, ES, and SP)

Table A.6-1 (Original). Regression analysis of slope across Experiments 1-4 and task modalities (LE, ES, and SP; LE as a reference). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Statsmodels* package was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Modality used as reference= E	s					
	Coef.	Std.Err.	z	P> z	CI2.5%	CI97.5%
Intercept	0.22	0.04	5.49	0.00	0.14	0.30
C(exp_num)[T.2]	-0.10	0.06	-1.73	0.08	-0.22	0.01
C(exp_num)[T.3]	0.02	0.06	0.42	0.68	-0.09	0.13
C(exp_num)[T.4]	0.11	0.06	2.03	0.04	0.00	0.22
C(modality, Treatment("ES"))[T.LE]	0.37	0.05	7.71	0.00	0.27	0.46
C(modality, Treatment("ES"))[T.SP]	0.10	0.05	2.01	0.04	0.00	0.19
C(exp_num)[T.2]:C(modality, Treatment("ES"))[T.LE]	0.26	0.07	3.77	0.00	0.12	0.39
C(exp_num)[T.3]:C(modality, Treatment("ES"))[T.LE]	0.26	0.07	3.99	0.00	0.13	0.39
C(exp_num)[T.4]:C(modality, Treatment("ES"))[T.LE]	0.20	0.07	3.04	0.00	0.07	0.32
C(exp_num)[T.2]:C(modality, Treatment("ES"))[T.SP]	0.01	0.07	0.11	0.91	-0.13	0.14
C(exp_num)[T.3]:C(modality, Treatment("ES"))[T.SP]	0.07	0.07	1.04	0.30	-0.06	0.20
C(exp_num)[T.4]:C(modality, Treatment("ES"))[T.SP]	0.07	0.07	1.06	0.29	-0.06	0.20
subject Var	0.04	0.02				

Table A.6-2 (Original). Regression analysis of slope across Experiment (Experiment 1-4) and task modalities (LE, ES, and SP; ES as a reference). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Statsmodels* package was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Modality used as reference= SP										
	Coef.	Std.Err.	z	P> z	CI2.5%	CI97.5%				
Intercept	0.32	0.04	7.84	0.00	0.24	0.40				
C(exp_num)[T.2]	-0.09	0.06	-1.60	0.11	-0.21	0.02				
C(exp_num)[T.3]	0.09	0.06	1.63	0.10	-0.02	0.20				
C(exp_num)[T.4]	0.18	0.06	3.26	0.00	0.07	0.29				
C(modality, Treatment("SP"))[T.ES]	-0.10	0.05	-2.01	0.04	-0.19	0.00				
C(modality, Treatment("SP"))[T.LE]	0.27	0.05	5.70	0.00	0.18	0.36				
C(exp_num)[T.2]:C(modality, Treatment("SP"))[T.ES]	-0.01	0.07	-0.11	0.91	-0.14	0.13				
C(exp_num)[T.3]:C(modality, Treatment("SP"))[T.ES]	-0.07	0.07	-1.04	0.30	-0.20	0.06				
C(exp_num)[T.4]:C(modality, Treatment("SP"))[T.ES]	-0.07	0.07	-1.06	0.29	-0.20	0.06				
C(exp_num)[T.2]:C(modality, Treatment("SP"))[T.LE]	0.25	0.07	3.66	0.00	0.12	0.38				
C(exp_num)[T.3]:C(modality, Treatment("SP"))[T.LE]	0.19	0.07	2.95	0.00	0.07	0.32				
C(exp_num)[T.4]:C(modality, Treatment("SP"))[T.LE]	0.13	0.07	1.98	0.05	0.00	0.26				
subject Var	0.04	0.02								

Table A.6-3 (Original). Regression analysis of slope across Experiment (Experiment 1-4) and task modalities (LE, ES, and SP; SP as a reference). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Statsmodels* package was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Modality used as reference= LE									
	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%			
Intercept	0.59	0.04	16.14	0.00	0.51	0.67			
C(exp_num)[T.2]	0.16	0.05	2.99	0.00	0.04	0.27			
C(exp_num)[T.3]	0.29	0.05	6.33	0.00	0.18	0.39			
C(exp_num)[T.4]	0.31	0.05	6.85	0.00	0.21	0.41			
C(modality, Treatment("LE"))[T.ES]	-0.37	0.06	-6.56	0.00	-0.49	-0.24			
C(modality, Treatment("LE"))[T.SP]	-0.27	0.05	-5.45	0.00	-0.38	-0.16			
C(exp_num)[T.2]:C(modality, Treatment("LE"))[T.ES]	-0.26	0.07	-3.50	0.00	-0.42	-0.09			
C(exp_num)[T.3]:C(modality, Treatment("LE"))[T.ES]	-0.26	0.07	-3.84	0.00	-0.42	-0.11			
C(exp_num)[T.4]:C(modality, Treatment("LE"))[T.ES]	-0.20	0.07	-2.67	0.01	-0.36	-0.03			
C(exp_num)[T.2]:C(modality, Treatment("LE"))[T.SP]	-0.25	0.07	-3.54	0.00	-0.41	-0.09			

C(exp_num)[T.3]:C(modality, Treatment("LE"))[T.SP]	-0.19	0.07	-2.90	0.00	-0.34	-0.04
C(exp_num)[T.4]:C(modality, Treatment("LE"))[T.SP]	-0.13	0.08	-1.60	0.11	-0.31	0.05

Table A.6-1 (Reproduced). Regression analysis of slope across Experiments 1-4 and task modalities (LE, ES, and SP; LE as a reference). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A custom MATLAB code, equivalent to the function of the *Statsmodels* package, was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Modality used as reference= ES									
	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%			
Intercept	0.22	0.04	5.17	0.00	0.13	0.32			
C(exp_num)[T.2]	-0.10	0.05	-1.91	0.06	-0.22	0.02			
C(exp_num)[T.3]	0.02	0.06	0.42	0.67	-0.10	0.15			
C(exp_num)[T.4]	0.11	0.06	1.86	0.06	-0.02	0.25			
C(modality, Treatment("ES"))[T.LE]	0.37	0.06	6.56	0.00	0.24	0.49			
C(modality, Treatment("ES"))[T.SP]	0.10	0.04	2.63	0.01	0.01	0.18			
C(exp_num)[T.2]:C(modality, Treatment("ES"))[T.LE]	0.26	0.07	3.50	0.00	0.09	0.42			
C(exp_num)[T.3]:C(modality, Treatment("ES"))[T.LE]	0.26	0.07	3.84	0.00	0.11	0.42			
C(exp_num)[T.4]:C(modality, Treatment("ES"))[T.LE]	0.20	0.07	2.67	0.01	0.03	0.36			
C(exp_num)[T.2]:C(modality, Treatment("ES"))[T.SP]	0.01	0.05	0.16	0.87	-0.10	0.11			
C(exp_num)[T.3]:C(modality, Treatment("ES"))[T.SP]	0.07	0.05	1.32	0.19	-0.05	0.18			
C(exp_num)[T.4]:C(modality, Treatment("ES"))[T.SP]	0.07	0.05	1.33	0.18	-0.05	0.18			

Table A.6-2 (Reproduced). Regression analysis of slope across Experiment (Experiment 1-4) and task modalities (LE, ES, and SP; ES as a reference). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A custom MATLAB code, equivalent to the function of the *Statsmodels* package, was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

Modality used as reference= SP									
	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%			
Intercept	0.32	0.04	7.20	0.00	0.22	0.42			
C(exp_num)[T.2]	-0.09	0.06	-1.66	0.10	-0.22	0.03			
C(exp_num)[T.3]	0.09	0.06	1.43	0.15	-0.05	0.24			
C(exp_num)[T.4]	0.18	0.07	2.55	0.01	0.02	0.34			
C(modality, Treatment("SP"))[T.ES]	0.27	0.05	5.45	0.00	0.16	0.38			
C(modality, Treatment("SP"))[T.LE]	-0.10	0.04	-2.63	0.01	-0.18	-0.01			
C(exp_num)[T.2]:C(modality, Treatment("SP"))[T.ES]	0.25	0.07	3.54	0.00	0.09	0.41			
C(exp_num)[T.3]:C(modality, Treatment("SP"))[T.ES]	0.19	0.07	2.90	0.00	0.04	0.34			
C(exp_num)[T.4]:C(modality, Treatment("SP"))[T.ES]	0.13	0.08	1.60	0.11	-0.05	0.31			
C(exp_num)[T.2]:C(modality, Treatment("SP"))[T.LE]	-0.01	0.05	-0.16	0.87	-0.11	0.10			

C(exp_num)[T.3]:C(modality, Treatment("SP"))[T.LE]	-0.07	0.05	-1.32	0.19	-0.18	0.05
C(exp_num)[T.4]:C(modality, Treatment("SP"))[T.LE]	-0.07	0.05	-1.33	0.18	-0.18	0.05

Table A.6-3 (Reproduced). Regression analysis of slope across Experiment (Experiment 1-4) and task modalities (LE, ES, and SP; SP as a reference). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A custom MATLAB code, equivalent to the function of the *Statsmodels* package, was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

						All								
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	1	2	FALSE	TRUE	0.33	136.48	two-sided	0.74	1.00	bonf	1.87E-01	0.05
2	exp_num	-	1	3	FALSE	TRUE	-3.14	154.36	two-sided	0.00	0.01	bonf	1.50E+01	-0.50
3	exp_num	-	1	4	FALSE	TRUE	-4.49	161.60	two-sided	0.00	0.00	bonf	1.28E+03	-0.70
4	exp_num	-	2	3	FALSE	TRUE	-3.96	149.68	two-sided	0.00	0.00	bonf	1.87E+02	-0.63
5	exp_num	-	2	4	FALSE	TRUE	-5.40	150.98	two-sided	0.00	0.00	bonf	5.18E+04	-0.82
6	exp_num	-	3	4	FALSE	TRUE	-1.57	167.90	two-sided	0.12	0.71	bonf	5.18E-01	-0.24
7	modality	-	ES	LE	TRUE	TRUE	-22.10	317.00	two-sided	0.00	0.00	bonf	3.82E+62	-1.65
8	modality	-	ES	SP	TRUE	TRUE	-7.49	317.00	two-sided	0.00	0.00	bonf	8.57E+09	-0.34
9	modality	-	LE	SP	TRUE	TRUE	15.24	317.00	two-sided	0.00	0.00	bonf	2.34E+36	1.10
10	exp_num * modality	1	ES	LE	TRUE	TRUE	-6.53	75.00	two-sided	0.00	0.00	bonf	1.68E+06	-1.04
11	exp_num * modality	1	ES	SP	TRUE	TRUE	-2.63	75.00	two-sided	0.01	0.13	bonf	3.07E+00	-0.25
12	exp_num * modality	1	LE	SP	TRUE	TRUE	5.42	75.00	two-sided	0.00	0.00	bonf	2.07E+04	0.76
13	exp_num * modality	2	ES	LE	TRUE	TRUE	-12.94	70.00	two-sided	0.00	0.00	bonf	1.63E+17	-2.16
14	exp_num * modality	2	ES	SP	TRUE	TRUE	-3.43	70.00	two-sided	0.00	0.01	bonf	2.47E+01	-0.37
15	exp_num * modality	2	LE	SP	TRUE	TRUE	10.29	70.00	two-sided	0.00	0.00	bonf	5.49E+12	1.70
16	exp_num * modality	3	ES	LE	TRUE	TRUE	-15.81	82.00	two-sided	0.00	0.00	bonf	2.83E+23	-2.19
17	exp_num * modality	3	ES	SP	TRUE	TRUE	-4.39	82.00	two-sided	0.00	0.00	bonf	5.38E+02	-0.43
18	exp_num * modality	3	LE	SP	TRUE	TRUE	10.36	82.00	two-sided	0.00	0.00	bonf	4.17E+13	1.35
19	exp_num * modality	4	ES	LE	TRUE	TRUE	-11.62	87.00	two-sided	0.00	0.00	bonf	2.38E+16	-1.68
20	exp_num * modality	4	ES	SP	TRUE	TRUE	-4.46	87.00	two-sided	0.00	0.00	bonf	7.04E+02	-0.35
21	exp_num * modality	4	LE	SP	TRUE	TRUE	6.31	87.00	two-sided	0.00	0.00	bonf	1.00E+06	0.97

Table A.7 Slope analysis between the inferred P(win) and the actual values: T-test comparison of slopes across Experiments 1-4 and task modalities (LE, ES, and SP)

Table A.7-1 (Original). T-test comparison of slopes across Experiments 1-4 and task modalities (LE, ES, and SP). #, number of t-tests; exp_num, study number; modality, one of the experiment types (ES, LE, and SP); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

					EXI	P. 1: ttest betwee	n ES and SP							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	-2.63	75.00	two-sided	0.01	-0.18	-0.01	0.25	3.07	0.57					
					EX	P. 2: ttest betwee	n ES and SP							
	T dof alternative p-val CI2.5% CI97.5% cohen-d BF10 power													
T-test	-3.43	70.00	two-sided	0.00	-0.17	-0.03	0.37	24.71	0.87					
					EX	P. 3: ttest betwee	n ES and SP							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	-4.39	82.00	two-sided	0.00	-0.25	-0.08	0.43	537.98	0.97					
					EX	P. 4: ttest betwee	n ES and SP							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	-4.46	87.00	two-sided	0.00	-0.25	-0.08	0.35	704.37	0.90					

Table A.7-2 (Original). T-test comparison of slopes between the ES and SP phases. dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test. A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

						All								
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	1	2	FALSE	TRUE	0.34	136.50	two-sided	0.74	1.00	bonf	1.87E-01	0.06
2	exp_num	-	1	3	FALSE	TRUE	-3.15	154.37	two-sided	0.00	0.01	bonf	1.50E+01	-0.50
3	exp_num	-	1	4	FALSE	TRUE	-4.49	161.63	two-sided	0.00	0.00	bonf	1.28E+03	-0.70
4	exp_num	-	2	3	FALSE	TRUE	-3.96	149.68	two-sided	0.00	0.00	bonf	1.88E+02	-0.63
5	exp_num	-	2	4	FALSE	TRUE	-5.40	150.92	two-sided	0.00	0.00	bonf	4.93E+04	-0.84
6	exp_num	-	3	4	FALSE	TRUE	-1.57	167.87	two-sided	0.12	0.71	bonf	5.17E-01	-0.24
7	modality	-	ES	LE	TRUE	TRUE	-22.07	317.00	two-sided	0.00	0.00	bonf	2.98E+62	-1.65
8	modality	-	ES	SP	TRUE	TRUE	-7.47	317.00	two-sided	0.00	0.00	bonf	7.57E+09	-0.34
9	modality	-	LE	SP	TRUE	TRUE	15.24	317.00	two-sided	0.00	0.00	bonf	2.34E+36	1.10
10	exp_num * modality	1	ES	LE	TRUE	TRUE	-6.52	75.00	two-sided	0.00	0.00	bonf	1.58E+06	-1.04
11	exp_num * modality	1	ES	SP	TRUE	TRUE	-2.61	75.00	two-sided	0.01	0.13	bonf	2.96E+00	-0.25
12	exp_num * modality	1	LE	SP	TRUE	TRUE	5.42	75.00	two-sided	0.00	0.00	bonf	2.07E+04	0.76
13	exp_num * modality	2	ES	LE	TRUE	TRUE	-12.93	70.00	two-sided	0.00	0.00	bonf	1.56E+17	-2.16
14	exp_num * modality	2	ES	SP	TRUE	TRUE	-3.42	70.00	two-sided	0.00	0.01	bonf	2.42E+01	-0.37
15	exp_num * modality	2	LE	SP	TRUE	TRUE	10.29	70.00	two-sided	0.00	0.00	bonf	5.49E+12	1.70
16	exp_num * modality	3	ES	LE	TRUE	TRUE	-15.81	82.00	two-sided	0.00	0.00	bonf	2.85E+23	-2.19
17	exp_num * modality	3	ES	SP	TRUE	TRUE	-4.38	82.00	two-sided	0.00	0.00	bonf	5.20E+02	-0.43
18	exp_num * modality	3	LE	SP	TRUE	TRUE	10.36	82.00	two-sided	0.00	0.00	bonf	4.17E+13	1.35
19	exp_num * modality	4	ES	LE	TRUE	TRUE	-11.60	87.00	two-sided	0.00	0.00	bonf	2.18E+16	-1.68
20	exp_num * modality	4	ES	SP	TRUE	TRUE	-4.45	87.00	two-sided	0.00	0.00	bonf	6.92E+02	-0.35
21	exp_num * modality	4	LE	SP	TRUE	TRUE	6.31	87.00	two-sided	0.00	0.00	bonf	1.00E+06	0.97

Table A.7-1 (Reproduced). T-test comparison of slopes across Experiments 1-4 and task modalities (LE, ES, and SP). #, number of t-tests; exp_num, study number; modality, one of the experiment types (ES, LE, and SP); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-valueusing a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory). The cells in green represent the statistical analyses used in the main analysis of the original paper, all of which were successfully replicated in this report.

					EX	P. 1: ttest between	ES and SP							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T- test	-2.61	75.00	'two-sided'	0.01	-0.18	-0.01	-0.25	2.96	0.73					
					EX	P. 2: ttest between	ES and SP							
	T dof alternative p-val C12.5% C197.5% cohen-d BF10 power													
T- test	-3.42	70.00	'two-sided'	0.00	-0.17	-0.03	-0.37	24.16	0.92					
					EX	P. 3: ttest between	ES and SP							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T- test	-4.38	82.00	'two-sided'	0.00	-0.25	-0.08	-0.43	520.3 5	0.99					
					EX	P. 4: ttest between	ES and SP							
	Т	dof	alternative	p-val	CI2.5%	C197.5%	cohen-d	BF10	power					
T- test	-4.45	87.00	'two-sided'	0.00	-0.25	-0.08	-0.35	692.0 3	0.99					

Table A.7-2 (Reproduced). T-test comparison of slopes between the ES and SP phases. dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test. A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

						Al	1							
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	5	6.1	FALSE	TRUE	-0.01	134.94	two-sided	0.99	1.00	bonf	1.83E-01	0.00
2	exp_num	-	5	6.2	FALSE	TRUE	-1.39	134.69	two-sided	0.17	0.50	bonf	4.40E-01	-0.24
3	exp_num	-	6.1	6.2	FALSE	TRUE	-1.39	130.00	two-sided	0.17	0.50	bonf	4.46E-01	-0.24
4	modality	-	EE	ES	TRUE	TRUE	7.68	202.00	two-sided	0.00	NaN	NaN	1.01E+1 0	0.50
5	exp_num * modality	5	EE	ES	TRUE	TRUE	4.48	70.00	two-sided	0.00	0.00	bonf	6.67E+0 2	0.53
6	exp_num * modality	6.1	EE	ES	TRUE	TRUE	4.06	65.00	two-sided	0.00	0.00	bonf	1.59E+0 2	0.40
7	exp_num * modality	6.2	EE	ES	TRUE	TRUE	4.84	65.00	two-sided	0.00	0.00	bonf	2.14E+0 3	0.57
						EXF	2.5							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T- test	T 4.48	dof 70.00	alternative two-sided	p-val 0.00	CI2.5%	CI97.5%	cohen-d 0.53	BF10 667.49	power 0.99					
T- test	T 4.48	dof 70.00	alternative two-sided	p-val 0.00	CI2.5%	CI97.5% 0.33 EXP.	cohen-d 0.53 6.1	BF10 667.49	power 0.99					
T- test	T 4.48 T	dof 70.00 dof	alternative two-sided alternative	p-val 0.00 p-val	C12.5% 0.11 C12.5%	C197.5% 0.33 EXP. C197.5%	cohen-d 0.53 6.1 cohen-d	BF10 667.49 BF10	power 0.99 power					
T- test T- test	T 4.48 T 4.06	dof 70.00 dof 65.00	alternative two-sided alternative two-sided	p-val 0.00 p-val 0.00	C12.5% 0.11 C12.5% 0.06	C197.5% 0.33 EXP. C197.5% 0.23	cohen-d 0.53 6.1 cohen-d 0.40	BF10 667.49 BF10 159.14	power 0.99 power 0.90					
T- test T- test	T 4.48 T 4.06	dof 70.00 dof 65.00	alternative two-sided alternative two-sided	p-val 0.00 p-val 0.00	C12.5% 0.11 C12.5% 0.06	C197.5% 0.33 EXP. C197.5% 0.23 EXP.	cohen-d 0.53 6.1 cohen-d 0.40 6.2	BF10 667.49 BF10 159.14	power 0.99 power 0.90					
T- test T- test	T 4.48 T 4.06 T	dof 70.00 dof 65.00 dof	alternative two-sided alternative two-sided alternative	p-val 0.00 p-val 0.00 p-val	C12.5% 0.11 C12.5% 0.06 C12.5%	C197.5% 0.33 EXP. C197.5% 0.23 EXP. C197.5%	cohen-d 0.53 6.1 cohen-d 0.40 6.2	BF10 667.49 BF10 159.14 BF10	power 0.99 power 0.90 power					

Table A.8 Slope analysis between the inferred P(win) and the actual values: T-test comparison of slopes across Experiments 5-6 and task modalities (ES, EE)

Table A.8-1 (Original). T-test comparison of slopes across Experiments 5-6 and task modalities (EE and ES). #, number of t-tests; exp_num, study number; exp_num, study number; modality, one of the experiment types (EE and ES); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; CI, confidence interval for each t-test. A Jupyter Notebook file (*stats.ipynb*, located in the ./python/directory) using the *Pingouin* package was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

						All								
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	5	6.1	FALSE	TRUE	0.00	134.94	two-sided	1.00	1.00	bonf	1.83E-01	0.00
2	exp_num	-	5	6.2	FALSE	TRUE	-1.37	134.67	two-sided	0.17	0.52	bonf	4.32E-01	-0.23
3	exp_num	-	6.1	6.2	FALSE	TRUE	-1.38	129.35	two-sided	0.17	0.51	bonf	4.43E-01	-0.24
4	modality	-	EE	ES	TRUE	TRUE	7.85	202.00	two-sided	0.00	NaN	NaN	2.76E+10	0.52
5	exp_num * modality	5	EE	ES	TRUE	TRUE	4.54	70.00	two-sided	0.00	0.00	bonf	8.12E+02	0.54
6	exp_num * modality	6.1	EE	ES	TRUE	TRUE	4.15	65.00	two-sided	0.00	0.00	bonf	2.17E+02	0.41
7	exp_num * modality	6.2	EE	ES	TRUE	TRUE	5.00	65.00	two-sided	0.00	0.00	bonf	3.66E+03	0.59
						EXP. 5								
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	4.54	70.00	'two-sided'	0.00	0.11	0.33	0.54	812.00	0.99					
						EXP. 6.1	l							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	4.15	65.00	'two-sided'	0.00	0.07	0.23	0.41	216.53	0.98					
						EXP. 6.2	2							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	5.00	65.00	'two-sided'	0.00	0.11	0.3	0.59	3660.42	1.00					

Table A.8-1 (Reproduced). T-test comparison of slopes across Experiments 5-6 and task modalities (EE and ES). #, number of t-tests; exp_num, study number; modality, one of the experiment types (EE and ES); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; CI, confidence interval for each t-test. A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

Modality used as reference= ES						
	Coef.	Std.Err.	z	P> z	CI2.5%	C197.5%
Intercept	0.32	0.04	7.17	0.00	0.23	0.40
C(exp_num, Treatment("6.1"))[T.6.2]	0.05	0.06	0.79	0.43	-0.07	0.17
C(modality, Treatment("ES"))[T.EE]	0.15	0.04	3.74	0.00	0.07	0.22
C(exp_num, Treatment("6.1"))[T.6.2]:C(modality, Treatment("ES"))[T.EE]	0.06	0.06	1.02	0.31	-0.05	0.17
subject Var	0.08	0.08				
Modality used as reference= EE						
	Coef.	Std.Err.	z	P> z	CI2.5%	CI97.5%
Intercept	0.46	0.04	10.49	0.00	0.38	0.55
C(exp_num, Treatment("6.1"))[T.6.2]	0.11	0.06	1.70	0.09	-0.02	0.23
C(modality, Treatment("EE"))[T.ES]	-0.15	0.04	-3.74	0.00	-0.22	-0.07
C(exp_num, Treatment("6.1"))[T.6.2]:C(modality, Treatment("EE"))[T.ES]	-0.06	0.06	-1.02	0.31	-0.17	0.05
subject Var	0.08	0.08				

Table A.9 Slope analysis between the inferred P(win) and the actual values: T-test comparison of slopes across Experiments 6.1-6.2 and task modalities (ES, EE)

Table A.9-1 (Original). Regression analysis of slope across Experiments 6.1-6.2 and task modalities (ES, EE). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Statsmodels* package was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

Modality used as reference= ES						
	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%
Intercept	0.31	0.04	8.04	0.00	0.23	0.40
C(exp_num, Treatment("6.1"))[T.6.2]	0.05	0.06	0.86	0.39	-0.08	0.17
C(modality, Treatment("ES"))[T.EE]	0.15	0.04	4.19	0.00	0.07	0.23
C(exp_num, Treatment("6.1"))[T.6.2]:C(modality, Treatment("ES"))[T.EE]	0.06	0.05	1.06	0.29	-0.07	0.18
Modality used as reference= EE						
	Coef.	Std.Err.	t	P-val	CI2.5%	CI97.5%
Intercept	0.46	0.05	9.47	0.00	0.35	0.57
C(exp_num, Treatment("6.1"))[T.6.2]	0.11	0.07	1.59	0.11	-0.04	0.26
C(modality, Treatment("EE"))[T.ES]	-0.15	0.04	-4.19	0.00	-0.23	-0.07
C(exp_num, Treatment("6.1"))[T.6.2]:C(modality, Treatment("EE"))[T.ES]	-0.06	0.05	-1.06	0.29	-0.18	0.07

Table A.9-1 (Reproduced). Regression analysis of slope across Experiments 6.1-6.2 and task modalities (ES, EE). Coef, correlation coefficient of each regressor; Std.Err, standard error of each regressor; CI, confidence interval for each regressor; A custom MATLAB code, equivalent to the function of the *Statsmodels* package, was used to conduct the regression. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

	within (Modality) First = False													
#	Contrast	exp_num	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	exp_num	-	6	7	FALSE	TRUE	5.70	126.94	two-sided	0.00	NaN	NaN	1.59E+05	0.96
2	modality	-	ES	EE	TRUE	TRUE	2.92	136.00	two-sided	0.00	NaN	NaN	5.47E+00	0.24
3	exp_num * modality	6	ES	EE	TRUE	TRUE	11.55	65.00	two-sided	0.00	0.00	bonf	2.80E+14	1.32
4	exp_num * modality	7	ES	EE	TRUE	TRUE	-6.36	70.00	two-sided	0.00	0.00	bonf	6.96E+05	-0.46
					v	within (Modality)	First = True							
#	Contrast	modality	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	modality	-	ES	EE	TRUE	TRUE	2.92	136.00	two-sided	0.00	NaN	NaN	5.47E+00	0.24
2	exp_num	-	6	7	FALSE	TRUE	5.70	126.94	two-sided	0.00	NaN	NaN	1.59E+05	0.96
3	modality * exp_num	ES	6	7	FALSE	TRUE	11.02	94.98	two-sided	0.00	0.00	bonf	2.12E+17	1.84
4	modality * exp_num	ES	6	7	FALSE	TRUE	0.38	131.77	two-sided	0.70	1.00	bonf	1.96E-01	0.07

Table A.10 Slope analysis between the inferred P(win) and the actual values: T-test comparison analysis of slopes across Experiments 6-7 and task modalities (ES, EE)

Table A.10-1 (Original). T-test comparison of slopes across Experiments 6-7**and task modalities (ES, EE).** #, number of t-tests; exp_num, study number; modality, one of the experiment types (ES, EE); Paired, TRUE = a pairwise t-test; FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

						EXP. 7 EE vs	EXP. 7 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	6.36	70.00	two-sided	0.00	0.04	0.08	0.46	6.96E+05	0.97	
						EXP. 6 EE vs	EXP. 7 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	2.98	134.97	two-sided	0.00	0.02	0.12	0.51	9.65E+00	0.84	
						EXP. 7 EE vs	EXP. 7 EE			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	NaN	70.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05	
						EXP. 6 EE vs	EXP. 7 EE			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	0.38	131.77	two-sided	0.70	-0.04	0.06	0.07	0.20	0.07	
						EXP. 7 ES vs	EXP. 7 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	NaN	70.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05	
						EXP. 6 ES vs	EXP. 7 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	11.02	94.98	two-sided	0.00	0.16	0.25	1.84	2.12E+17	1.00	
						EXP. 6 EE vs	EXP. 6 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	-11.55	65.00	two-sided	0.00	-0.16	-0.11	1.32	2.80E+14	1.00	
						EXP. 6 EE vs	EXP. 7 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	-8.86	103.91	two-sided	0.00	-0.18	-0.11	1.48	1.21E+12	1.00	
						EXP. 6 EE vs	EXP. 6 EE			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	NaN	65.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05	
						EXP. 6 EE vs	EXP. 7 EE			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	-0.38	131.77	two-sided	0.70	-0.06	0.04	0.07	1.96E-01	0.07	
						EXP. 6 ES vs	EXP. 6 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	NaN	65.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05	
						EXP. 6 ES vs	EXP. 7 ES			
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power	
T-test	-11.02	94.98	two-sided	0.00	-0.25	-0.16	1.84	2.12E+17	1.00	

Table A.10-2 (Original). T-test comparison of slopes across Experiments 6-7and task modalities (ES, EE). dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

	within (Modality) First = False														
#	Contrast	exp_num	А	в	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen	
1	exp_num	-	6	7	FALSE	TRUE	5.70	126.94	two-sided	0.00	NaN	NaN	1.46E+05	0.97	
2	modality	-	ES	EE	TRUE	TRUE	2.92	136.00	two-sided	0.00	NaN	NaN	5.47E+00	0.24	
3	exp_num * modality	6	ES	EE	TRUE	TRUE	-11.55	65.00	two-sided	0.00	0.00	bonf	2.80E+14	-1.32	
4	exp_num * modality	7	ES	EE	TRUE	TRUE	6.36	70.00	two-sided	0.00	0.00	bonf	6.96E+05	0.46	
						within (Modality)	First = True								
#	name	modality	А	в	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen	
1	modality	-	ES	EE	TRUE	TRUE	2.92	136.00	two-sided	0.00	NaN	NaN	5.47E+00	0.24	
2	exp_num	-	6	7	FALSE	TRUE	5.70	126.94	two-sided	0.00	NaN	NaN	1.46E+05	0.97	
3	modality * exp_num	ES	6	7	FALSE	TRUE	11.02	94.98	two-sided	0.00	0.00	bonf	3.50E+15	1.86	
4	modality * exp_num	ES	6	7	FALSE	TRUE	0.38	131.77	two-sided	0.70	1.00	bonf	1.96E-01	0.07	

Table A.10-1 (Reproduced). T-test comparison of slopes across Experiments 6-7**and task modalities (ES, EE).** #, number of t-tests; exp_num, study number; modality, one of the experiment types (ES, EE); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

	EXP. 7 EE vs EXP. 7 ES												
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	6.36	70.00	'two-sided'	0.00	0.05	0.08	0.46	6.96E+05	1.00				
						EXP. 6 EE vs EX	(P. 7 ES						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	2.98	134.97	'two-sided'	0.00	0.02	0.12	0.51	9.65E+00	0.99				
						EXP. 7 EE vs EX	(P. 7 EE						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	NaN	70.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05				
						EXP. 6 EE vs EX	(P. 7 EE						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	0.38	131.77	'two-sided'	0.70	-0.04	0.06	0.07	1.96E-01	0.98				
						EXP. 7 ES vs EX	(P. 7 ES						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	NaN	70.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05				
						EXP. 6 ES vs EX	KP. 7 ES						
	Т	dof	alternative	p-val	CI2.5%	C197.5%	cohen-d	BF10	power				
T-test	11.02	94.98	'two-sided'	0.00	0.16	0.24	1.86	3.50E+15	1.00				
						EXP. 6 EE vs EX	(P. 6 ES						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	-11.55	65.00	'two-sided'	0.00	-0.16	-0.11	-1.32	2.80E+14	1.00				
						EXP. 6 EE vs EX	(P. 7 ES						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	8.86	103.91	'two-sided'	0.00	0.11	0.18	1.50	2.34E+11	1.00				
						EXP. 6 EE vs EX	(P. 6 EE						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	NaN	65.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05				
						EXP. 6 EE vs EX	(P. 7 EE						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	-0.38	131.77	'two-sided'	0.70	-0.06	0.04	-0.07	0.20	0.98				
	-		•		-	EXP. 6 ES vs EX	KP. 6 ES						
	Т	dof	alternative	p-val	CI2.5%	C197.5%	cohen-d	BF10	power				
T-test	NaN	65.00	two-sided	NaN	NaN	NaN	0.00	NaN	0.05				
						EXP. 6 ES vs EX	(P. 7 ES						
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T-test	-11.02	94.98	'two-sided'	0.00	-0.25	-0.17	-1.86	3.50E+15	0.87				

Table A.10-2 (Reproduced). T-test comparison of slopes across Experiments 6-7and task modalities (ES, EE). exp_num, study number; modality, one of the experiment types (ES, EE); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test. The dependent variables (slope) were derived from the parameters uploaded by the authors (located in the ./data/fit/ directory).

	All													
#	Contrast	modality	А	в	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	modality	-	EE	ES_d	TRUE	TRUE	5.02	136.00	two-sided	0.00	0.00	bonf	7.96E+0 3	0.28
2	modality	-	EE	ES_e	TRUE	TRUE	3.30	136.00	two-sided	0.00	0.00	bonf	1.62E+0 1	0.18
3	modality	-	ES_d	ES_e	TRUE	TRUE	-3.24	136.00	two-sided	0.00	0.00	bonf	1.35E+0 1	-0.12
4	exp_num	-	5	6	FALSE	TRUE	1.45	131.71	two-sided	0.15	NaN	NaN	4.74E-01	0.25
5	modality * exp_num	EE	5	6	FALSE	TRUE	1.40	134.41	two-sided	0.16	0.49	bonf	4.45E-01	0.24
6	modality * exp_num	ES_d	5	6	FALSE	TRUE	1.34	133.23	two-sided	0.18	0.55	bonf	4.15E-01	0.23
7	modality * exp_num	ES_e	5	6	FALSE	TRUE	1.38	132.70	two-sided	0.17	0.51	bonf	4.35E-01	0.24
						modality: EF	E vs ES_e							
	Т	dof	alternative	p-val	CI2.5%	modality: EE CI97.5%	e vs ES_e cohen-d	BF10	power					
T- test	T 3.30	dof 136.00	alternative two-sided	p-val 0.00	CI2.5% 33.35	modality: EF C197.5% 179.65	cohen-d	BF10 16.16E+ 0	power 0.53					
T- test	T 3.30	dof 136.00	alternative two-sided	p-val 0.00	CI2.5% 33.35	modality: EE C197.5% 179.65 modality: EE	i vs ES_e cohen-d 0.18 i vs ES_d	BF10 16.16E+ 0	power 0.53					
T- test	T 3.30 T	dof 136.00 dof	alternative two-sided alternative	p-val 0.00 p-val	C12.5% 33.35 C12.5%	modality: EE C197.5% 179.65 modality: EE C197.5%	cohen-d 0.18 cohen-d cohen-d	BF10 16.16E+ 0 BF10	power 0.53 power					
T- test T- test	T 3.30 T 5.02	dof 136.00 dof 136.00	alternative two-sided alternative two-sided	p-val 0.00 p-val 0.00	CI2.5% 33.35 CI2.5% 92.68	modality: EE C197.5% 179.65 modality: EE C197.5% 245.38	cohen-d 0.18 vs ES_d cohen-d 0.28	BF10 16.16E+ 0 BF10 79.64E+ 2	power 0.53 power 0.90					
T- test T- test	T 3.30 T 5.02	dof 136.00 dof 136.00	alternative two-sided alternative two-sided	p-val 0.00 p-val 0.00	C12.5% 33.35 C12.5% 92.68	modality: EE C197.5% 179.65 modality: EE C197.5% 245.38 modality: ES	cohen-d 0.18 cvs ES_d cohen-d 0.28 e vs ES_d	BF10 16.16E+ 0 BF10 79.64E+ 2	power 0.53 power 0.90					
T- test T- test	T 3.30 T 5.02 T	dof 136.00 dof 136.00 dof	alternative two-sided alternative two-sided alternative	p-val 0.00 p-val 0.00	C12.5% 33.35 C12.5% 92.68 C12.5%	modality: EE C197.5% 179.65 modality: EE C197.5% 245.38 modality: ES_ C197.5%	cohen-d cohen-d cohen-d cohen-d cohen-d cohen-d	BF10 16.16E+ 0 BF10 79.64E+ 2 BF10 BF10	power 0.53 power 0.90 power					

Table A.11 Reaction time analysis: T-test comparison of RTs across Experiments 5-6 and task modalities (ES_d: trials which choose S option, ES_e: trials which choose E option, EE)

Table A.11-1 (Original). T-test comparison of slopes across Experiments 5-6 and task modalities (ES_d: trials which choose S option, ES_e: trials which choose E option, EE). #, number of t-tests; exp_num, study number; modality, one of the experiment types (ES_d: trials which choose S option, ES_e: trials which choose E option, EE).); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test.

	All													
#	Contrast	modality	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p-corr	p-adjust	BF10	cohen
1	modality	-	EE	ES_d	TRUE	TRUE	5.02	136.00	'two-sided'	0.00	0.00	'Bonf'	7.96E+03	0.28
2	modality	-	EE	ES_e	TRUE	TRUE	3.30	136.00	'two-sided'	0.00	0.00	'Bonf'	1.62E+01	0.18
3	modality	-	ES_d	ES_e	TRUE	TRUE	-3.24	136.00	'two-sided'	0.00	0.00	'Bonf'	1.35E+01	-0.12
4	exp_num	-	5	6	FALSE	TRUE	1.45	131.71	'two-sided'	0.15	0.15	'Bonf'	4.74E-01	0.25
5	modality * exp_num	EE	5	6	FALSE	TRUE	1.40	134.41	'two-sided'	0.16	0.33	'Bonf'	4.45E-01	0.24
6	modality * exp_num	D	5	6	FALSE	TRUE	1.34	133.23	'two-sided'	0.18	0.36	'Bonf'	4.15E-01	0.23
7	modality * exp_num	Е	5	6	FALSE	TRUE	1.38	132.70	'two-sided'	0.17	0.34	'Bonf'	4.35E-01	0.24
						modality: EE	vs ES_e							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	3.30	136.00	'two-sided'	0.00	33.35	179.65	0.18	1.62E+01	0.91					
						modality: EE	vs ES_d							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	5.02	136.00	'two-sided'	0.00	92.68	245.38	0.28	7.96E+03	1.00					
						modality: ES_	e vs ES_d							
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power					
T-test	3.24	136.00	'two-sided'	0.00	18.78	106.28	0.12	1.35E+01	0.90					

Table A.11-1 (Reproduced). T-test comparison of slopes across Experiments 5-6 and task modalities (ES_d: trials which choose S option, ES_e: trials which choose E option, EE). #, number of t-tests; exp_num, study number; modality, one of the experiment types (ES_d: trials which choose S option, ES_e: trials which choose E option, EE).); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test.

Table A.12: Reaction time analysis: T-test comparison of RTs across Experiments 1-6 and trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices)

	Exp. neglect vs LE estimates													
	Т	dof	alternative	p-val	CI2.5%	C197.5%	cohen-d	BF10	power					
T- test	-2.20	385.00	two-sided	0.03	-669.85	7.12	0.16	0.63	0.86					

Table A.12-1 (Original). T-test comparison of RT between the trial types (H: trials classified as exp. neglectbased choices, LE: trials classified as LE-based choices). dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test.

	All													
#	Contrast	trial_type	А	В	Paired	Parametri c	Т	dof	alternativ e	p-unc	p-corr	p- adjust	BF10	cohen
1	trial_type	-	Н	LE	TRUE	TRUE	-2.20	385.0 0	two-sided	0.03	NaN	NaN	6.26E-01	-0.16
2	exp_num	-	1	2	FALSE	TRUE	1.27	72.92	two-sided	0.21	1.00	bonf	4.00E-01	0.21
3	exp_num	-	1	3	FALSE	TRUE	1.31	68.41	two-sided	0.20	1.00	bonf	3.98E-01	0.23
4	exp_num	-	1	4	FALSE	TRUE	0.83	75.77	two-sided	0.41	1.00	bonf	2.58E-01	0.14
5	exp_num	-	1	5	FALSE	TRUE	1.18	70.44	two-sided	0.24	1.00	bonf	3.50E-01	0.21
6	exp_num	-	1	6	FALSE	TRUE	1.39	77.29	two-sided	0.17	1.00	bonf	4.54E-01	0.24
7	exp_num	-	2	3	FALSE	TRUE	0.06	98.08	two-sided	0.95	1.00	bonf	1.90E-01	0.01
8	exp_num	-	2	4	FALSE	TRUE	-1.17	114.8 3	two-sided	0.25	1.00	bonf	3.62E-01	-0.21
9	exp_num	-	2	5	FALSE	TRUE	-0.32	112.1 0	two-sided	0.75	1.00	bonf	2.02E-01	-0.06
10	exp_num	-	2	6	FALSE	TRUE	0.38	114.1 8	two-sided	0.70	1.00	bonf	2.09E-01	0.07
11	exp_num	-	3	4	FALSE	TRUE	-1.39	97.05	two-sided	0.17	1.00	bonf	4.48E-01	-0.25
12	exp_num	-	3	5	FALSE	TRUE	-0.46	127.8 9	two-sided	0.65	1.00	bonf	2.00E-01	-0.08
13	exp_num	-	3	6	FALSE	TRUE	0.38	94.48	two-sided	0.70	1.00	bonf	1.98E-01	0.07
14	exp_num	-	4	5	FALSE	TRUE	0.97	111.5 5	two-sided	0.34	1.00	bonf	2.88E-01	0.17
15	exp_num	-	4	6	FALSE	TRUE	1.41	122.5 8	two-sided	0.16	1.00	bonf	4.67E-01	0.25
16	exp_num	-	5	6	FALSE	TRUE	0.68	108.6 6	two-sided	0.50	1.00	bonf	2.32E-01	0.12

Table A.12-2 (Original). T-test comparison of RT across Experiment 1-6 and the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices). #, number of t-tests; exp_num, study number; trial_type, one of the trial types (H: trials classified as exp. neglect-based choices); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test.

17	trial_type * exp_num	Н	1	2	FALSE	TRUE	0.10	115.61	two-sided	0.92	1.00	bonf	1.94E-01	0.02
18	trial_type * exp_num	Н	1	3	FALSE	TRUE	0.18	108.07	two-sided	0.86	1.00	bonf	1.85E-01	0.03
19	trial_type * exp_num	Н	1	4	FALSE	TRUE	-1.11	111.45	two-sided	0.27	1.00	bonf	3.30E-01	-0.20
20	trial_type * exp_num	Н	1	5	FALSE	TRUE	0.28	108.20	two-sided	0.78	1.00	bonf	1.92E-01	0.05
21	trial_type * exp_num	Н	1	6	FALSE	TRUE	-0.17	106.02	two-sided	0.86	1.00	bonf	1.91E-01	-0.03
22	trial_type * exp_num	Н	2	3	FALSE	TRUE	0.04	86.24	two-sided	0.97	1.00	bonf	1.90E-01	0.01
23	trial_type * exp_num	Н	2	4	FALSE	TRUE	-1.15	112.54	two-sided	0.25	1.00	bonf	3.55E-01	-0.21
24	trial_type * exp_num	Н	2	5	FALSE	TRUE	0.14	86.70	two-sided	0.89	1.00	bonf	1.95E-01	0.03
25	trial_type * exp_num	Н	2	6	FALSE	TRUE	-0.24	109.27	two-sided	0.81	1.00	bonf	2.01E-01	-0.04
26	trial_type * exp_num	Н	3	4	FALSE	TRUE	-1.38	83.19	two-sided	0.17	1.00	bonf	4.42E-01	-0.25
27	trial_type * exp_num	Н	3	5	FALSE	TRUE	0.14	136.63	two-sided	0.89	1.00	bonf	1.84E-01	0.02
28	trial_type * exp_num	Н	3	6	FALSE	TRUE	-0.31	80.33	two-sided	0.76	1.00	bonf	1.93E-01	-0.06
29	trial_type * exp_num	Н	4	5	FALSE	TRUE	1.46	83.67	two-sided	0.15	1.00	bonf	4.93E-01	0.26
30	trial_type * exp_num	Н	4	6	FALSE	TRUE	0.76	121.82	two-sided	0.45	1.00	bonf	2.47E-01	0.14
31	trial_type * exp_num	Н	5	6	FALSE	TRUE	-0.38	80.77	two-sided	0.70	1.00	bonf	2.01E-01	-0.07
32	trial_type * exp_num	LE	1	2	FALSE	TRUE	1.28	67.01	two-sided	0.21	1.00	bonf	4.05E-01	0.21
33	trial_type * exp_num	LE	1	3	FALSE	TRUE	1.29	66.09	two-sided	0.20	1.00	bonf	3.91E-01	0.23
34	trial_type * exp_num	LE	1	4	FALSE	TRUE	1.15	68.77	two-sided	0.25	1.00	bonf	3.44E-01	0.20
35	trial_type * exp_num	LE	1	5	FALSE	TRUE	1.15	67.30	two-sided	0.25	1.00	bonf	3.38E-01	0.20
36	trial_type * exp_num	LE	1	6	FALSE	TRUE	1.51	66.08	two-sided	0.14	1.00	bonf	5.27E-01	0.26
37	trial_type * exp_num	LE	2	3	FALSE	TRUE	0.06	106.47	two-sided	0.96	1.00	bonf	1.90E-01	0.01
38	trial_type * exp_num	LE	2	4	FALSE	TRUE	-0.58	108.98	two-sided	0.57	1.00	bonf	2.28E-01	-0.10
39	trial_type * exp_num	LE	2	5	FALSE	TRUE	-0.72	120.93	two-sided	0.47	1.00	bonf	2.43E-01	-0.13
40	trial_type * exp_num	LE	2	6	FALSE	TRUE	1.46	103.57	two-sided	0.15	1.00	bonf	5.13E-01	0.27
41	trial_type * exp_num	LE	3	4	FALSE	TRUE	-0.67	94.46	two-sided	0.50	1.00	bonf	2.28E-01	-0.12
42	trial_type * exp_num	LE	3	5	FALSE	TRUE	-0.86	118.55	two-sided	0.39	1.00	bonf	2.56E-01	-0.15
43	trial_type * exp_num	LE	3	6	FALSE	TRUE	1.68	132.43	two-sided	0.09	1.00	bonf	6.66E-01	0.29
44	trial_type * exp_num	LE	4	5	FALSE	TRUE	-0.04	117.60	two-sided	0.97	1.00	bonf	1.88E-01	-0.01
45	trial_type * exp_num	LE	4	6	FALSE	TRUE	1.80	93.45	two-sided	0.08	1.00	bonf	8.17E-01	0.32
46	trial_type * exp_num	LE	5	6	FALSE	TRUE	2.21	115.54	two-sided	0.03	0.87	bonf	1.69E+0 0	0.38

Table A.12-3 (Original). T-test comparison of RT across Experiment 1-6 and the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices). #, number of t-tests; exp_num, study number; trial_type, one of the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A Jupyter Notebook file (*stats.ipynb*, located in the ./python/ directory) using the *Pingouin* package was used to conduct the t-test.

	Exp. neglect vs LE estimates												
	Т	dof	alternative	p-val	CI2.5%	CI97.5%	cohen-d	BF10	power				
T- test	-2.20	385.00	'two- sided'	0.03	-669.85	7.11	0.18	5.79E- 01	0.67				

Table A.12-1 (Reproduced). T-test comparison of RT between the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices). dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; CI, confidence interval for each t-test; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test.

						All								
#	Contrast	trial_type	А	В	Paired	Parametric	Т	dof	alternative	p-unc	p- corr	p- adjust	BF10	cohen
1	trial_type	-	Н	LE	TRUE	TRUE	-2.20	385.0 0	'two-sided'	0.03	NaN	NaN	5.79E-01	-0.18
2	exp_num	-	1	2	FALSE	TRUE	1.27	72.92	'two-sided'	0.21	1.00	'Bonf'	3.71E-01	0.22
3	exp_num	-	1	3	FALSE	TRUE	1.31	68.41	'two-sided'	0.20	1.00	'Bonf'	3.77E-01	0.23
4	exp_num	-	1	4	FALSE	TRUE	0.83	75.77	'two-sided'	0.41	1.00	'Bonf'	2.33E-01	0.14
5	exp_num	-	1	5	FALSE	TRUE	1.18	70.44	'two-sided'	0.24	1.00	'Bonf'	3.36E-01	0.21
6	exp_num	-	1	6	FALSE	TRUE	1.39	77.29	'two-sided'	0.17	1.00	'Bonf'	4.38E-01	0.24
7	exp_num	-	2	3	FALSE	TRUE	0.06	98.08	'two-sided'	0.95	1.00	'Bonf'	1.74E-01	0.01
8	exp_num	-	2	4	FALSE	TRUE	-1.17	114.8 3	'two-sided'	0.25	1.00	'Bonf'	3.22E-01	-0.21
9	exp_num	-	2	5	FALSE	TRUE	-0.32	112.1 0	'two-sided'	0.75	1.00	'Bonf'	1.89E-01	-0.06
10	exp_num	-	2	6	FALSE	TRUE	0.38	114.1 8	'two-sided'	0.70	1.00	'Bonf'	1.96E-01	0.07
11	exp_num	-	3	4	FALSE	TRUE	-1.39	97.05	'two-sided'	0.17	1.00	'Bonf'	4.06E-01	-0.25
12	exp_num	-	3	5	FALSE	TRUE	-0.46	127.8 9	'two-sided'	0.65	1.00	'Bonf'	1.92E-01	-0.08
13	exp_num	-	3	6	FALSE	TRUE	0.38	94.48	'two-sided'	0.70	1.00	'Bonf'	1.90E-01	0.07
14	exp_num	-	4	5	FALSE	TRUE	0.97	111.5 5	'two-sided'	0.34	1.00	'Bonf'	2.65E-01	0.17
15	exp_num	-	4	6	FALSE	TRUE	1.41	122.5 8	'two-sided'	0.16	1.00	'Bonf'	4.35E-01	0.25
16	exp_num	-	5	6	FALSE	TRUE	0.68	108.6 6	'two-sided'	0.50	1.00	'Bonf'	2.27E-01	0.12

Table A.12-2 (Reproduced). T-test comparison of RT across Experiment 1-6 and the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices). #, number of t-tests; exp_num, study number; trial_type, one of the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test.

17	trial_type * exp_num	Н	1	2	FALSE	TRUE	0.10	115.61	'two-sided'	0.92	1.00	'Bonf'	1.78E-01	0.02
18	trial_type * exp_num	Н	1	3	FALSE	TRUE	0.18	108.07	'two-sided'	0.86	1.00	'Bonf'	1.74E-01	0.03
19	trial type * exp. num	н	1	4	FALSE	TRUE	-1.11	111.45	'two-sided'	0.27	1.00	'Bonf'	2 98E-01	-0.20
	uni_type exp_num				THESE	mol			tiro bided	0.27	1.00	Bolli	2.002.01	0.20
20	trial_type * exp_num	Н	1	5	FALSE	TRUE	0.28	108.20	'two-sided'	0.78	1.00	'Bonf'	1.84E-01	0.05
21	trial_type * exp_num	Н	1	6	FALSE	TRUE	-0.17	106.02	'two-sided'	0.86	1.00	'Bonf'	1.83E-01	-0.03
22	trial_type * exp_num	Н	2	3	FALSE	TRUE	0.04	86.24	'two-sided'	0.97	1.00	'Bonf'	1.74E-01	0.01
23	trial_type * exp_num	Н	2	4	FALSE	TRUE	-1.15	112.54	'two-sided'	0.25	1.00	'Bonf'	3.16E-01	-0.21
24	trial_type * exp_num	Н	2	5	FALSE	TRUE	0.14	86.70	'two-sided'	0.89	1.00	'Bonf'	1.82E-01	0.03
25	trial_type * exp_num	Н	2	6	FALSE	TRUE	-0.24	109.27	'two-sided'	0.81	1.00	'Bonf'	1.88E-01	-0.04
26	trial_type * exp_num	Н	3	4	FALSE	TRUE	-1.38	83.19	'two-sided'	0.17	1.00	'Bonf'	4.01E-01	-0.25
27	trial_type * exp_num	Н	3	5	FALSE	TRUE	0.14	136.63	'two-sided'	0.89	1.00	'Bonf'	1.76E-01	0.02
28	trial_type * exp_num	Н	3	6	FALSE	TRUE	-0.31	80.33	'two-sided'	0.76	1.00	'Bonf'	1.85E-01	-0.06
29	trial_type * exp_num	Н	4	5	FALSE	TRUE	1.46	83.67	'two-sided'	0.15	1.00	'Bonf'	4.56E-01	0.26
30	trial_type * exp_num	Н	4	6	FALSE	TRUE	0.76	121.82	'two-sided'	0.45	1.00	'Bonf'	2.28E-01	0.14
31	trial_type * exp_num	Н	5	6	FALSE	TRUE	-0.38	80.77	'two-sided'	0.70	1.00	'Bonf'	1.96E-01	-0.07
32	trial_type * exp_num	LE	1	2	FALSE	TRUE	1.28	67.01	'two-sided'	0.21	1.00	'Bonf'	3.75E-01	0.22
33	trial_type * exp_num	LE	1	3	FALSE	TRUE	1.29	66.09	'two-sided'	0.20	1.00	'Bonf'	3.69E-01	0.22
34	trial_type * exp_num	LE	1	4	FALSE	TRUE	1.15	68.77	'two-sided'	0.25	1.00	'Bonf'	3.12E-01	0.20
35	trial_type * exp_num	LE	1	5	FALSE	TRUE	1.15	67.30	'two-sided'	0.25	1.00	'Bonf'	3.25E-01	0.20
36	trial_type * exp_num	LE	1	6	FALSE	TRUE	1.51	66.08	'two-sided'	0.14	1.00	'Bonf'	5.08E-01	0.26
37	trial_type * exp_num	LE	2	3	FALSE	TRUE	0.06	106.47	'two-sided'	0.96	1.00	'Bonf'	1.74E-01	0.01
38	trial_type * exp_num	LE	2	4	FALSE	TRUE	-0.58	108.98	'two-sided'	0.57	1.00	'Bonf'	2.00E-01	-0.11
39	trial_type * exp_num	LE	2	5	FALSE	TRUE	-0.72	120.93	'two-sided'	0.47	1.00	'Bonf'	2.28E-01	-0.13
40	trial_type * exp_num	LE	2	6	FALSE	TRUE	1.46	103.57	'two-sided'	0.15	1.00	'Bonf'	4.86E-01	0.27
41	trial_type * exp_num	LE	3	4	FALSE	TRUE	-0.67	94.46	'two-sided'	0.50	1.00	'Bonf'	2.04E-01	-0.12
42	trial_type * exp_num	LE	3	5	FALSE	TRUE	-0.86	118.55	'two-sided'	0.39	1.00	'Bonf'	2.45E-01	-0.15
43	trial_type * exp_num	LE	3	6	FALSE	TRUE	1.68	132.43	'two-sided'	0.09	1.00	'Bonf'	6.45E-01	0.29
44	trial_type * exp_num	LE	4	5	FALSE	TRUE	-0.04	117.60	'two-sided'	0.97	1.00	'Bonf'	1.72E-01	-0.01
45	trial_type * exp_num	LE	4	6	FALSE	TRUE	1.80	93.45	'two-sided'	0.08	1.00	'Bonf'	7.63E-01	0.32
46	trial_type * exp_num	LE	5	6	FALSE	TRUE	2.21	115.54	'two-sided'	0.03	0.87	'Bonf'	1.66E+00	0.39

Table A.12-3 (Reproduced). T-test comparison of RT across Experiment 1-6 and the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices). #, number of t-tests; exp_num, study number; trial_type, one of the trial types (H: trials classified as exp. neglect-based choices, LE: trials classified as LE-based choices); Paired, TRUE = a pairwise t-test, FALSE = a two sample t-test; Parametric, TRUE = a parametric t-test; dof, degree of freedom for each t-test; alternative, one-sided or two-sided t-tests; p-unc, unadjusted p-value; p-corr, corrected p-value using a method indicated in a 'p-adjust' cell; bonf, Bonferroni correction method; A custom MATLAB code, equivalent to the function of the *Pingouin* package, was used to conduct the t-test.