Supplementary Information for: Trial order causes systematic misestimation of economic choice traits in humans.

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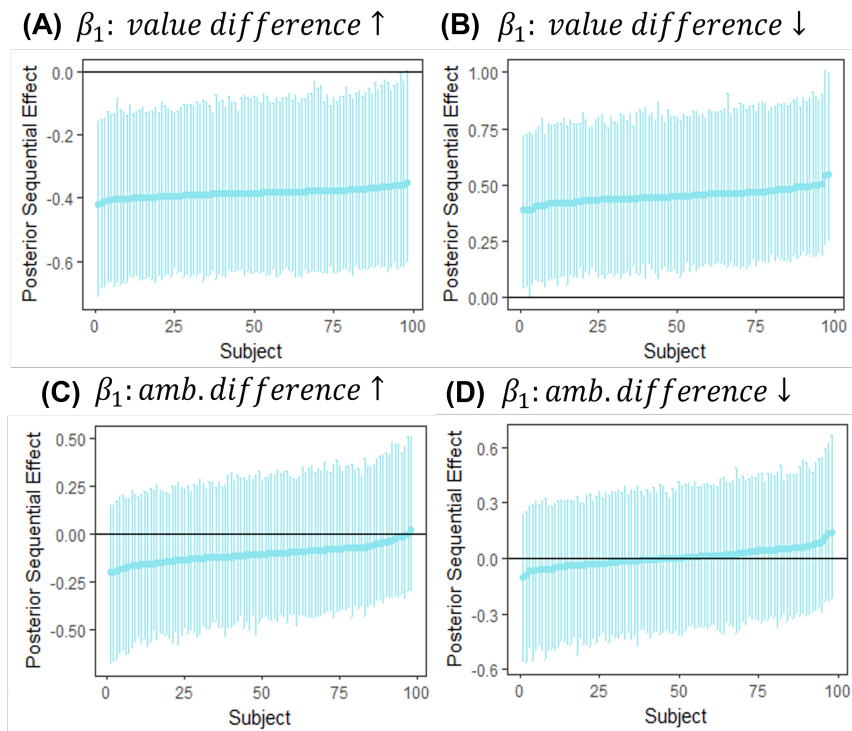
Keywords

Figure S1: **Participants in the AMB task show sequential dependencies on the drift rate EV term: "main effects" of value difference but not ambiguity difference.** Sorted posterior 95% Credible Intervals of sequential effects on the drift rate Expected Value term β_1, Equation 8, when successive trials (A) increase in value difference, (B) decrease in value difference, (C) increase in ambiguity difference, and (D) decrease ambiguity difference as summarized in table S4.

ITC	β_0	β_1	β_2	bias
value $\uparrow$	0.34(0.02)	−2.72(0.07)	*	−0.06(0.004)
value $\downarrow$	−0.50(0.02)	3.67(0.10)	−2.12(0.38)	0.05(0.004)
delay $\uparrow$	−0.35(0.01)	−0.14(0.04)	9.95(0.4)	0.03(0.002)
delay $\downarrow$	0.32(0.01)	0.19(0.04)	−7.77(0.29)	−0.03(0.004)
$v.\uparrow d.\uparrow$	0.08(0.02)	−1.06(0.05)	6.06(1.00)	*
$v.\uparrow d.\downarrow$	0.45(0.01)	−0.63(0.04)	−1.35(0.23)	−0.06(0.004)
$v.\downarrow d.\uparrow$	*	3.14(0.12)	−5.78(0.31)	*
$v.\downarrow d.\downarrow$	*	3.14(0.12)	−5.78(0.31)	*

Table S1: **ITC: Widespread sequential effects across drift rate and bias terms.** Participants in ITC show sequential effects across all trial sequence types and all four RT parameters (see Equation 5, main text). All results reported in a cell are posterior sequential effect group means (*mean (standard deviation)*) and have a BF > 3 if they are non-zero. If instead there is a H_0 then we find evidence (BF > 3) in favor of the null. Finally, if a cell contains an asterisk (∗) then the data does not contain enough evidence to favor either the null or alternative hypothesis.

AMB	β_0	β_1	β_2	bias
value $\uparrow$	H_0	−0.38(0.12)	H_0	H_0
value $\downarrow$	*	0.45(0.11)	*	H_0
amb $\uparrow$	H_0	*	−0.29(0.07)	H_0
amb $\downarrow$	H_0	H_0	0.32(0.09)	H_0
$v.\uparrow a.\uparrow$	H_0	*	H_0	H_0
$v\uparrow a.\downarrow$	H_0	*	0.59(0.13)	H_0
$v.\downarrow a.\uparrow$	H_0	*	*	H_0
$v.\downarrow a.\downarrow$	*	0.5(0.16)	H_0	H_0

Table S2: **AMB: Sequential effects are restricted to drift rate decomposition parameters.** Sequential effects are more selective compared to ITC. Specifically, they are related to online evidence accumulation and are only on the terms that include trial property information (see Equation 6, main text). Cell interpretations are as in Table S1.