

Supplementary Material

Testing Biased Competition Between Attention Shifts – The New Multiple Cue Paradigm

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Table 1*Parameter estimates from Experiment 1 for trials without fixation control.*

Participant	τ_0	C_I	w_c	C_V^{-1}	ω_0	ω_1	ω_2	ω_3	ω_4	k	R^2	$\log(ML)$
2	0.257	4.13	64.5	101.6	0.00	1.00	1.5E+02	2.4E+04	3.7E+06	5.04	0.934	-1741.1
3	0.278	4.45	304.6	82.1	0.08	1.00	5.2E+00	2.7E+01	1.4E+02	1.65	0.901	-1621.2
4	-0.054	1.01	86.9	160.2	0.05	1.00	1.4E+00	2.0E+00	2.8E+00	0.35	0.914	-2249.1
6	0.010	0.51	140.2	200.0	0.02	1.00	1.6E+54	2.6E+108	4.3E+162	124.83	0.907	-1991.9
7	-0.016	2.72	64.7	31.2	0.01	1.00	2.6E+04	6.7E+08	1.7E+13	10.16	0.915	-1840.2
8	0.088	2.26	53.9	78.8	0.01	1.00	2.6E+03	6.5E+06	1.7E+10	7.85	0.927	-1854.7
9	0.070	4.21	29.4	99.0	0.00	1.00	4.8E+02	2.3E+05	1.1E+08	6.17	0.922	-1752.0
10	0.054	3.08	15.0	54.9	0.01	1.00	4.5E+01	2.0E+03	9.1E+04	3.81	0.925	-2090.2
30	0.114	3.68	32.2	81.7	0.01	1.00	1.5E+06	2.1E+12	3.1E+18	14.20	0.934	-1740.0
31	0.130	2.50	53.9	157.3	0.00	1.00	7.2E+00	5.1E+01	3.7E+02	1.97	0.934	-2062.0
Mean	0.093	2.86	84.5	104.7	0.02		1.6E+53	2.6E+107	4.3E+161	17.60	0.921	-1894.2
SD	0.108	1.34	84.9	52.3	0.03		5.1E+53	8.4E+107	Inf	37.91	0.012	196.8

¹ Since only one exposure duration was used for the target letters, it was difficult to estimate the rate of visual

processing. We therefore fixed the maximum value to 200 Hz.

Table 2*Parameter estimates from Experiment 1 for trials with fixation control.*

Participant	τ_0	C_I	w_c	C_V	ω_0	ω_1	ω_2	ω_3	ω_4	k	R^2	$\log(ML)$
2	-0.058	2.16	15.6	56.8	0.00	1.00	1.6E+02	2.5E+04	4.0E+06	5.06	0.902	-2047.6
3	0.280	14.05	39.3	26.7	0.21	1.00	4.1E+00	1.7E+01	7.1E+01	1.42	0.920	-1819.7
4	0.108	2.95	6.5	26.6	0.06	1.00	1.9E+00	3.4E+00	6.4E+00	0.62	0.939	-2237.0
6	0.209	5.16	30.0	20.6	0.51	1.00	1.2E+01	1.4E+02	1.7E+03	2.48	0.888	-1834.5
7	0.124	2.24	62.6	19.8	0.02	1.00	9.7E+07	9.5E+15	9.3E+23	18.39	0.940	-1658.4
8	-0.027	0.61	163.4	189.9	0.02	1.00	7.6E+57	5.7E+115	4.4E+173	133.27	0.916	-1806.9
9	0.072	1.50	59.5	118.3	0.00	1.00	1.4E+01	1.8E+02	2.5E+03	2.60	0.923	-2044.3
10	0.203	3.32	31.3	56.6	0.07	1.00	4.5E+01	2.1E+03	9.3E+04	3.81	0.916	-1940.2
30	-0.034	3.35	11.8	34.5	0.02	1.00	2.9E+09	8.3E+18	2.4E+28	21.78	0.937	-2664.8
31	0.110	4.20	15.0	50.2	0.02	1.00	5.8E+01	3.3E+03	1.9E+05	4.06	0.913	-2645.6
Mean	0.099	3.95	43.5	60.0	0.09		7.6E+56	5.7E+114	4.4E+172	19.35	0.919	-2069.9
SD	0.113	3.78	46.3	54.2	0.16		2.4E+57	1.8E+115	Inf	40.69	0.016	347.7

Table 3*Parameter estimates from Experiment 2.*

Participant	τ_0	C_I	w_c	C_V	ω_0	ω_2	ω_3	ω_8	ω_9	k	R^2	$\log(ML)$
7	-0.027	3.01	37.8	39.6	0.00	1.00	2.2E+10	4.9E+20	1.1E+31	23.82	0.909	-2126.7
8	-0.030	2.36	40.4	60.1	0.01	1.00	7.4E+08	5.4E+17	4.0E+26	20.42	0.902	-2109.7
9	-0.019	4.54	10.4	49.6	0.00	1.00	1.5E+01	2.4E+02	3.6E+03	2.73	0.916	-2305.9
11	-0.080	3.15	16.0	76.8	0.00	1.00	6.7E+05	4.4E+11	2.9E+17	13.41	0.883	-2009.0
21	-0.063	4.93	21.5	57.4	0.00	1.00	5.9E+10	3.5E+21	2.1E+32	24.80	0.907	-1797.0
22	-0.061	5.81	31.8	78.1	0.02	1.00	3.0E+10	9.1E+20	2.7E+31	24.13	0.896	-1408.3
23	0.082	3.48	16.3	52.5	0.02	1.00	4.4E+07	1.9E+15	8.6E+22	17.60	0.893	-2220.3
24	-0.037	2.85	21.0	58.9	0.00	1.00	6.2E+04	3.8E+09	2.3E+14	11.03	0.921	-2146.5
42	-0.051	4.36	19.1	62.1	0.00	1.00	4.1E+11	1.7E+23	6.8E+34	26.73	0.932	-1794.6
43	-0.093	2.04	8.1	54.3	0.00	1.00	7.5E+00	5.6E+01	4.2E+02	2.01	0.932	-2645.8
Mean	-0.038	3.65	22.2	58.9	0.01		5.2E+10	1.7E+22	6.8E+33	16.67	0.909	-2056.4
SD	0.048	1.21	11.0	11.7	0.01		1.3E+11	5.2E+22	2.1E+34	9.07	0.016	335.1

Table 4*Parameter estimates from Experiment 3.*

Participant	τ_0	C_I^1	w_c	C_V	ω_0	ω_1	ω_2	ω_3	ω_4	k	R^2	$\log(ML)$
7	0.094	6.11	52.1	31.0	0.00	1.00	3.2E+05	1.0E+11	3.1E+16	12.66	0.942	-2736.9
8	-0.060	1.60	62.2	81.8	0.02	1.00	7.9E+04	6.2E+09	4.9E+14	11.27	0.916	-2919.7
9	-0.060	3.73	13.3	47.2	0.00	1.00	1.4E+02	2.0E+04	2.8E+06	4.95	0.902	-2961.5
11	-0.072	1.89	18.3	83.6	0.00	1.00	1.6E+03	2.7E+06	4.4E+09	7.40	0.922	-3096.7
21	0.104	7.81	15.9	44.1	0.01	1.00	2.2E+04	4.8E+08	1.0E+13	9.99	0.922	-2836.0
22	-0.046	2.77	43.3	88.1	0.00	1.00	2.3E+05	5.5E+10	1.3E+16	12.37	0.905	-2379.9
23	0.263	20.00	16.9	40.1	0.31	1.00	9.7E+00	9.4E+01	9.1E+02	2.27	0.891	-3400.7
24	0.115	3.01	26.5	69.0	0.00	1.00	3.4E+03	1.1E+07	3.9E+10	8.13	0.896	-2897.4
42	0.066	4.44	13.3	49.4	0.00	1.00	1.7E+05	3.0E+10	5.1E+15	12.06	0.921	-2708.6
43	-0.042	0.87	7.2	35.1	0.00	1.00	5.9E+00	3.5E+01	2.1E+02	1.78	0.945	-3721.5
Mean	0.036	5.22	26.9	56.9	0.03		8.3E+04	1.9E+10	5.0E+15	8.29	0.916	-2965.9
SD	0.110	5.61	18.9	21.6	0.10		1.2E+05	3.4E+10	1.0E+16	4.11	0.018	374.6

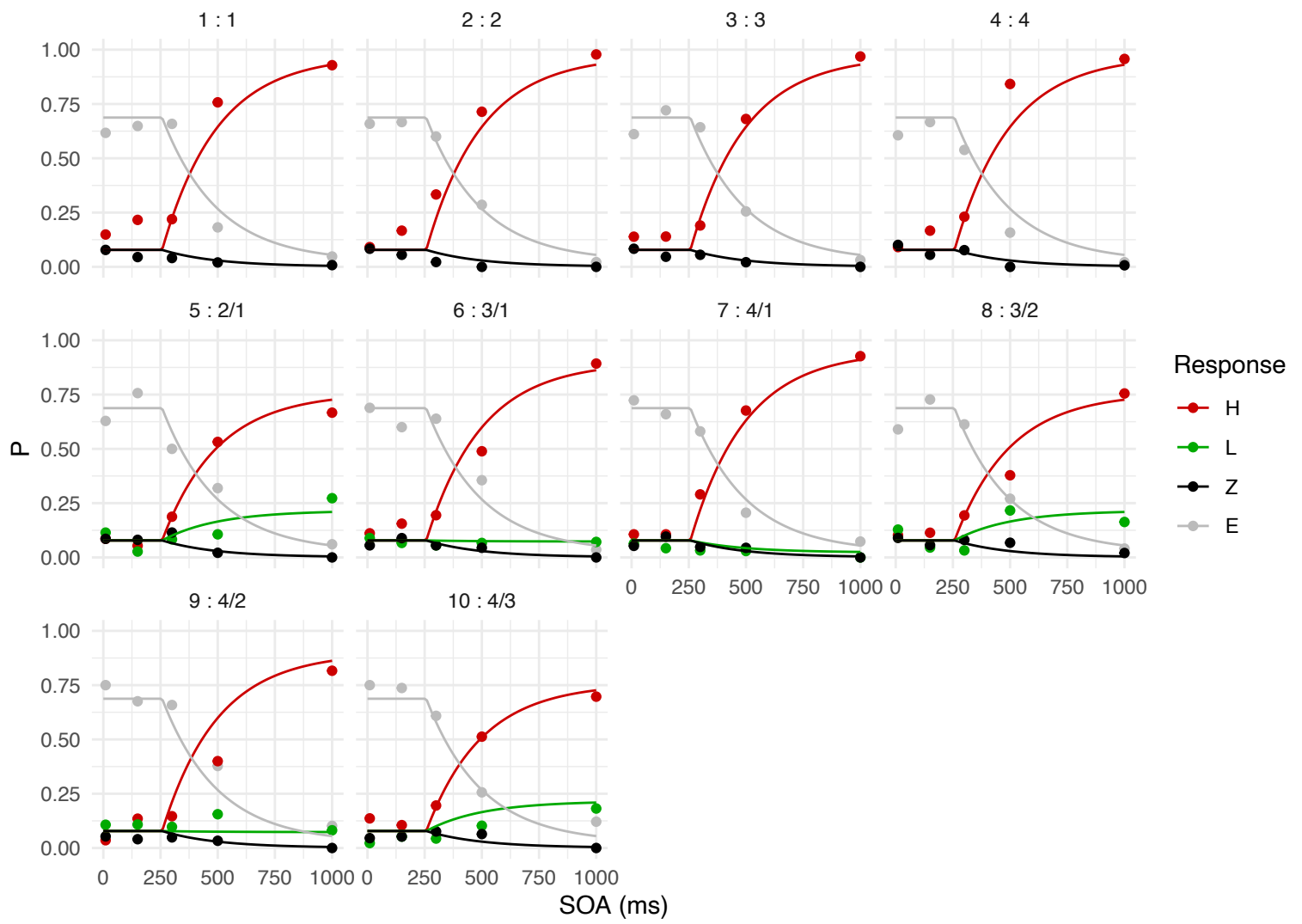
¹We limited our estimates of C_I to values below 20 Hz. Only the estimate for Participant 23 reached this maximum.

Model fits

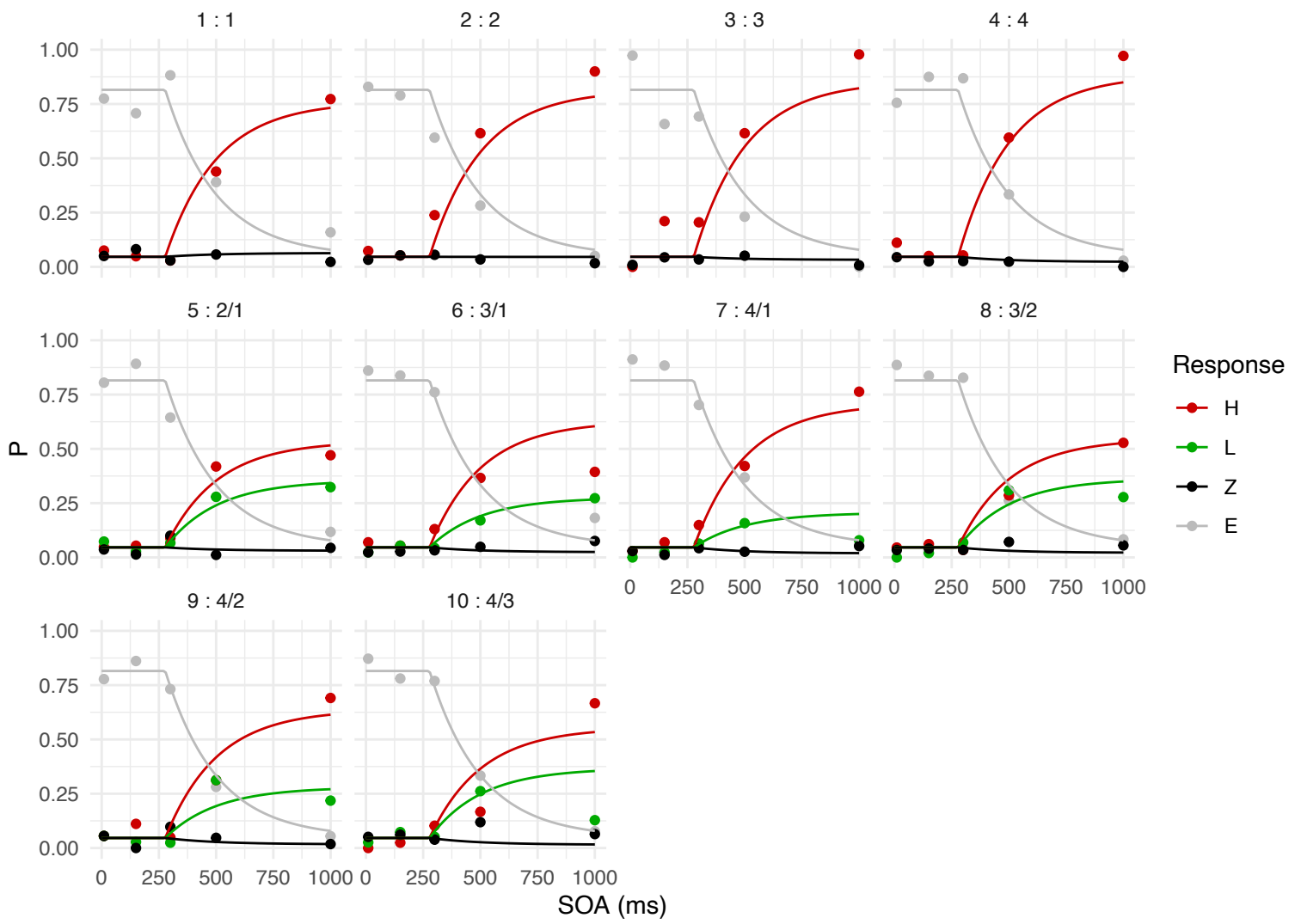
Experiment 1

Without Eye movement Control

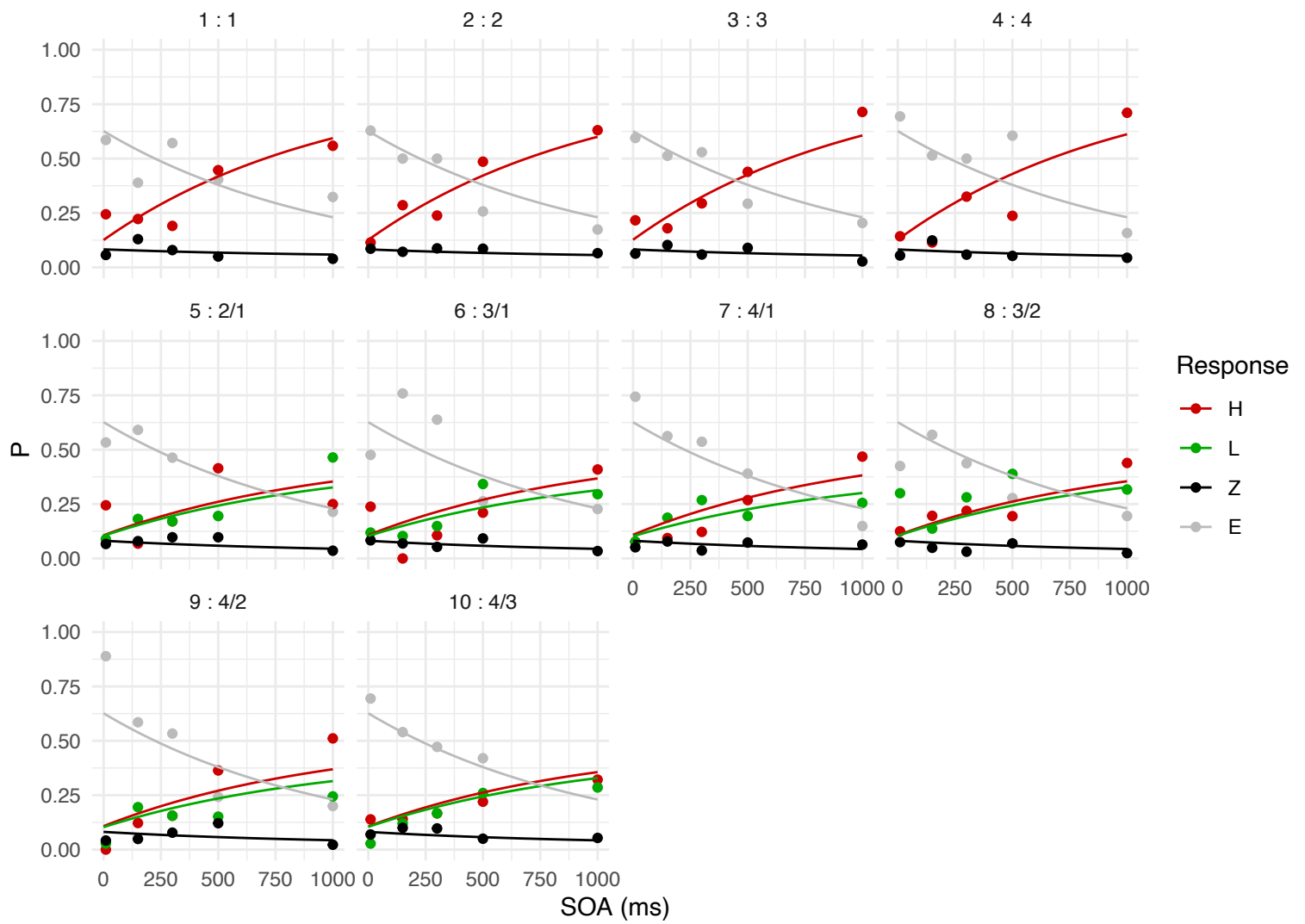
Participant 2



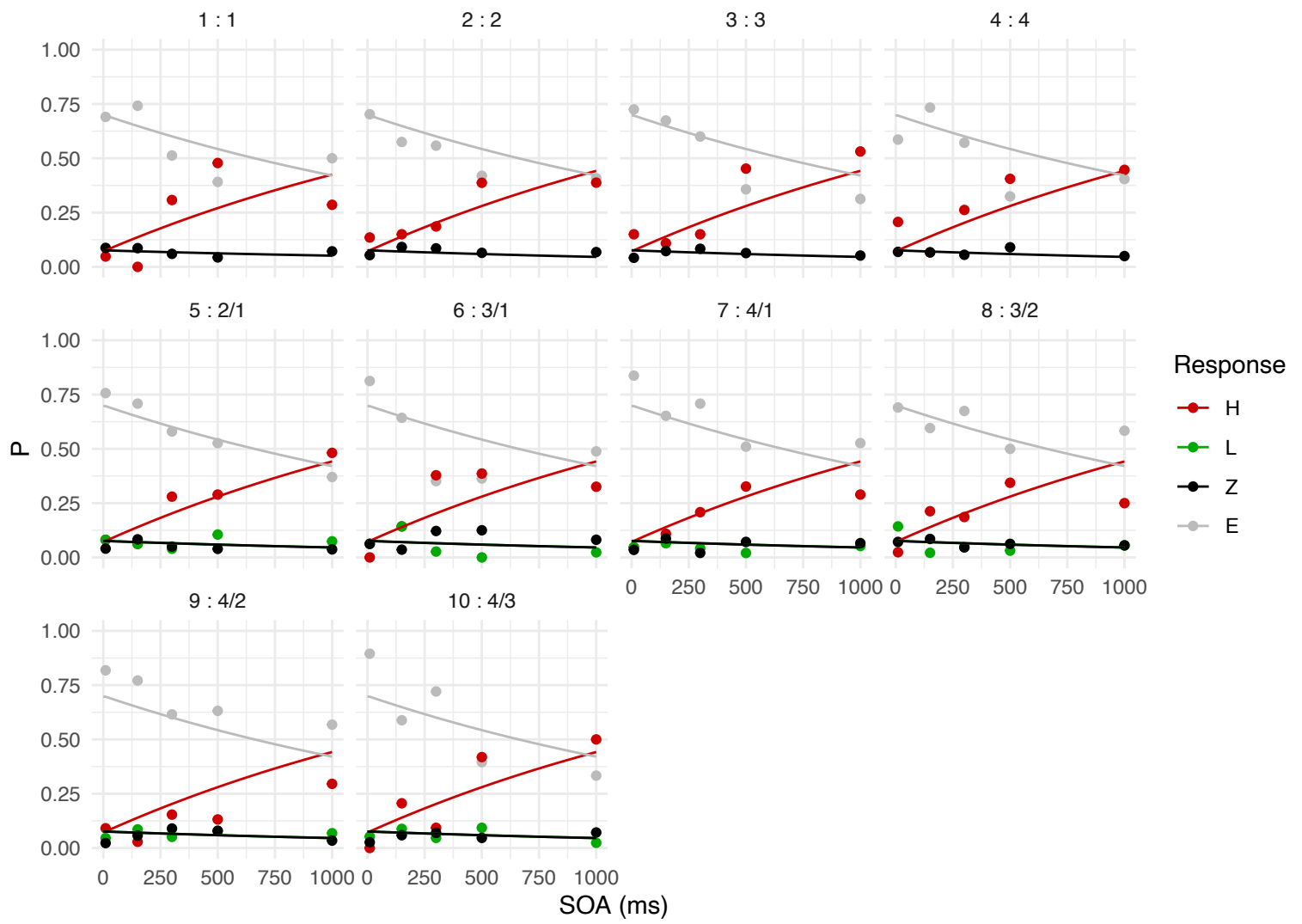
Participant 3



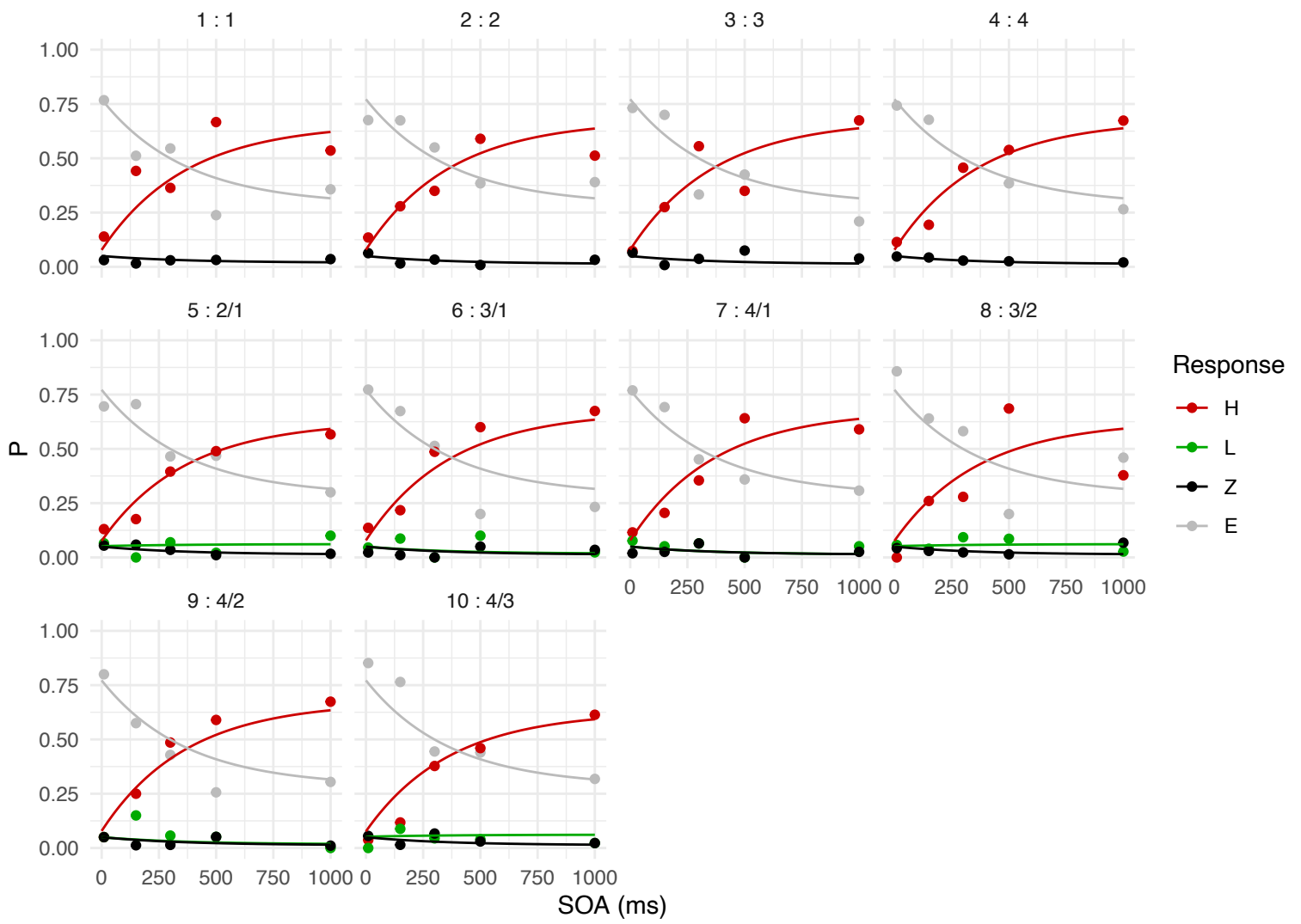
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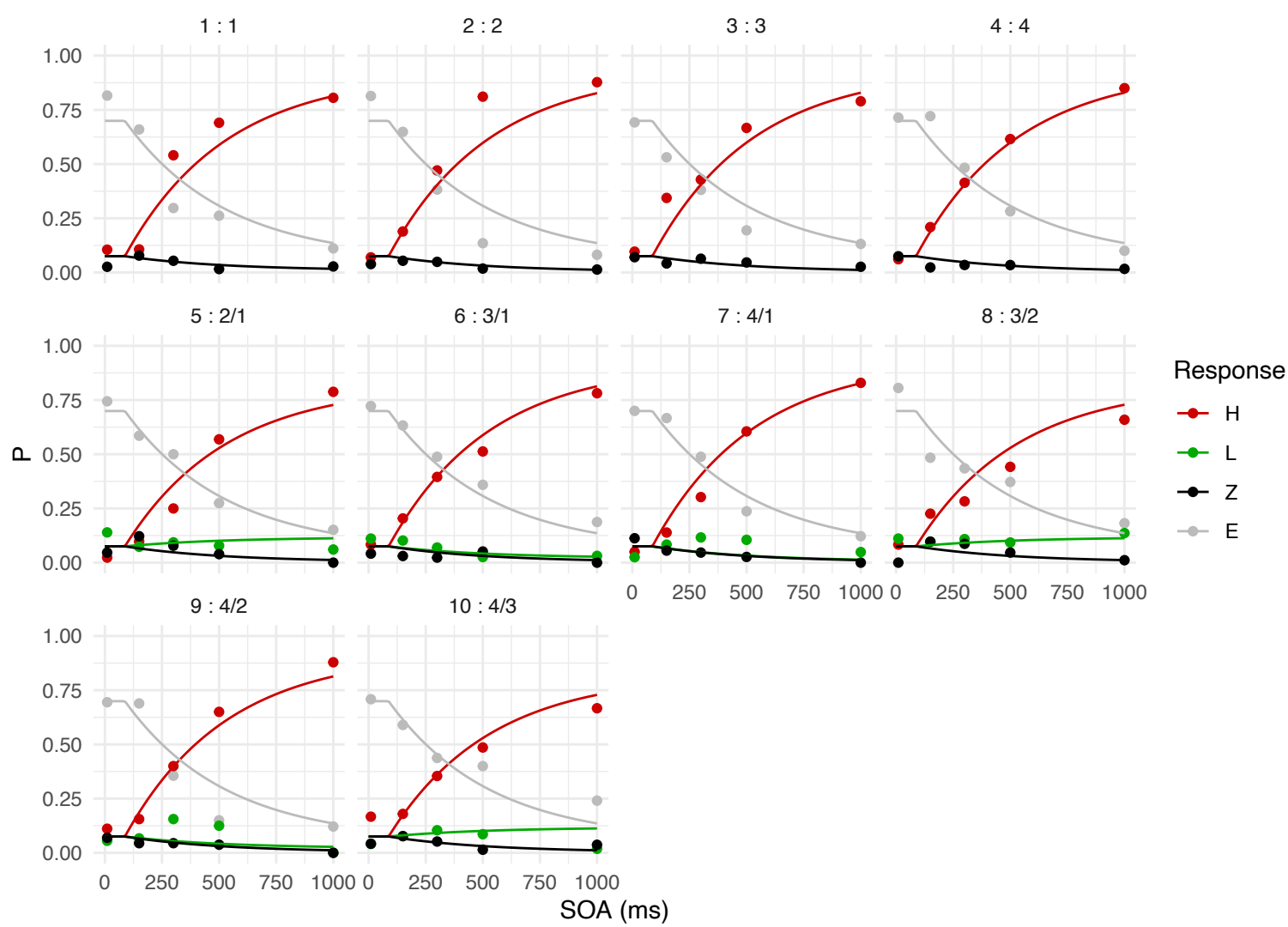
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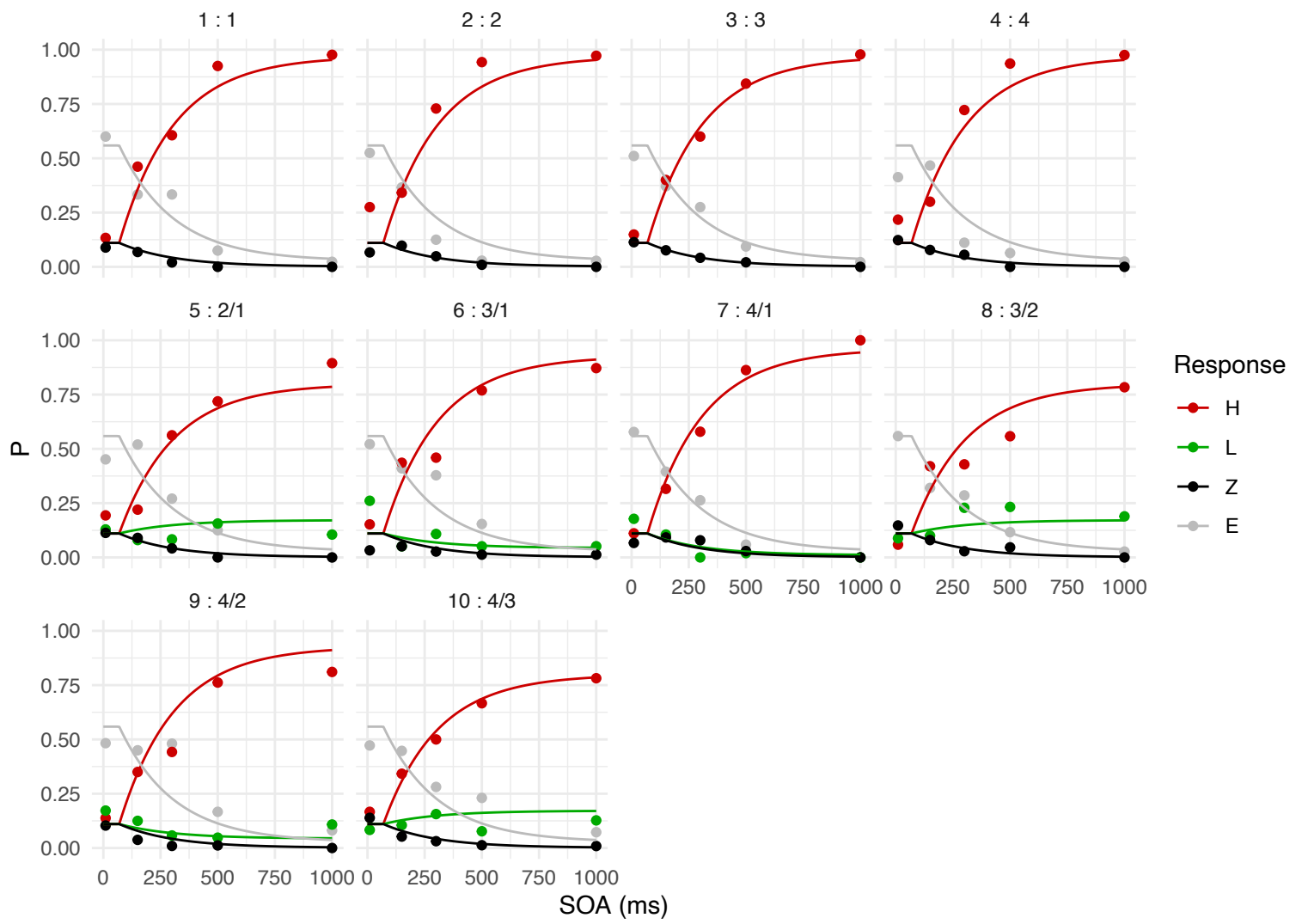
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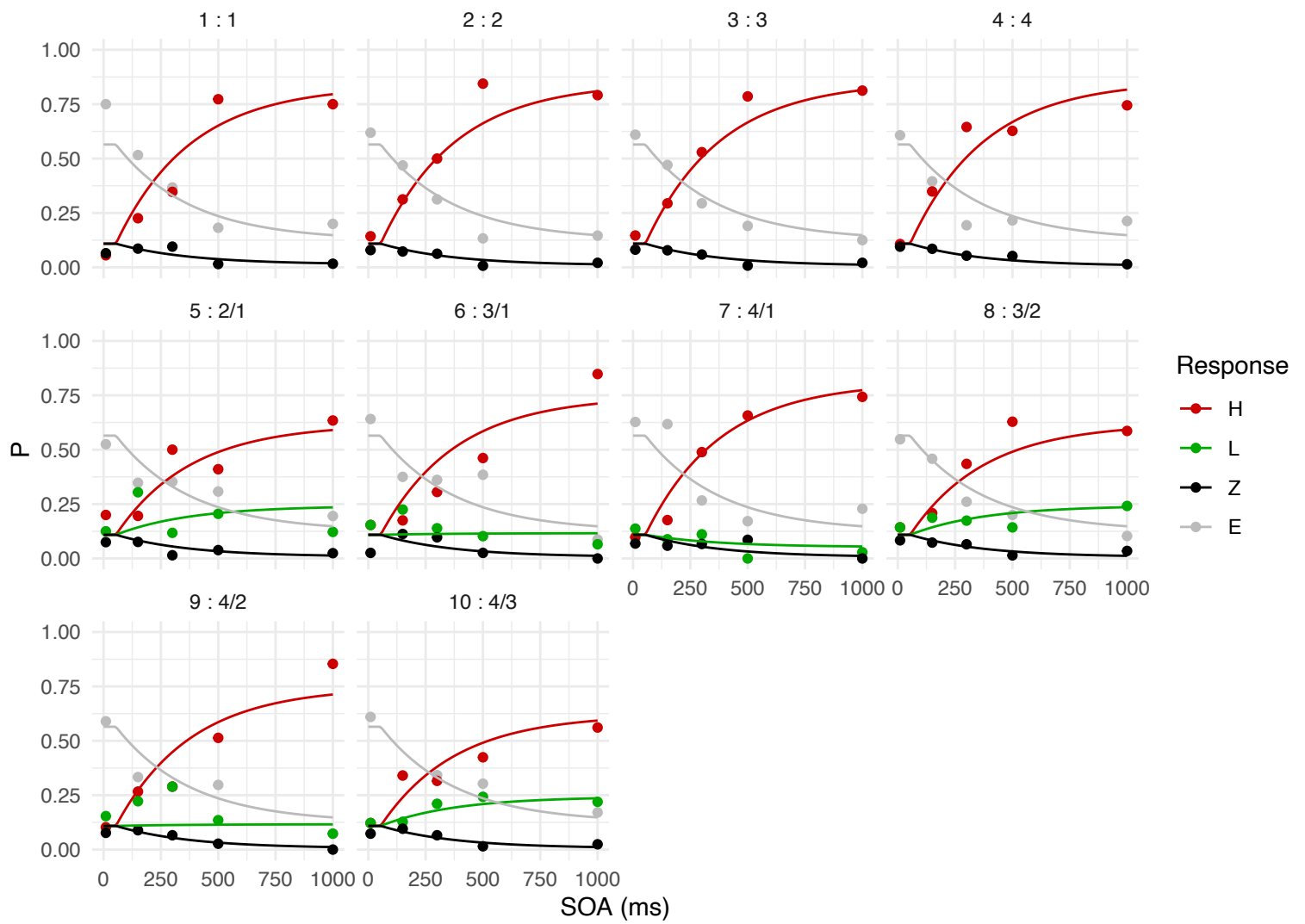
Participant 8



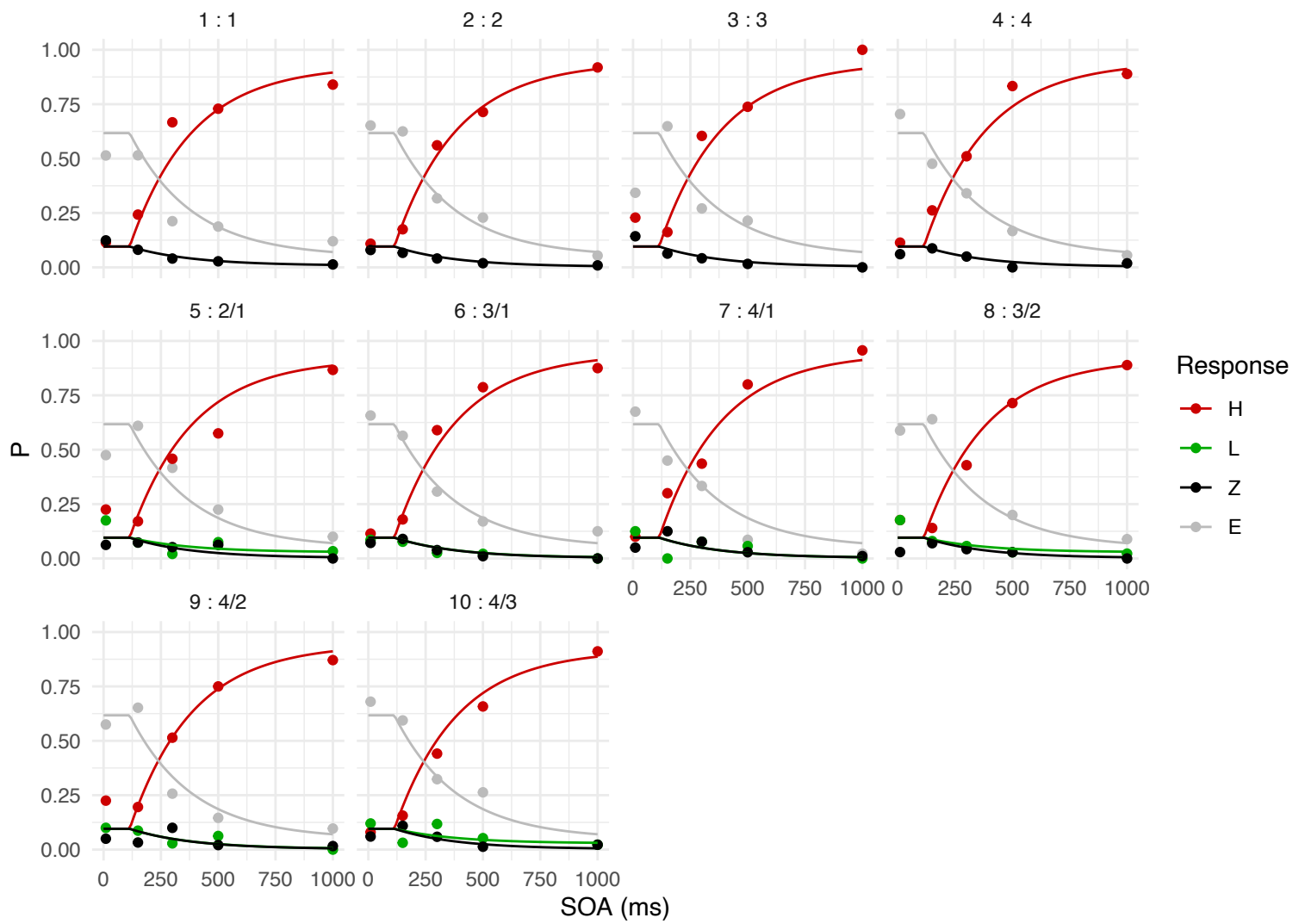
Participant 9



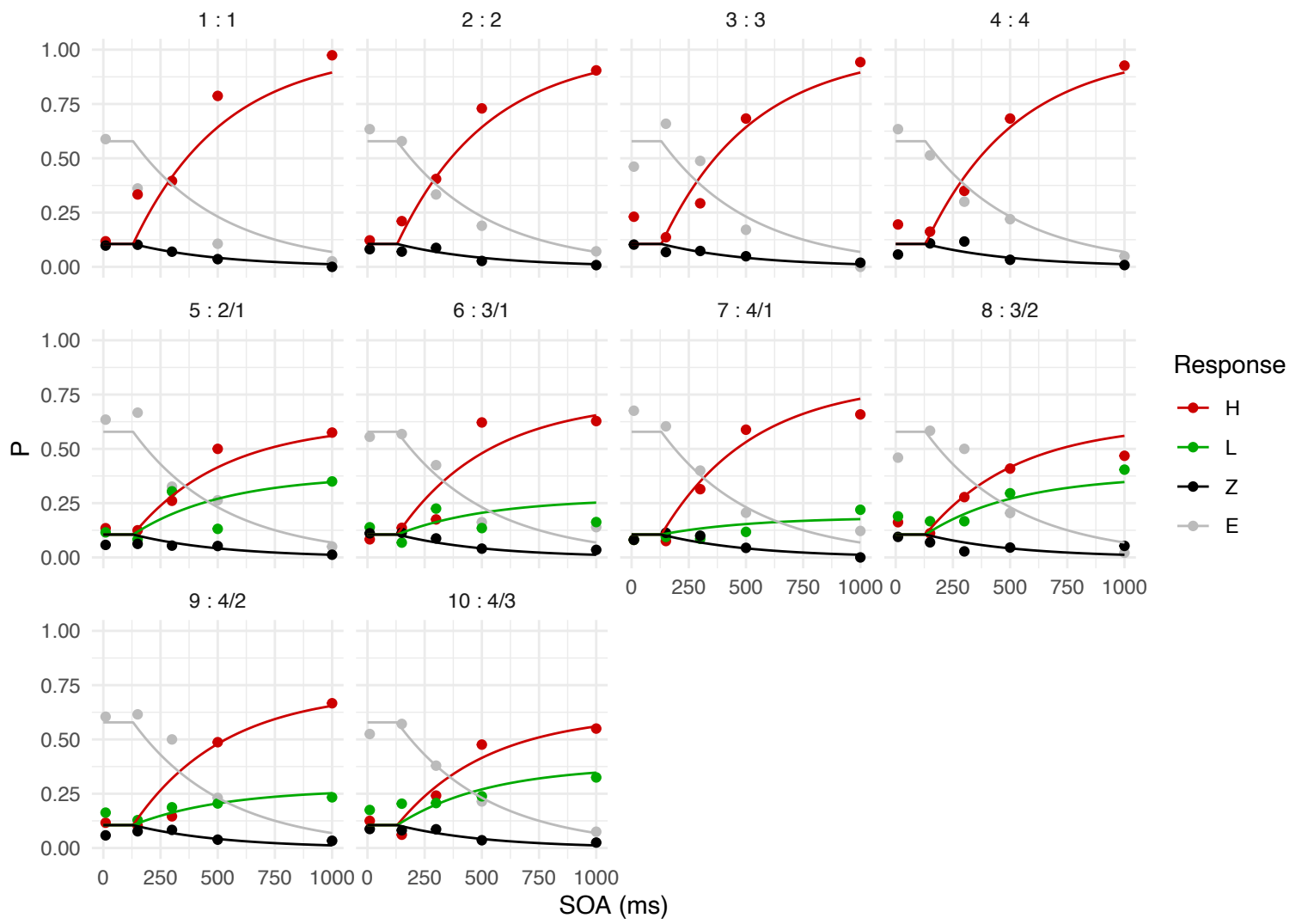
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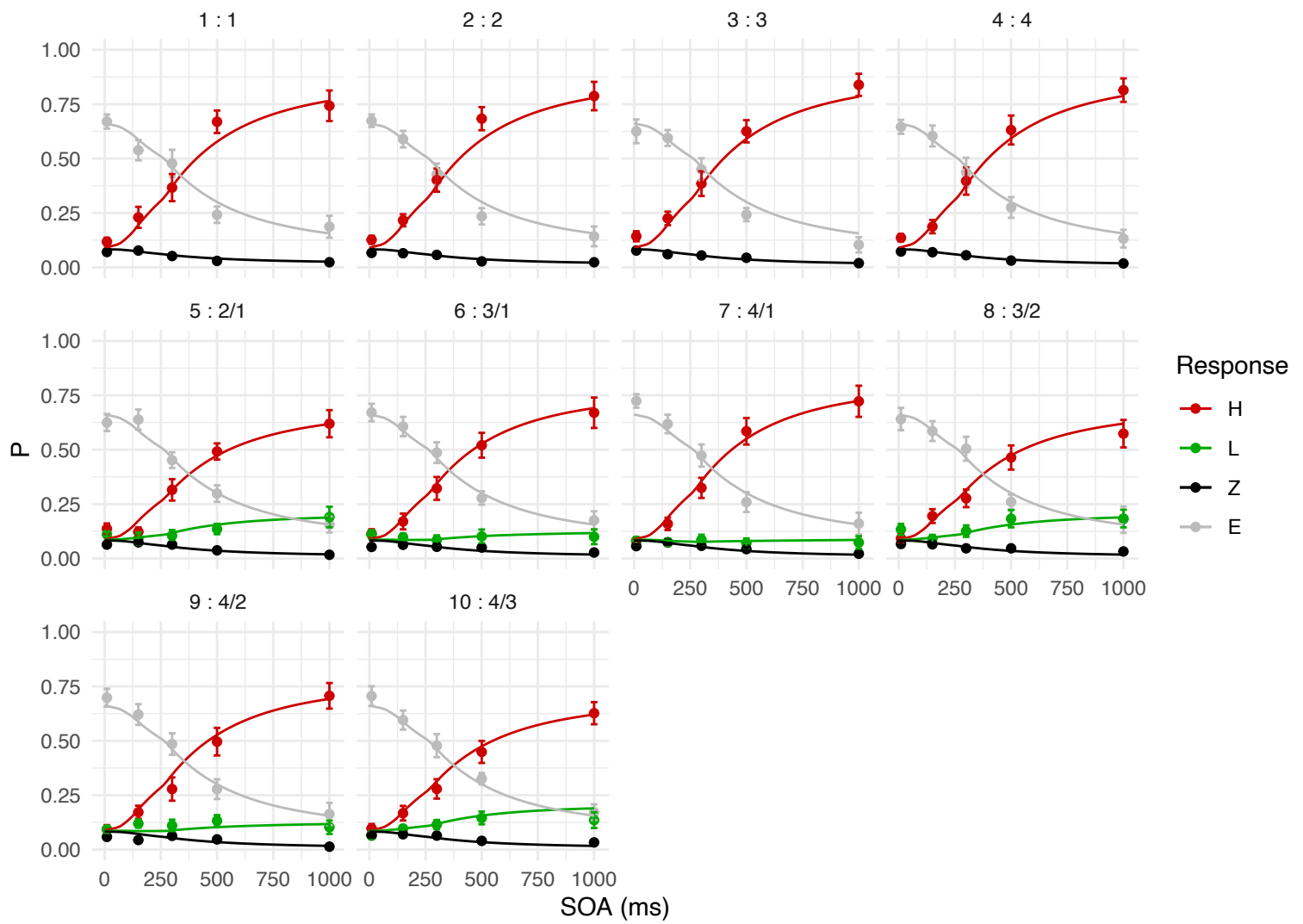
Participant 30



Participant 31



All Participants

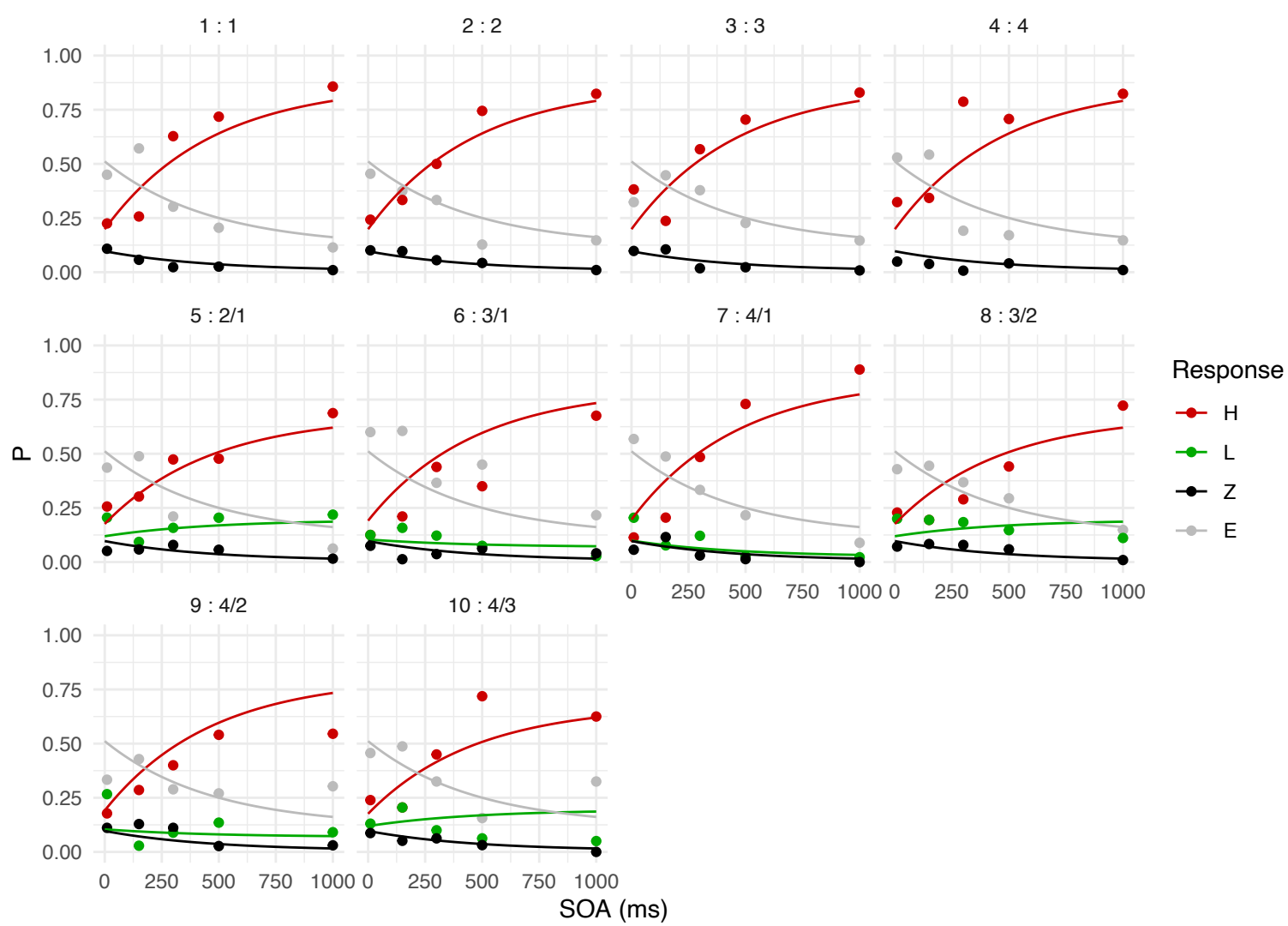


Model fits

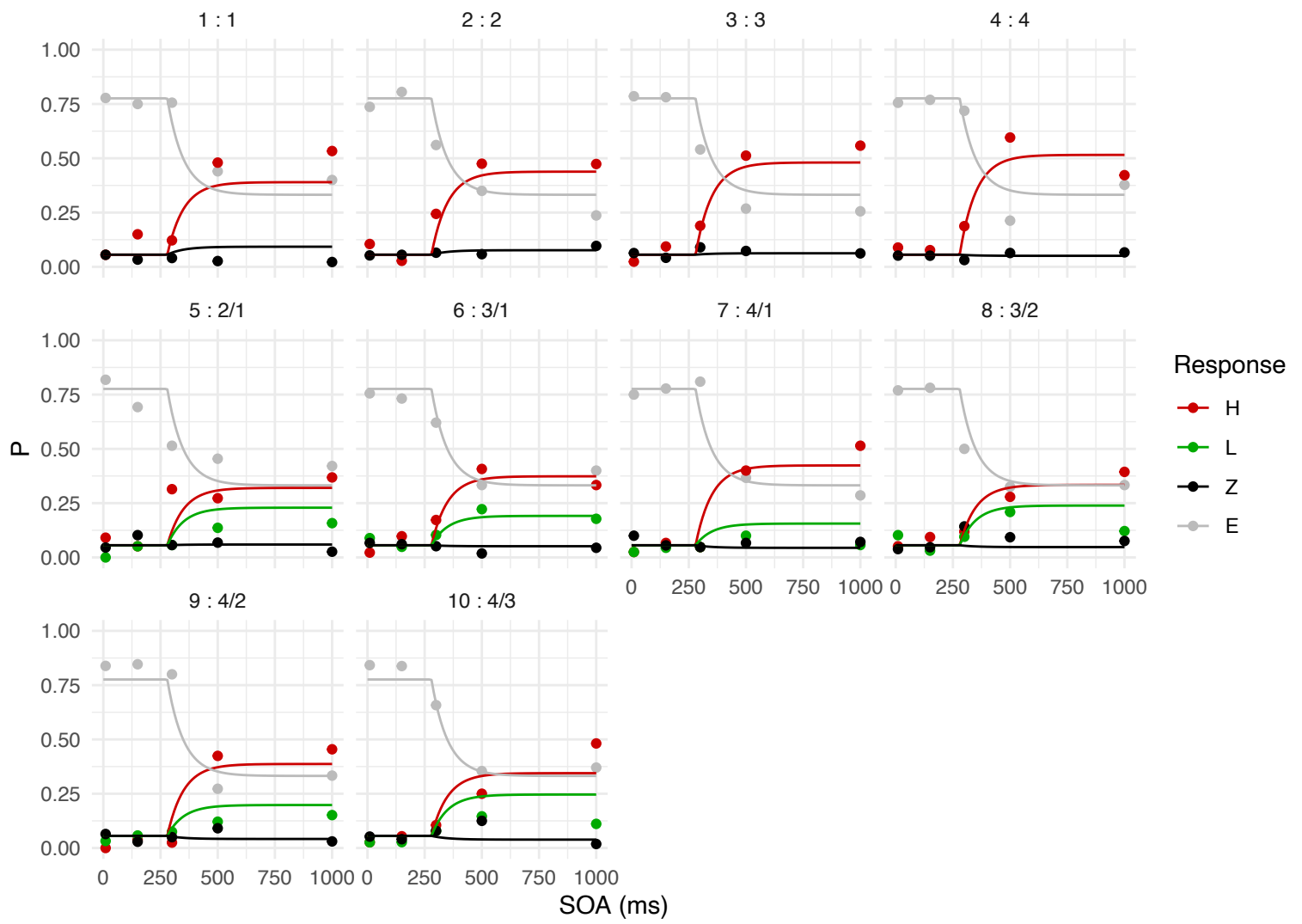
Experiment 1

With Eye movement Control

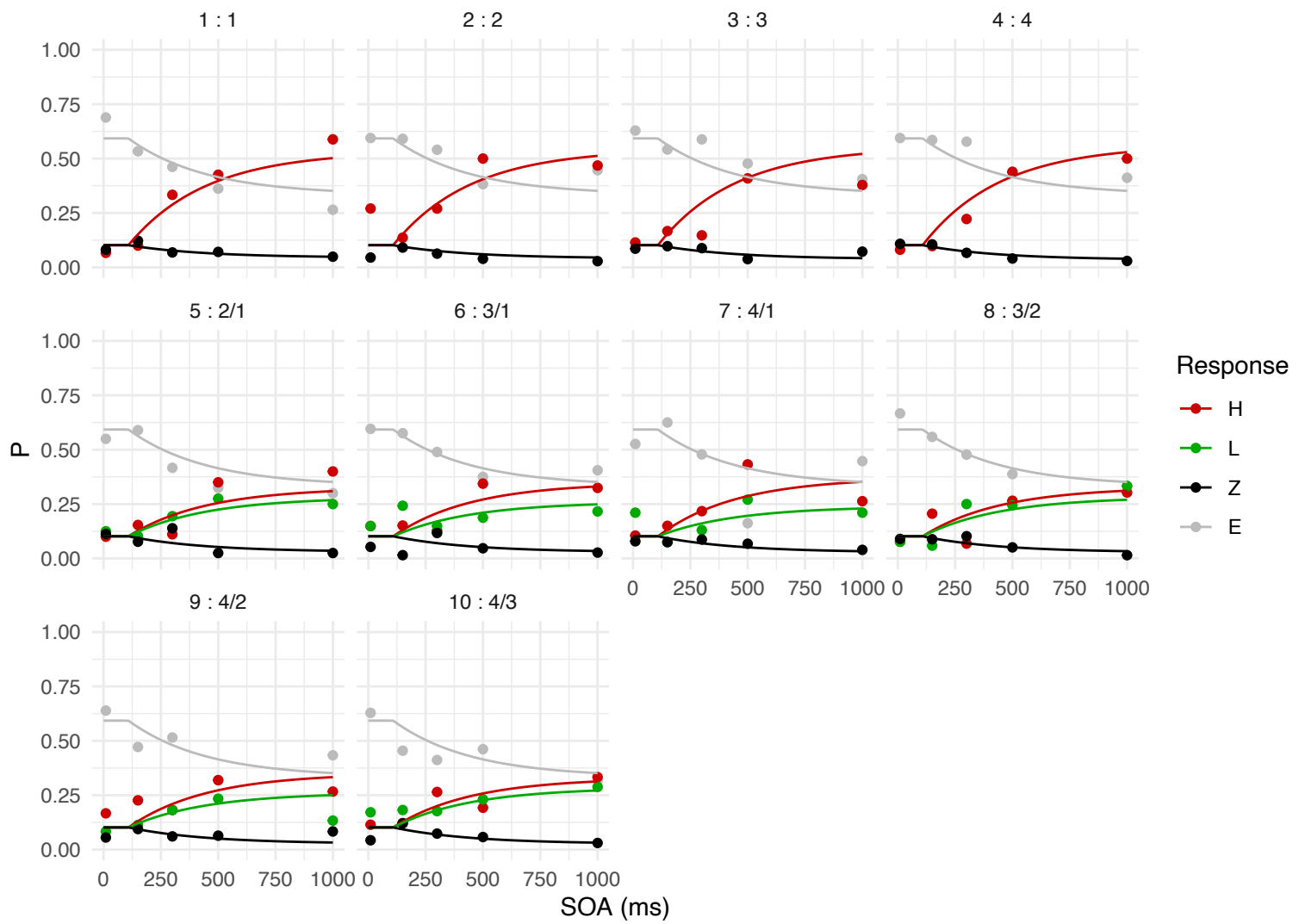
Participant 2



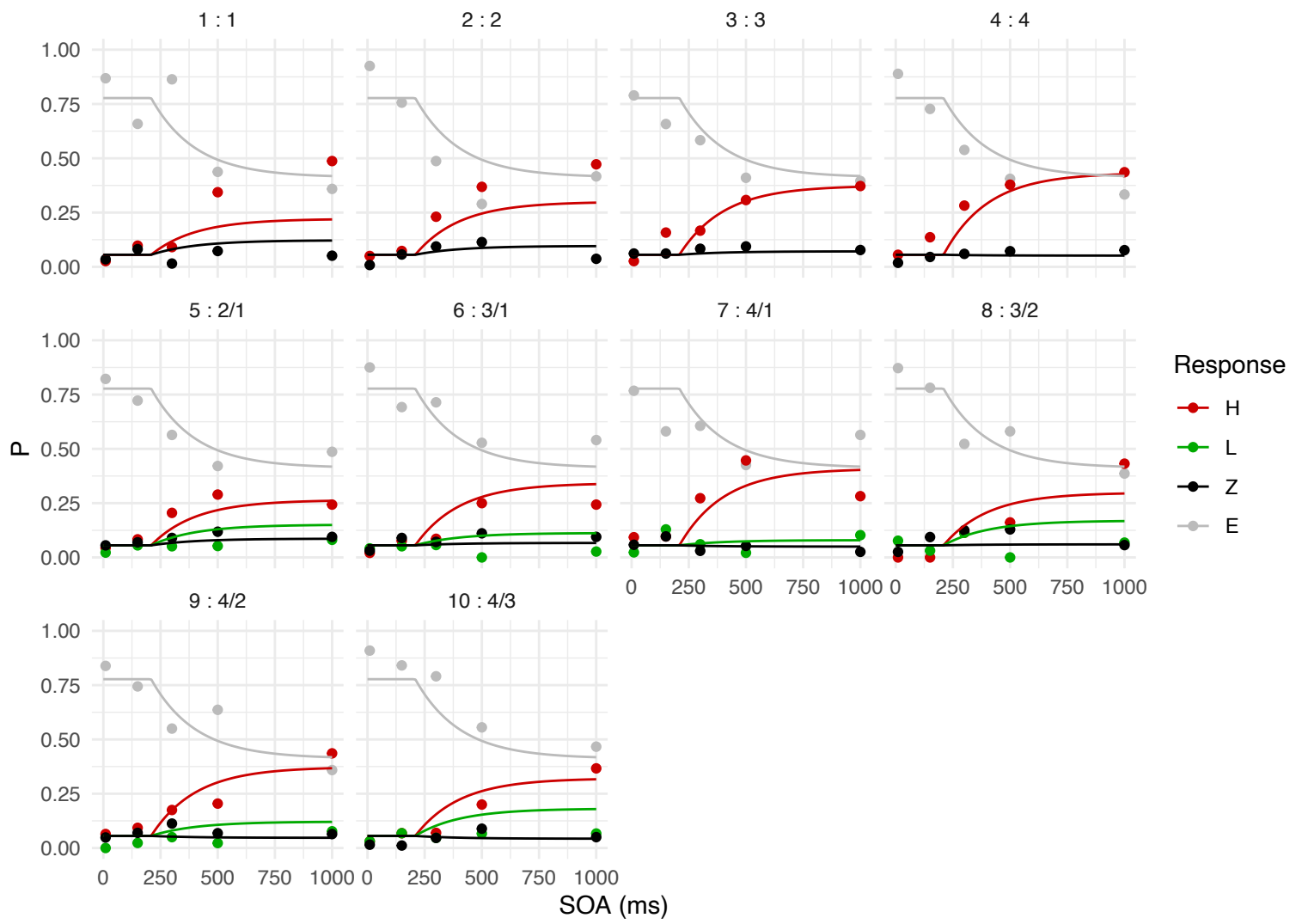
Participant 3



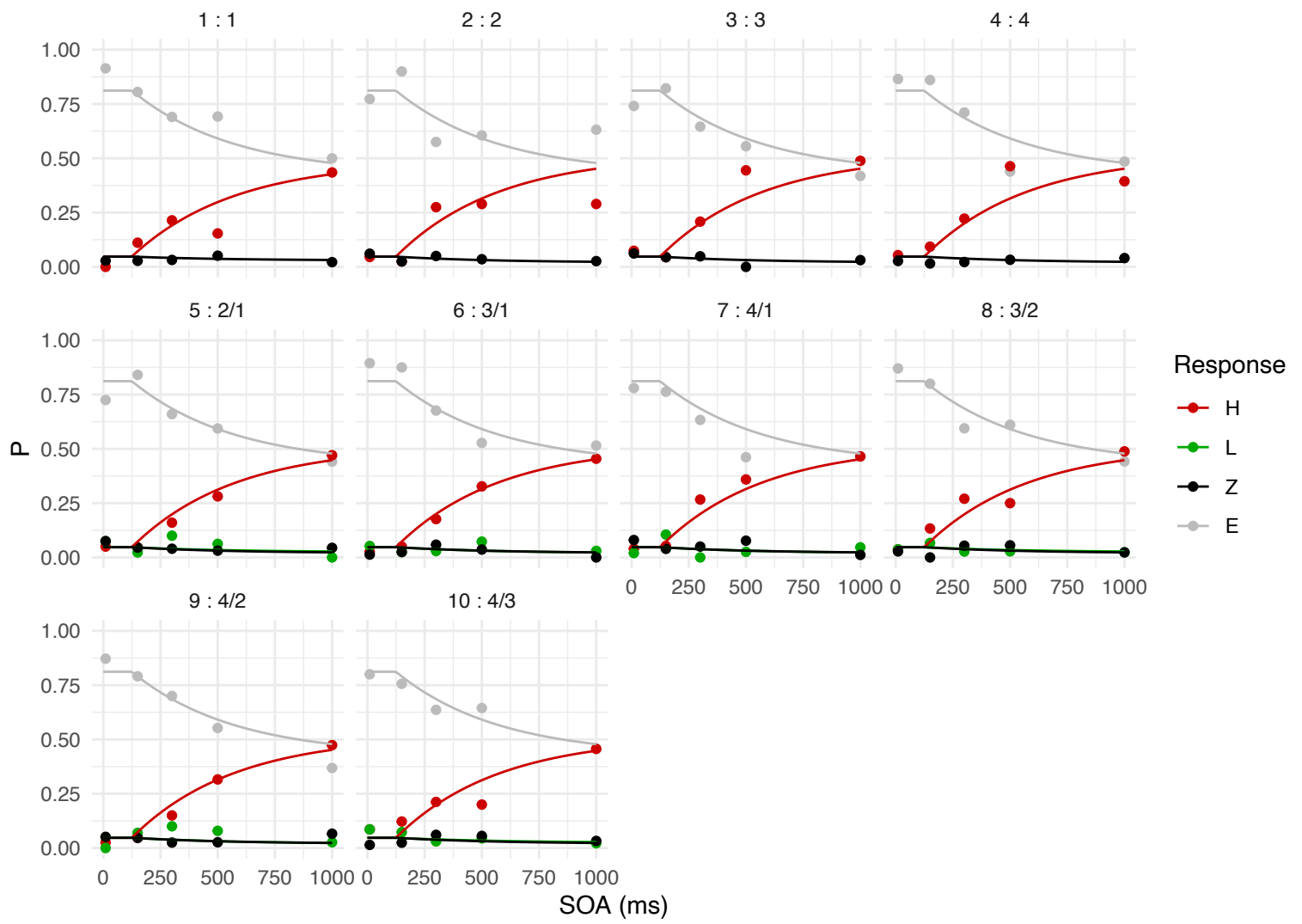
Participant 4



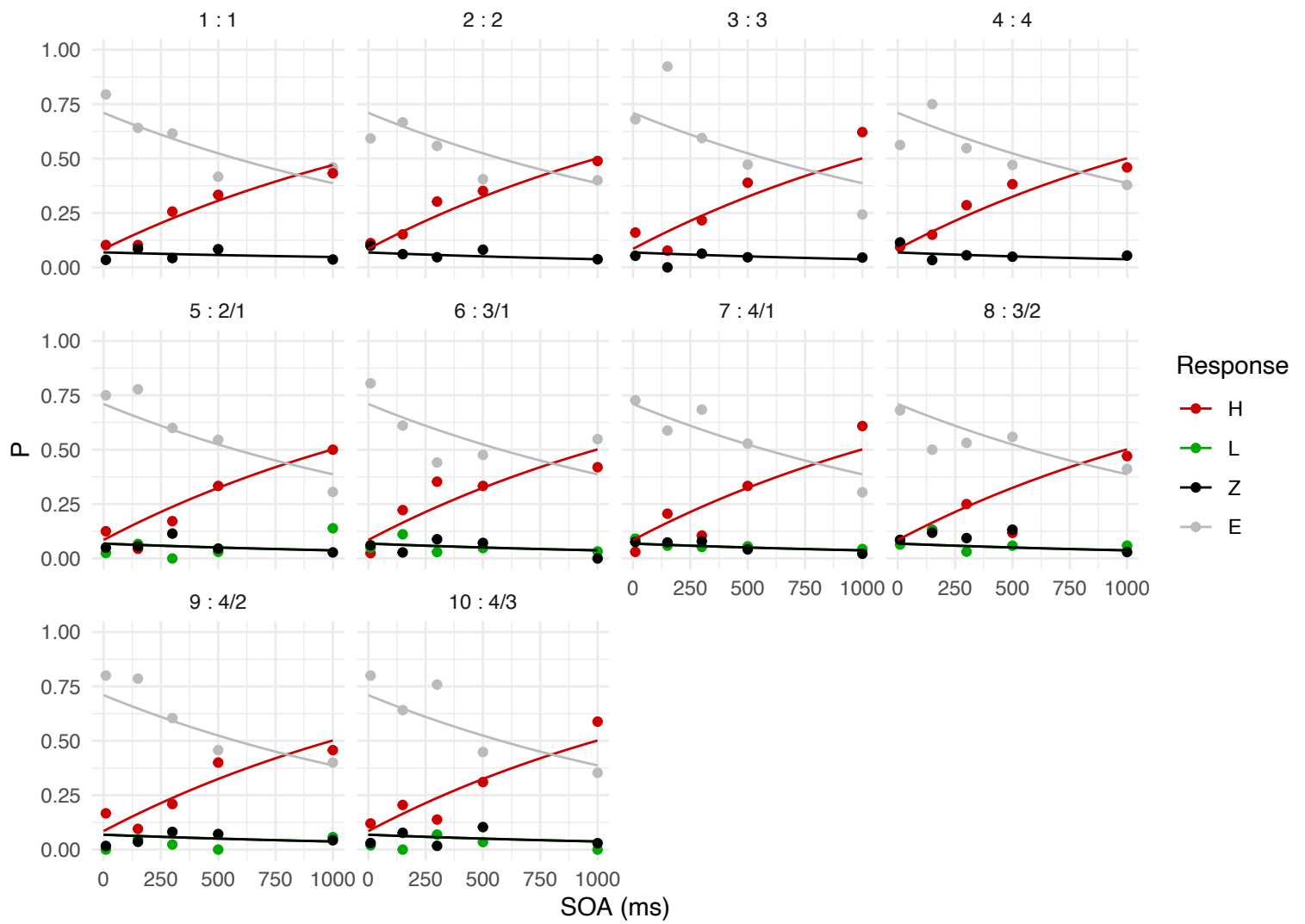
Participant 6



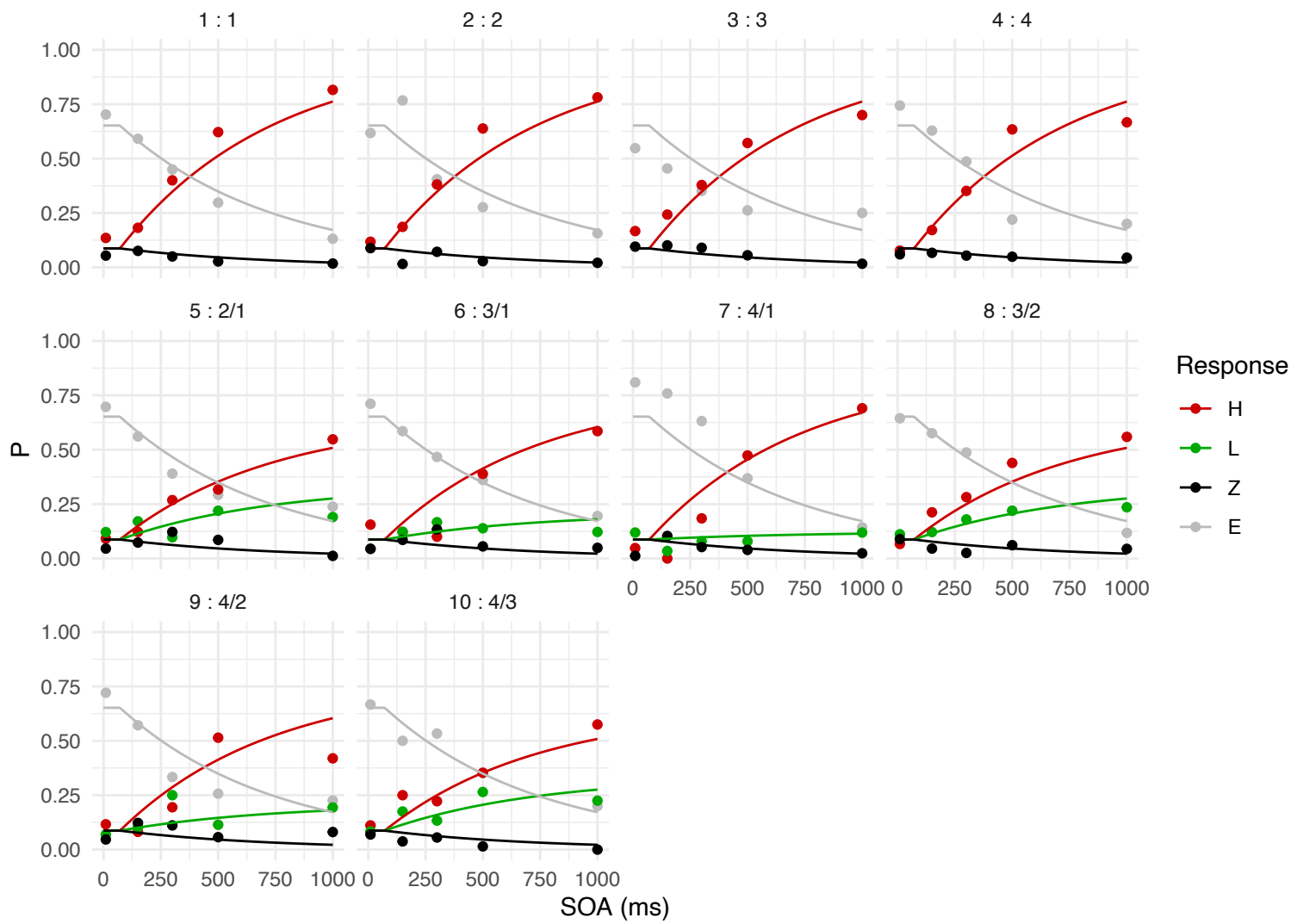
Participant 7



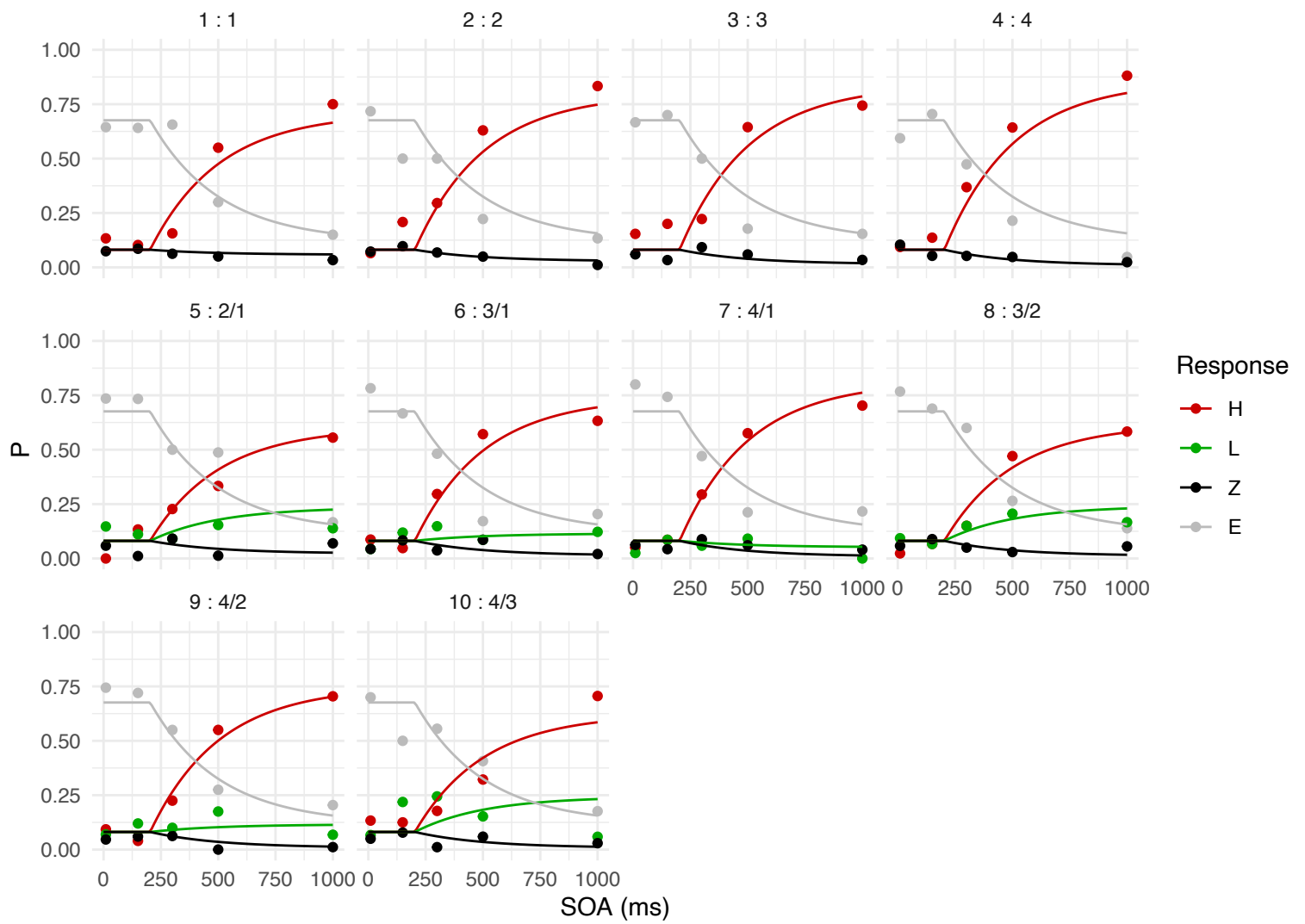
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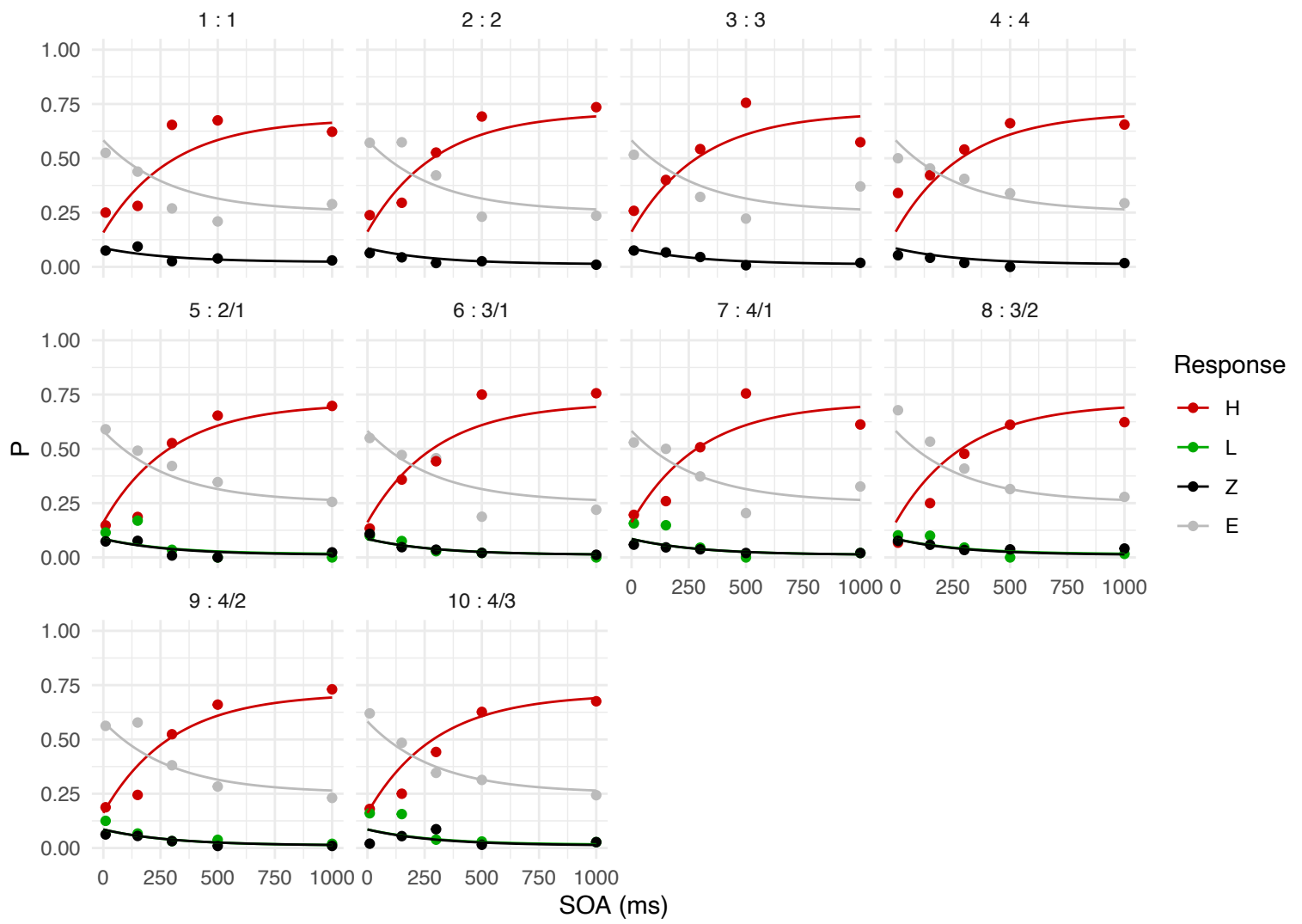
Participant 9



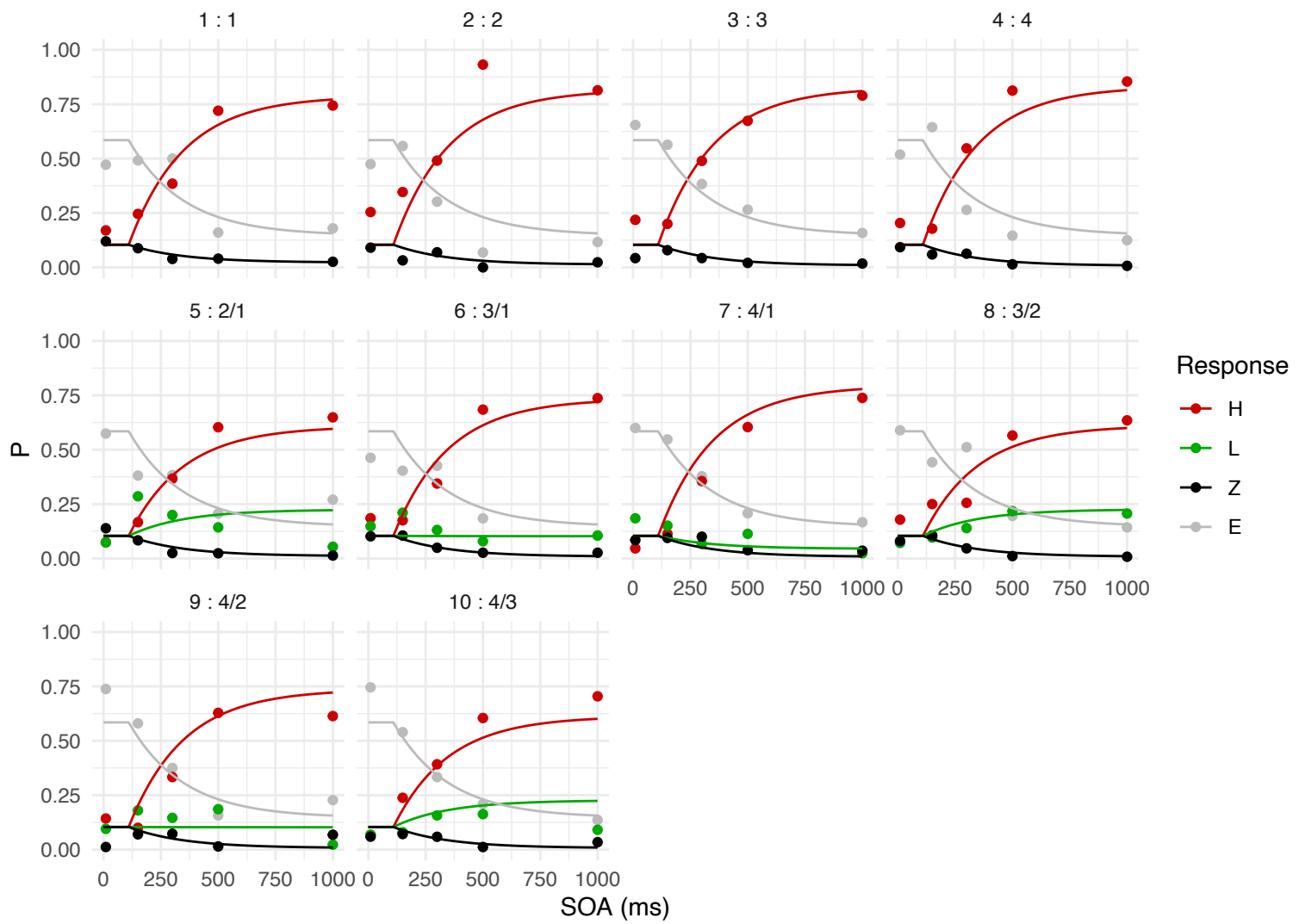
Participant 10



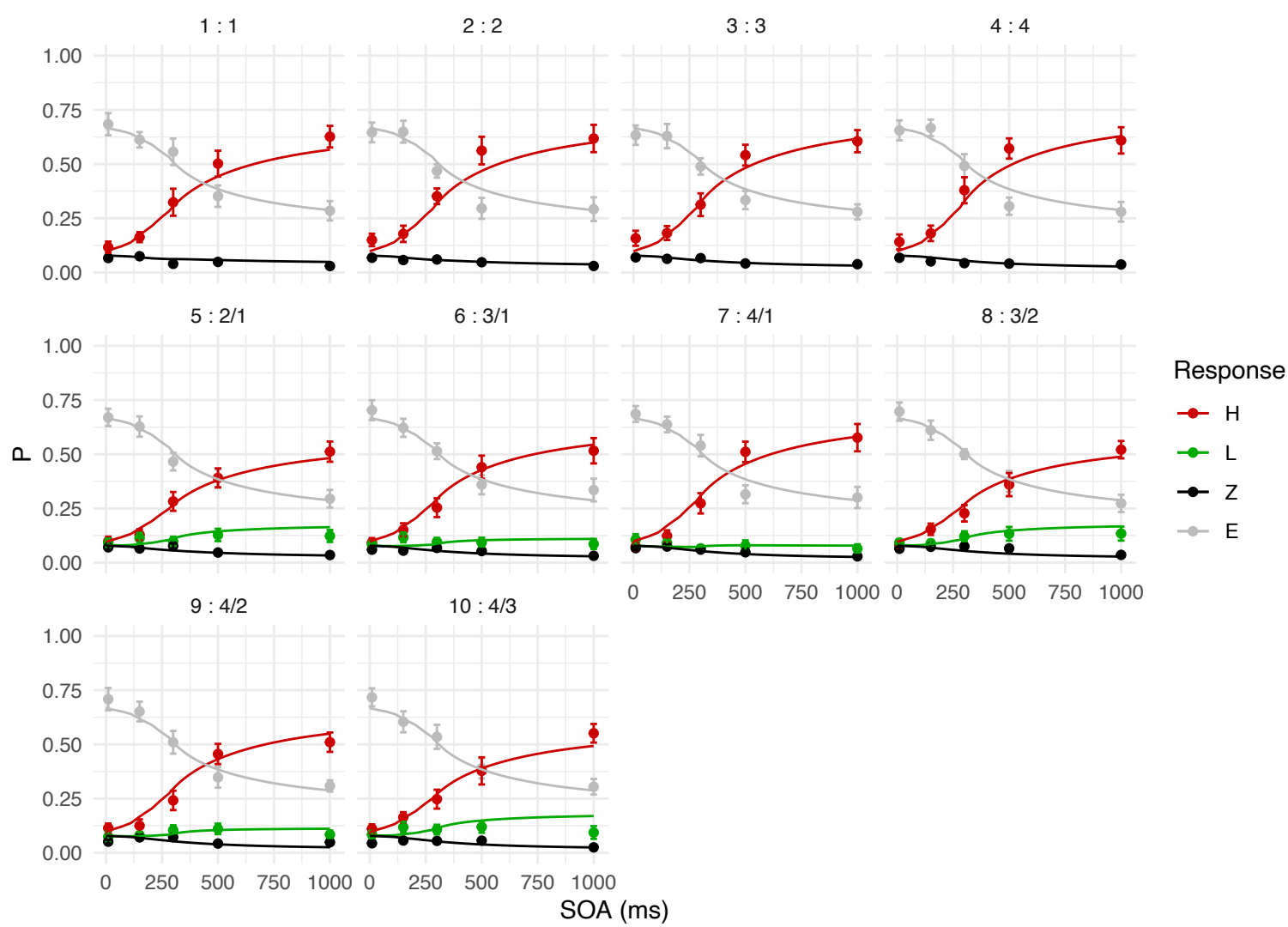
Participant 30



Participant 31



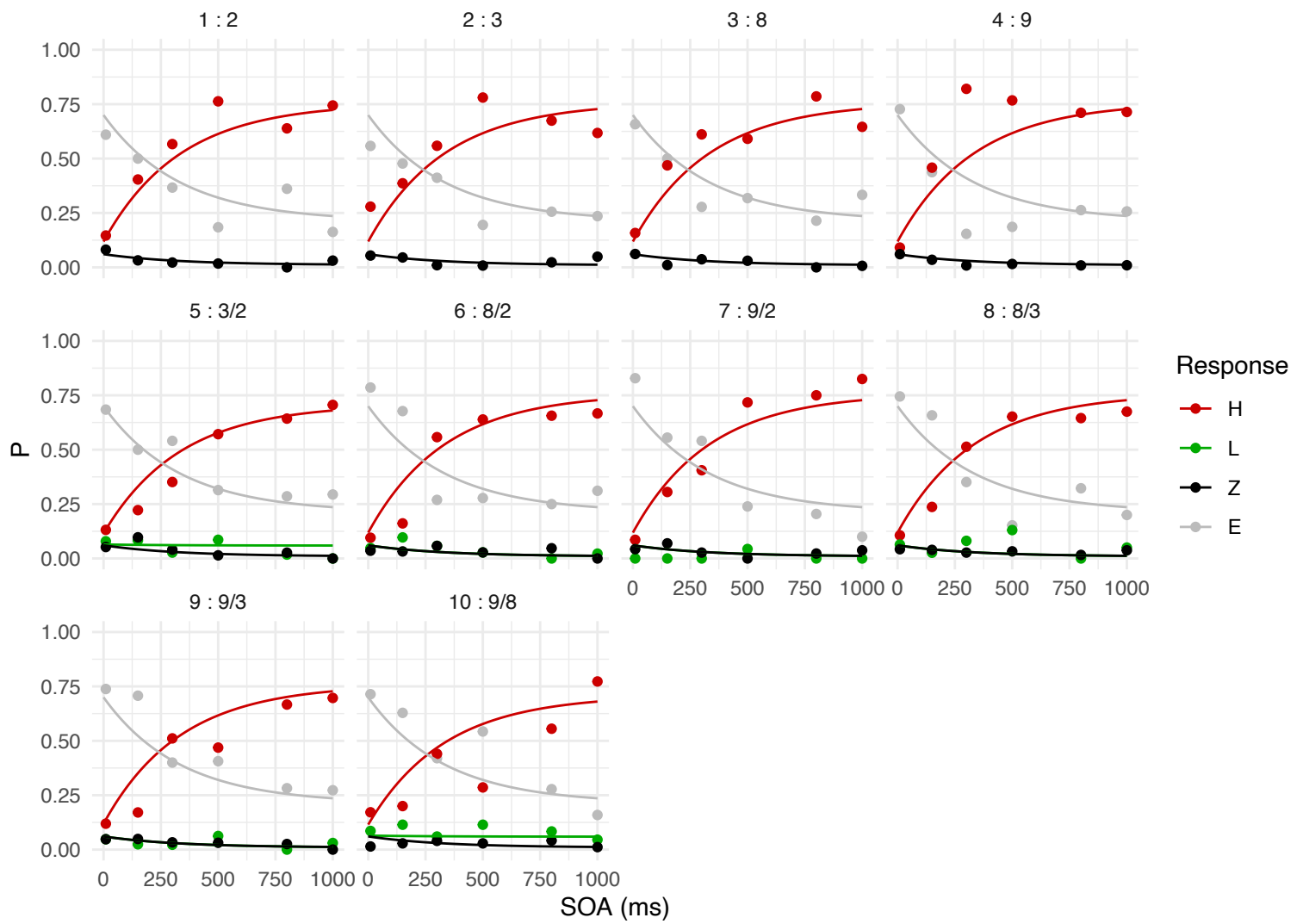
All Participants



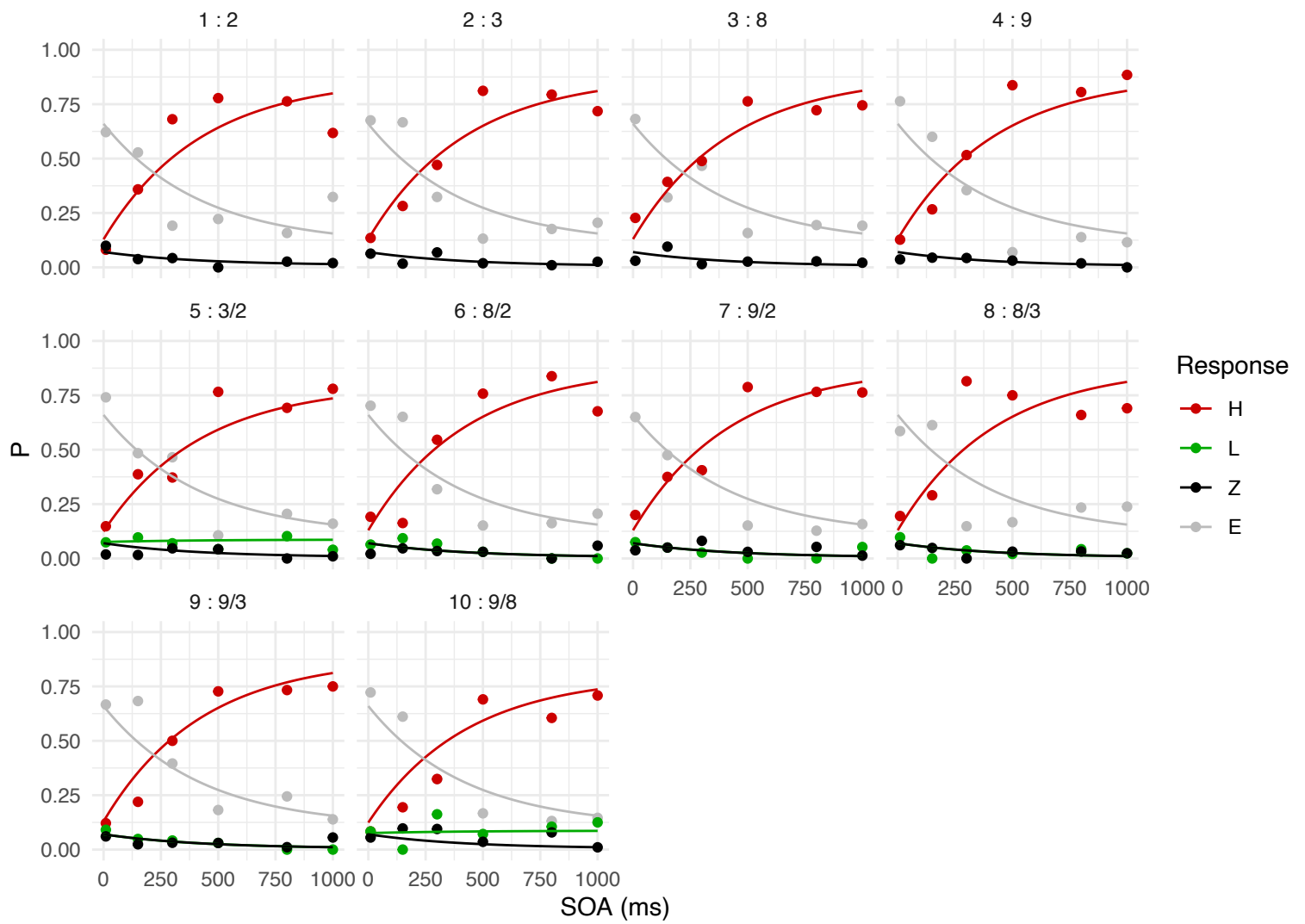
Model fits

Experiment 2

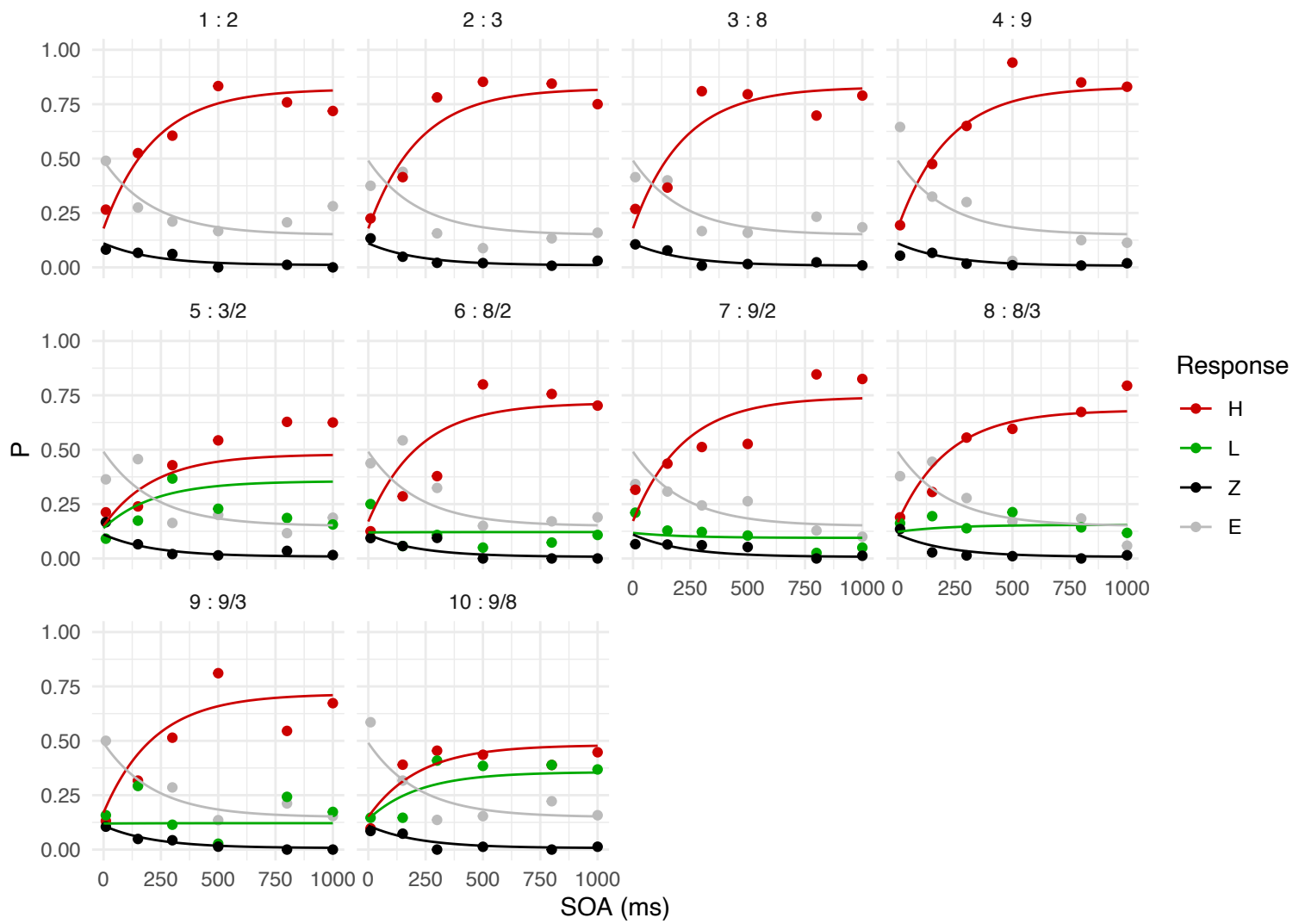
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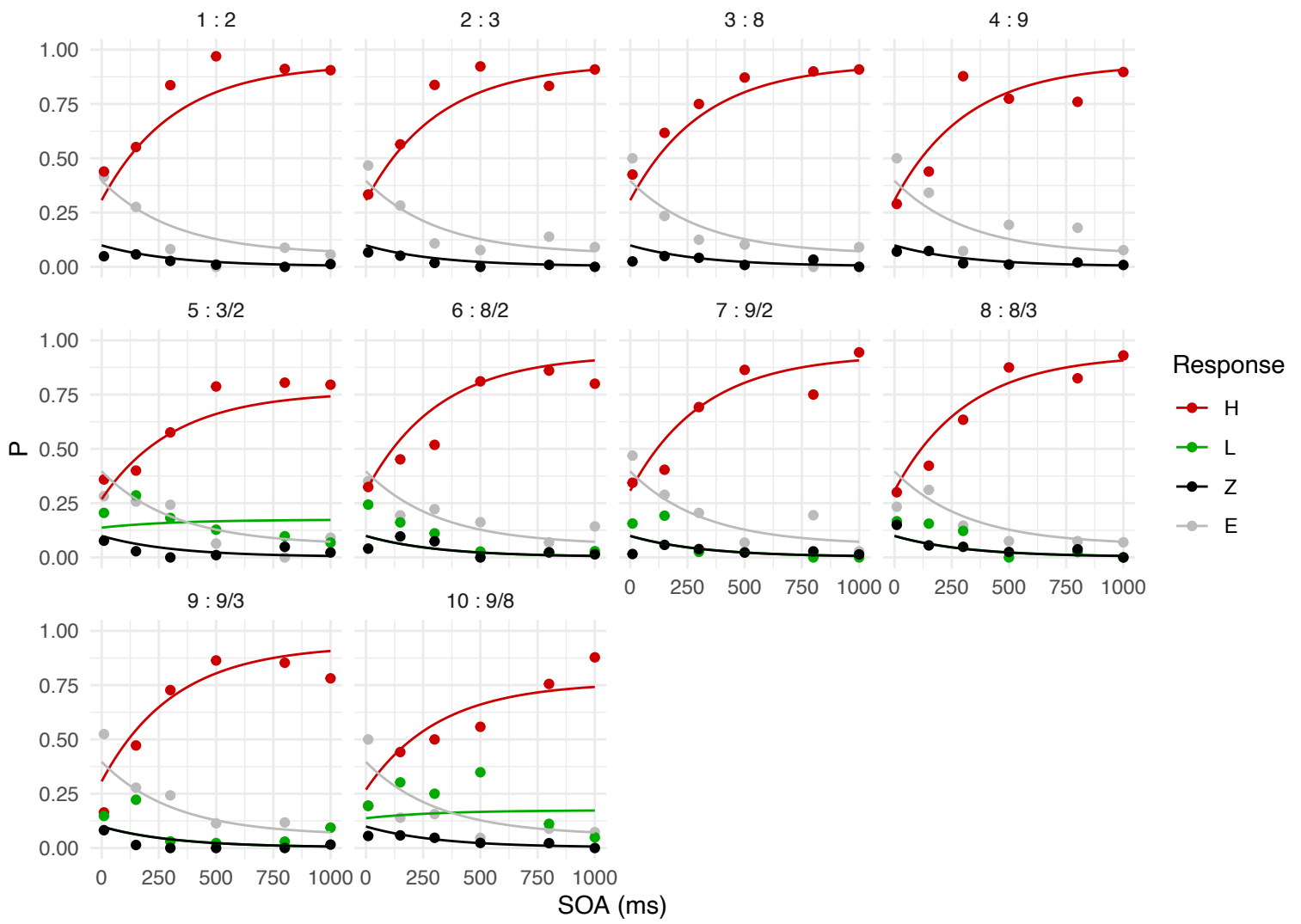
Participant 8



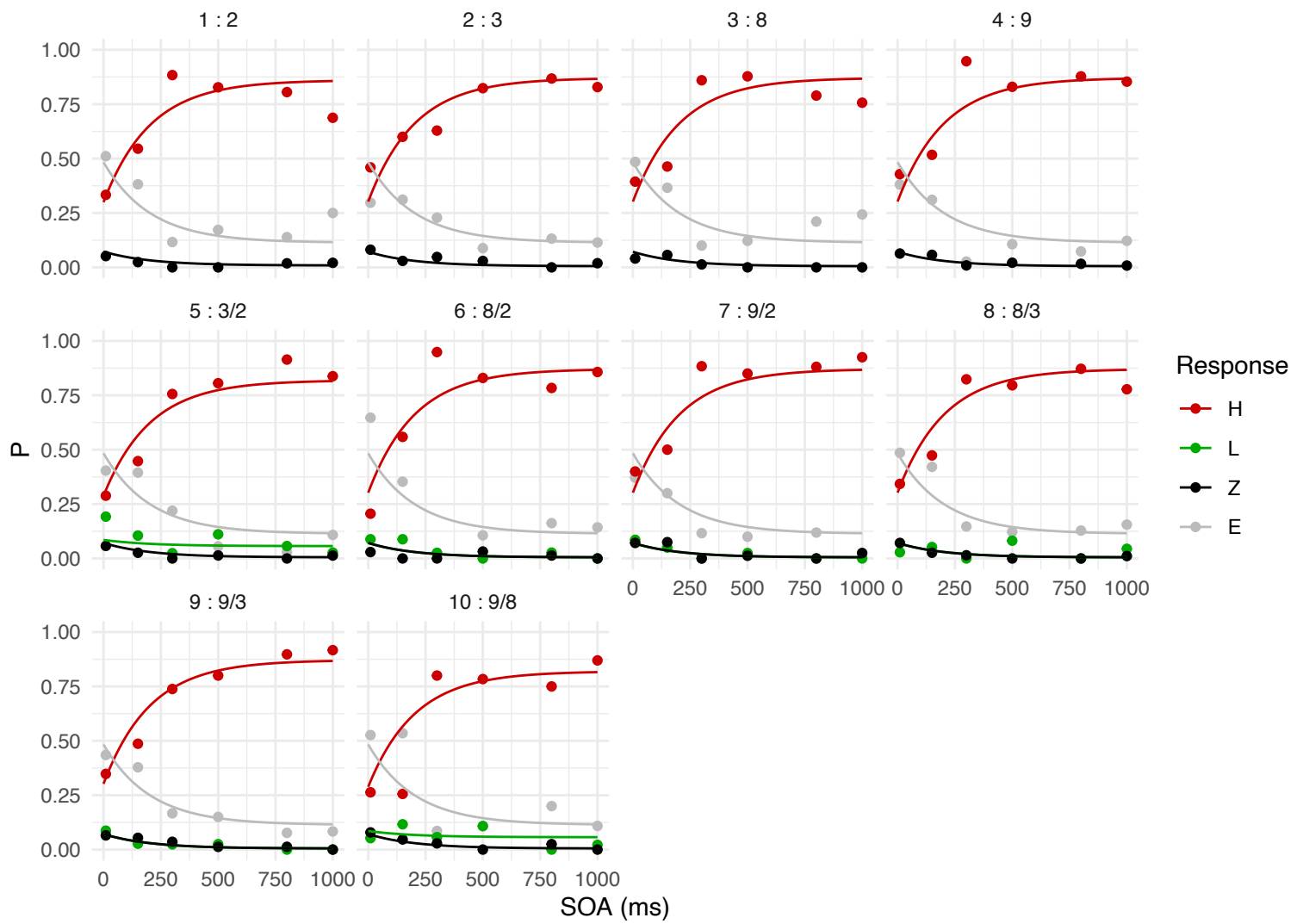
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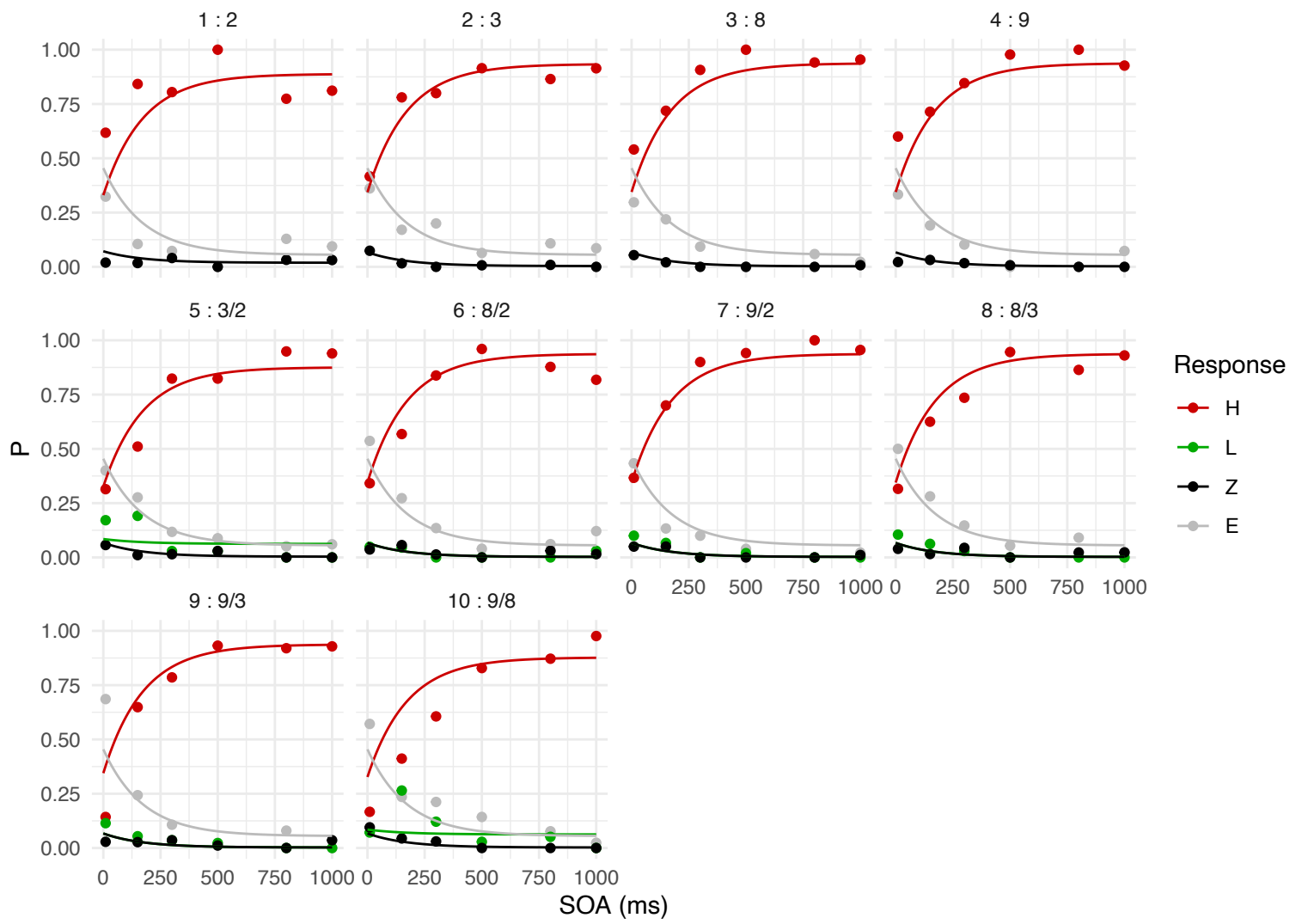
Participant 11



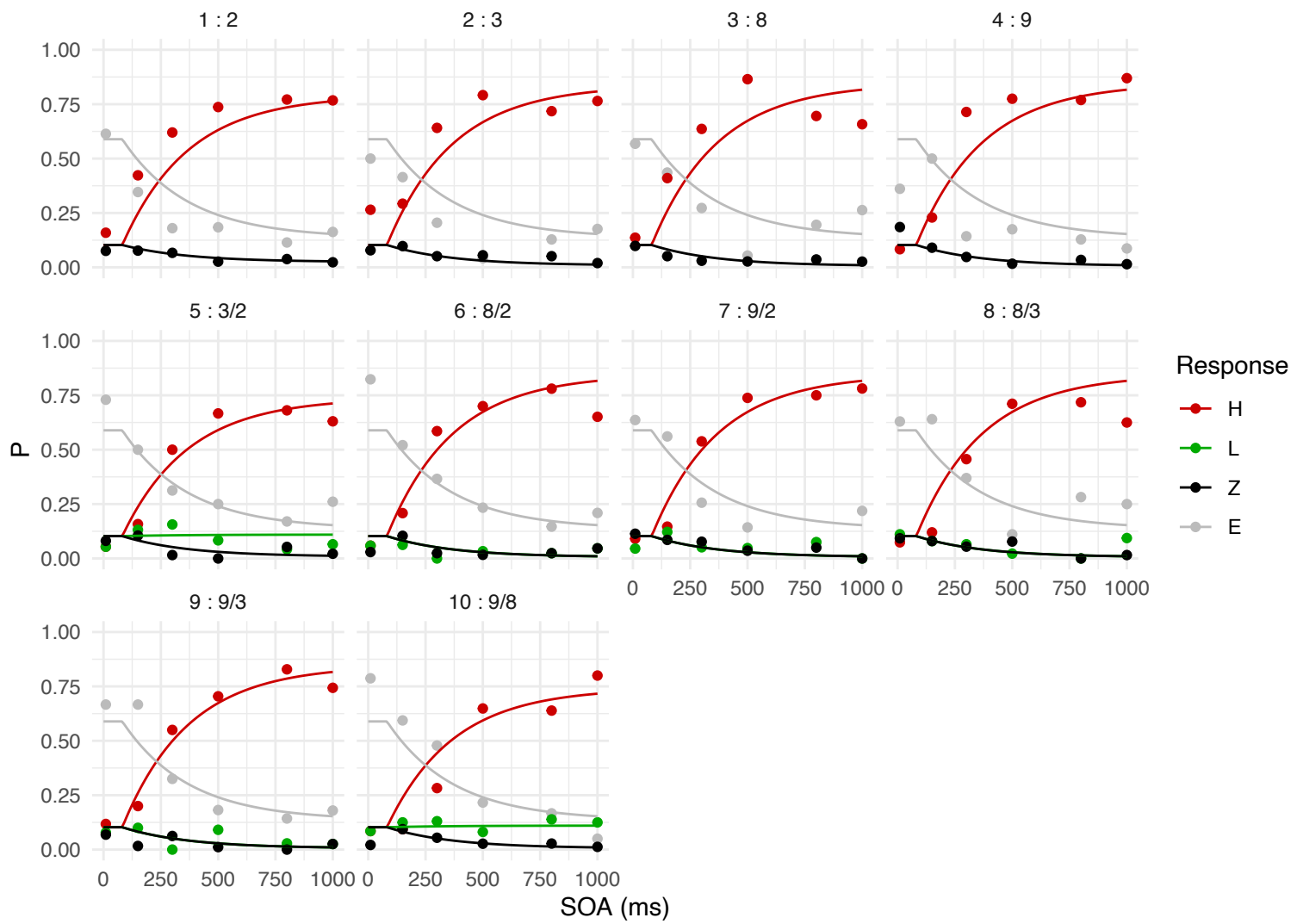
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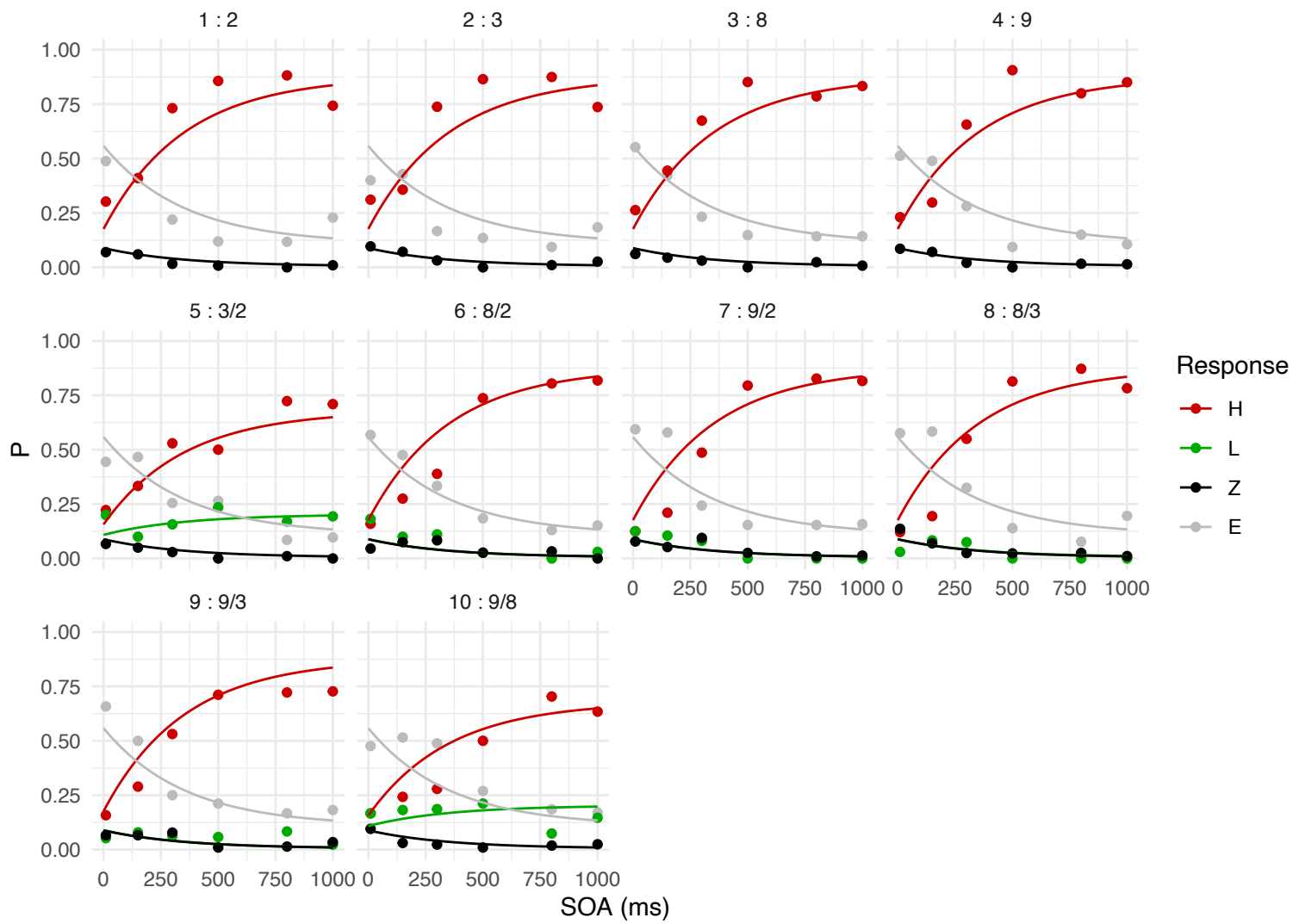
Participant 22



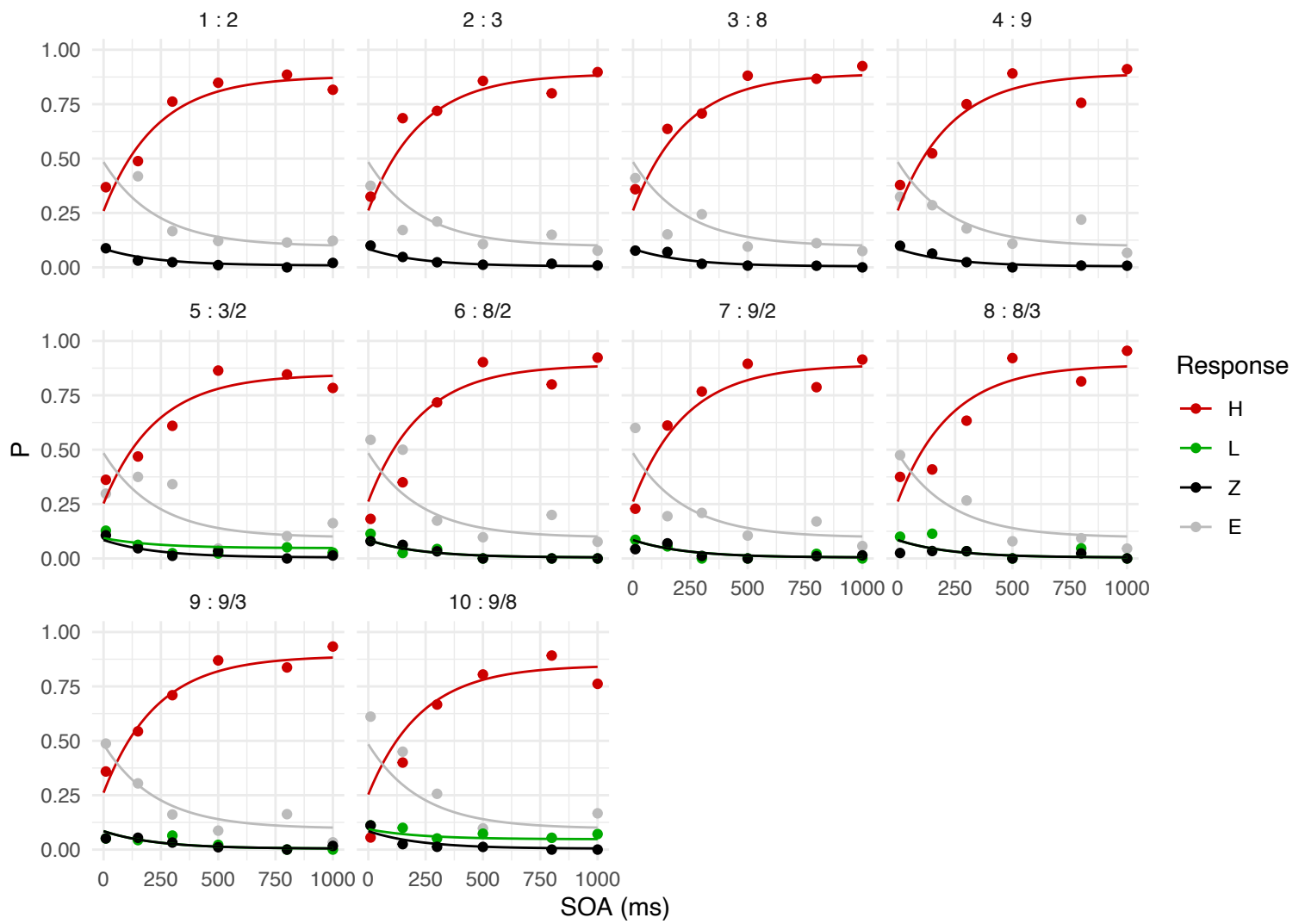
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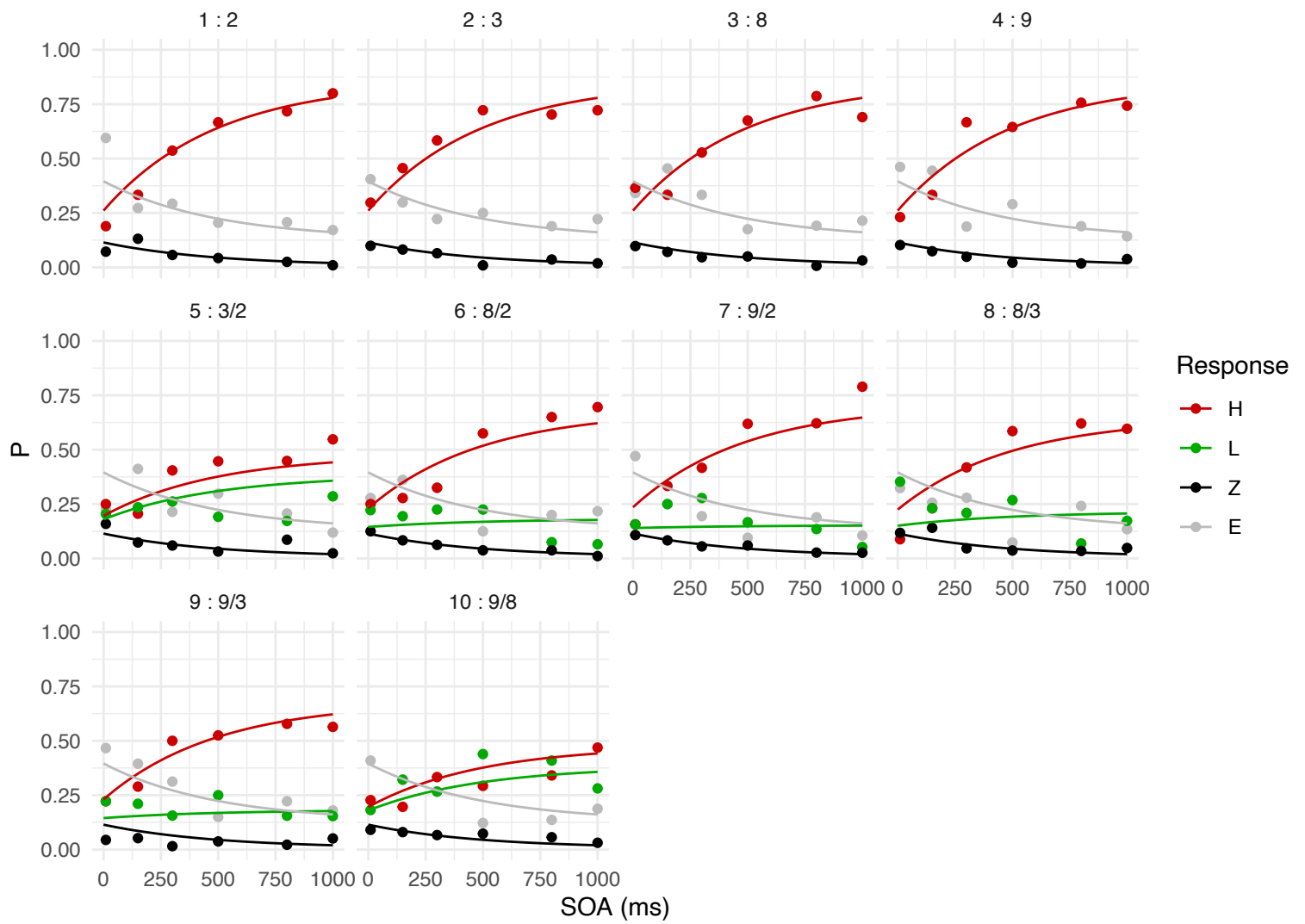
Participant 24



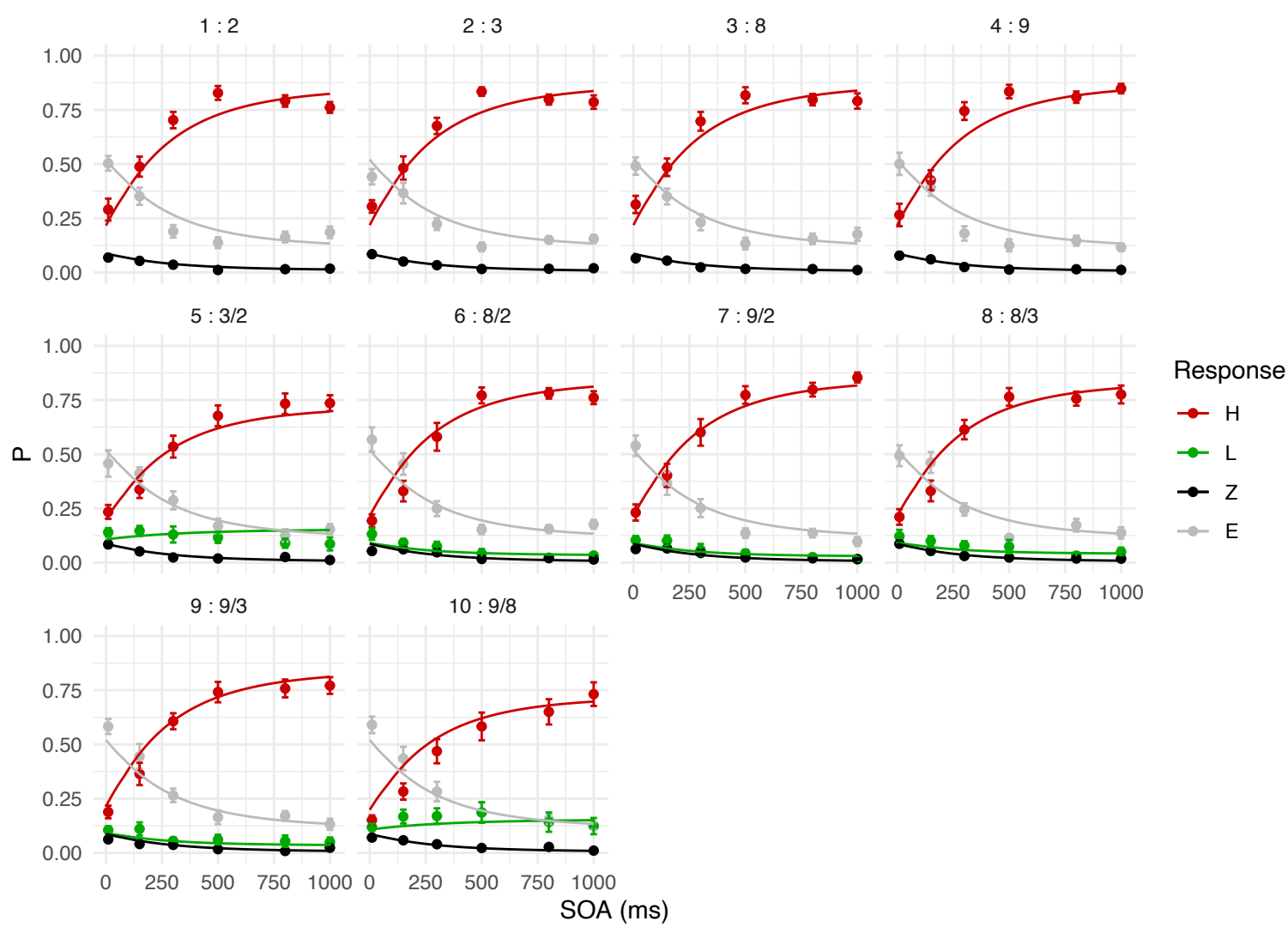
Participant 42



Participant 43



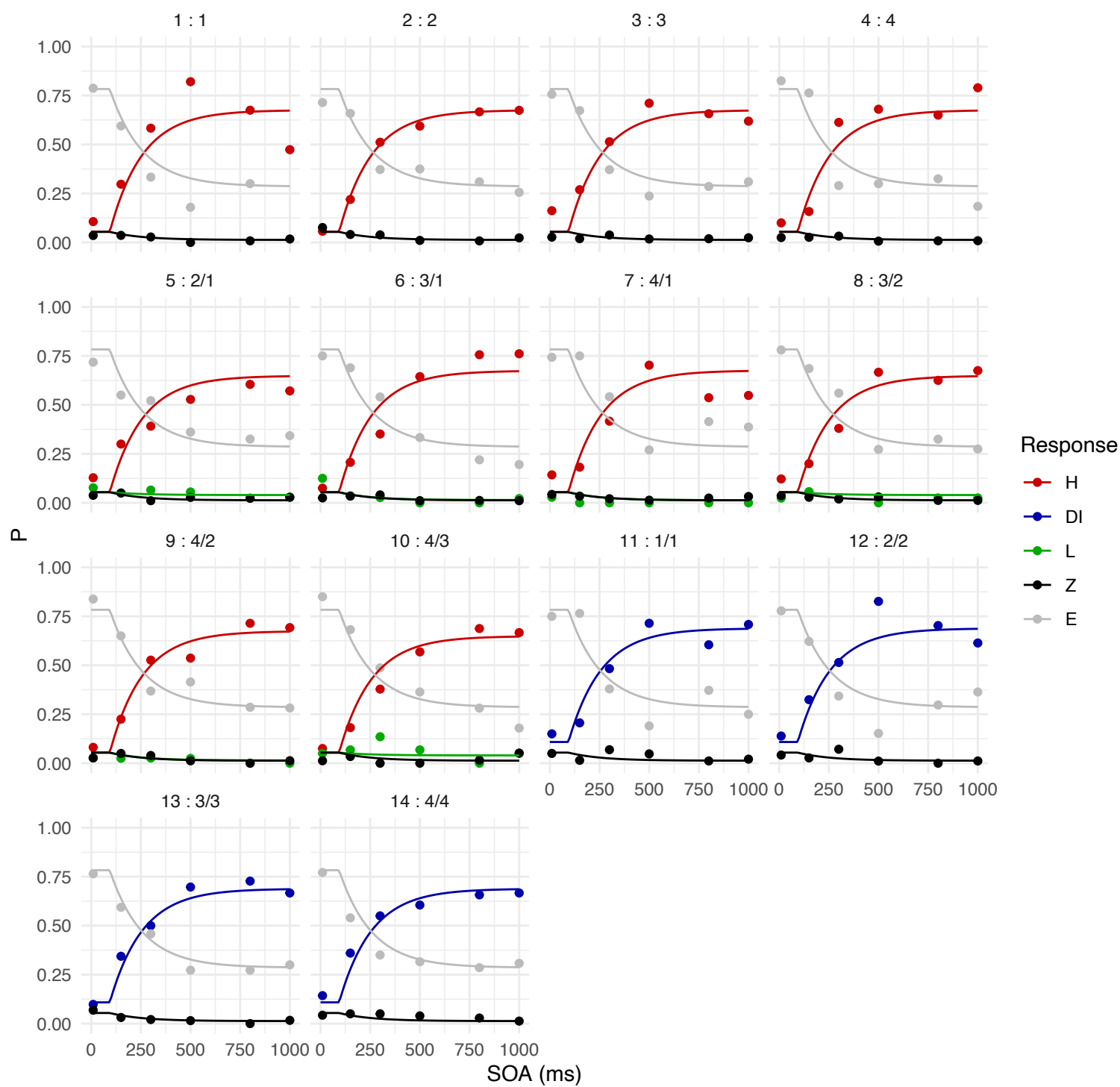
All Participants



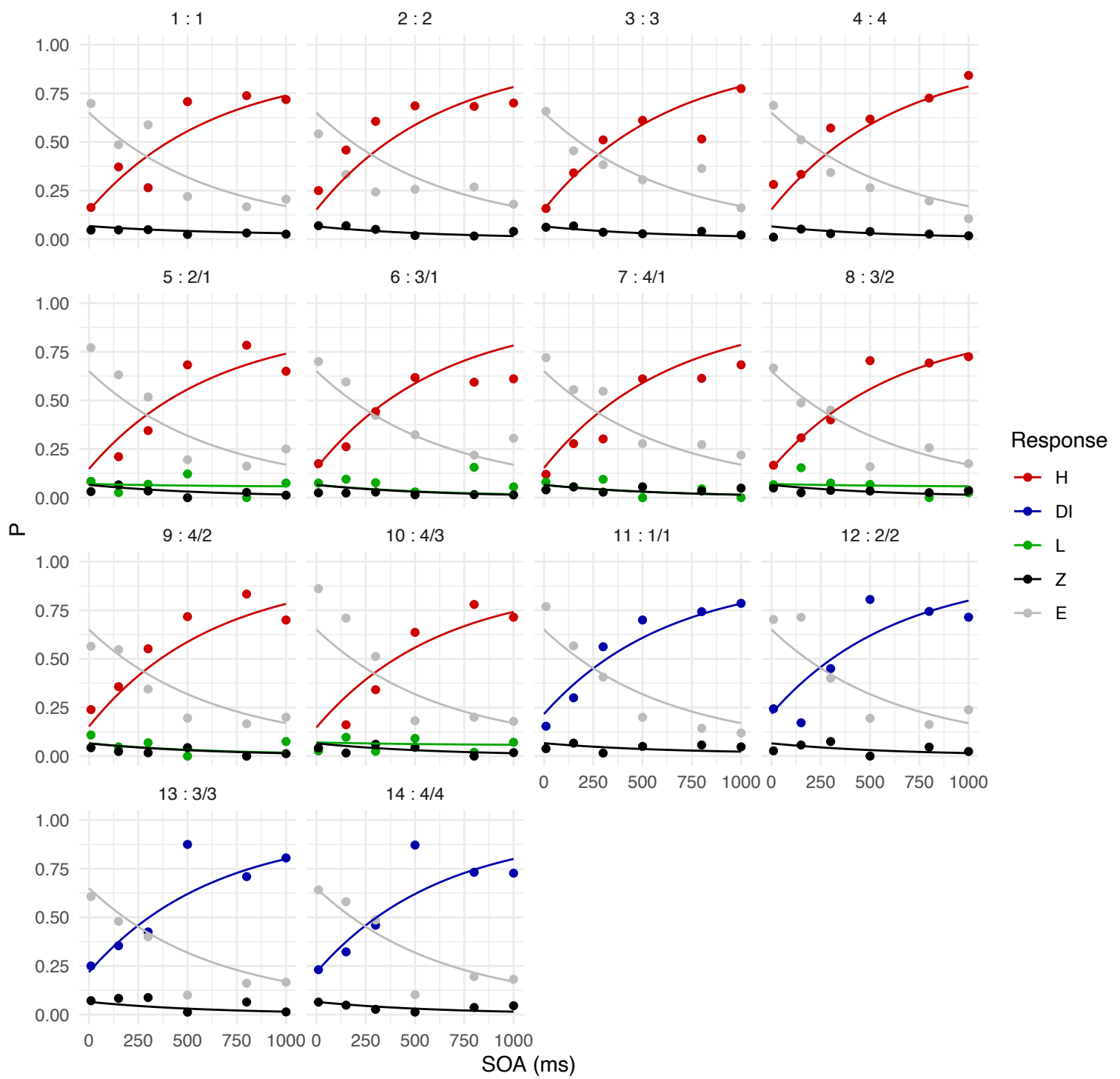
Model fits

Experiment 3

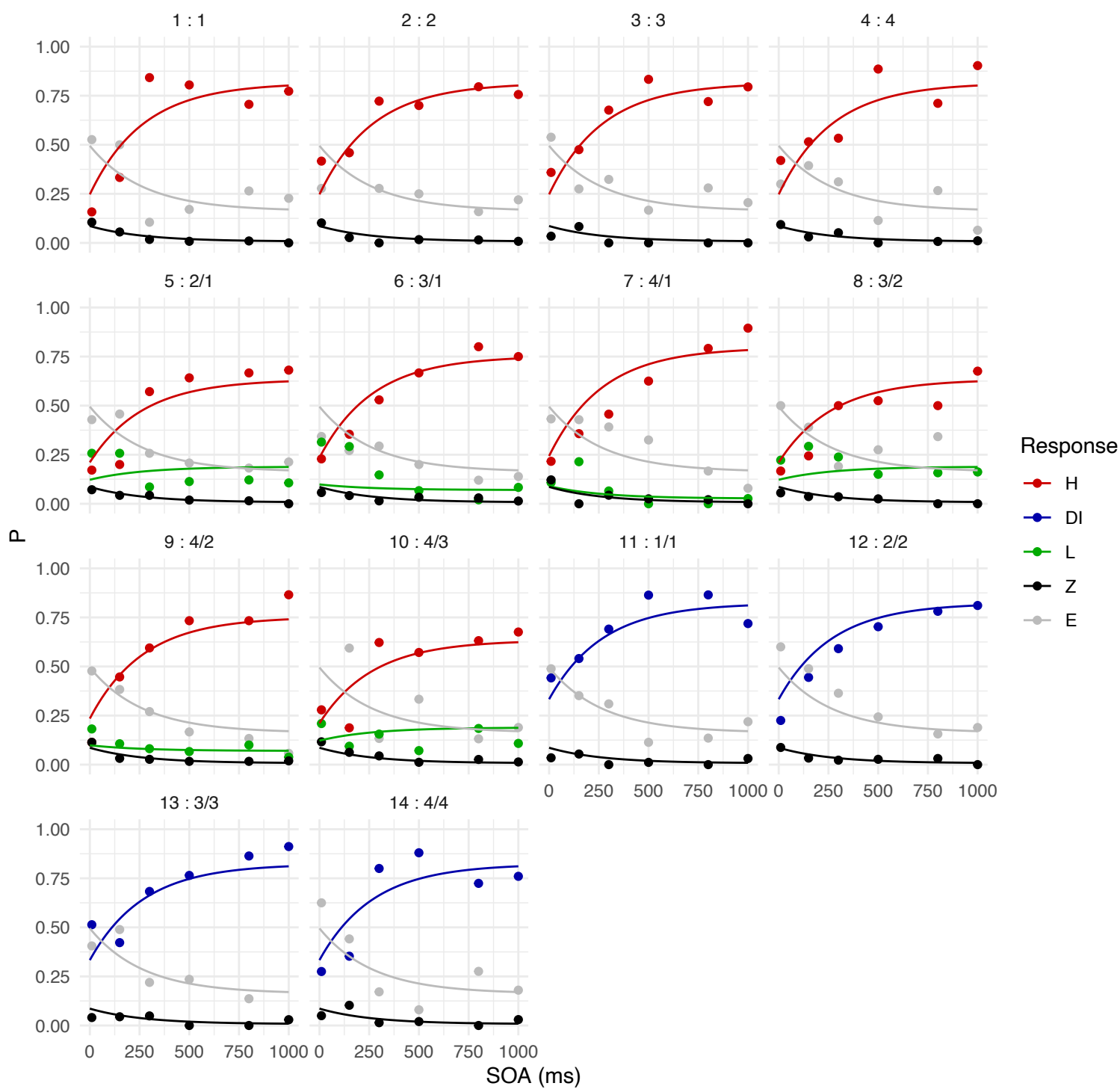
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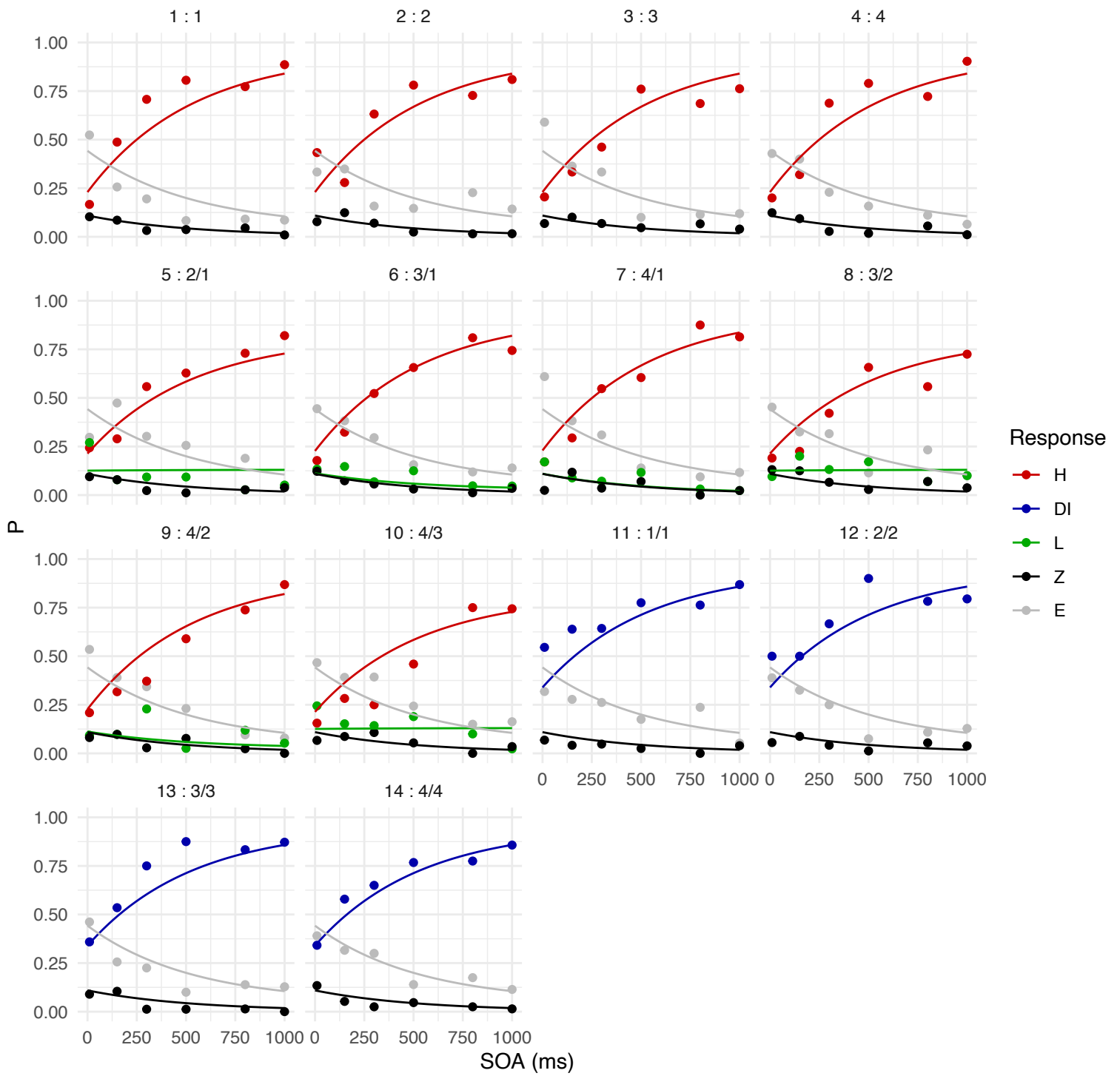
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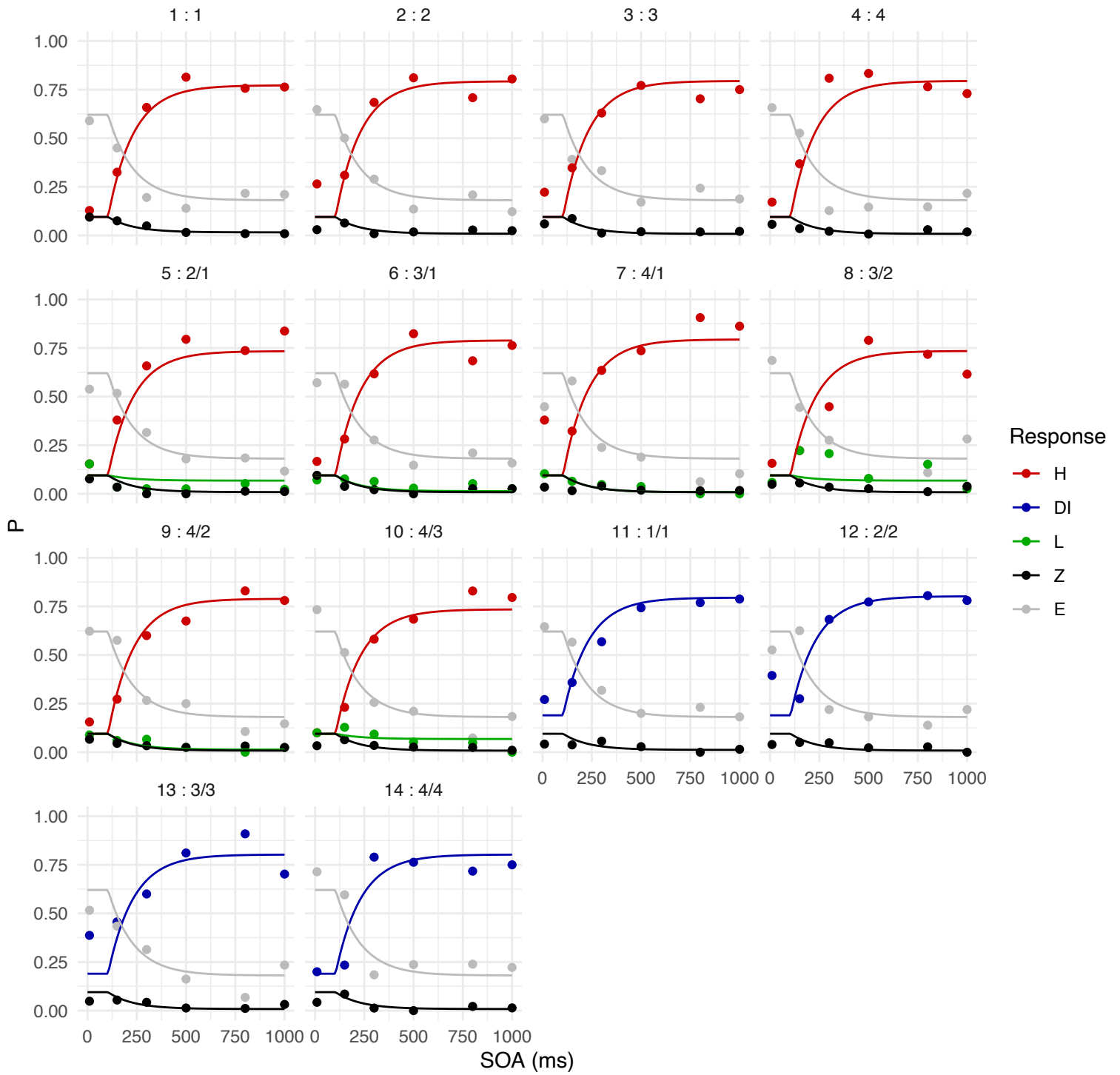
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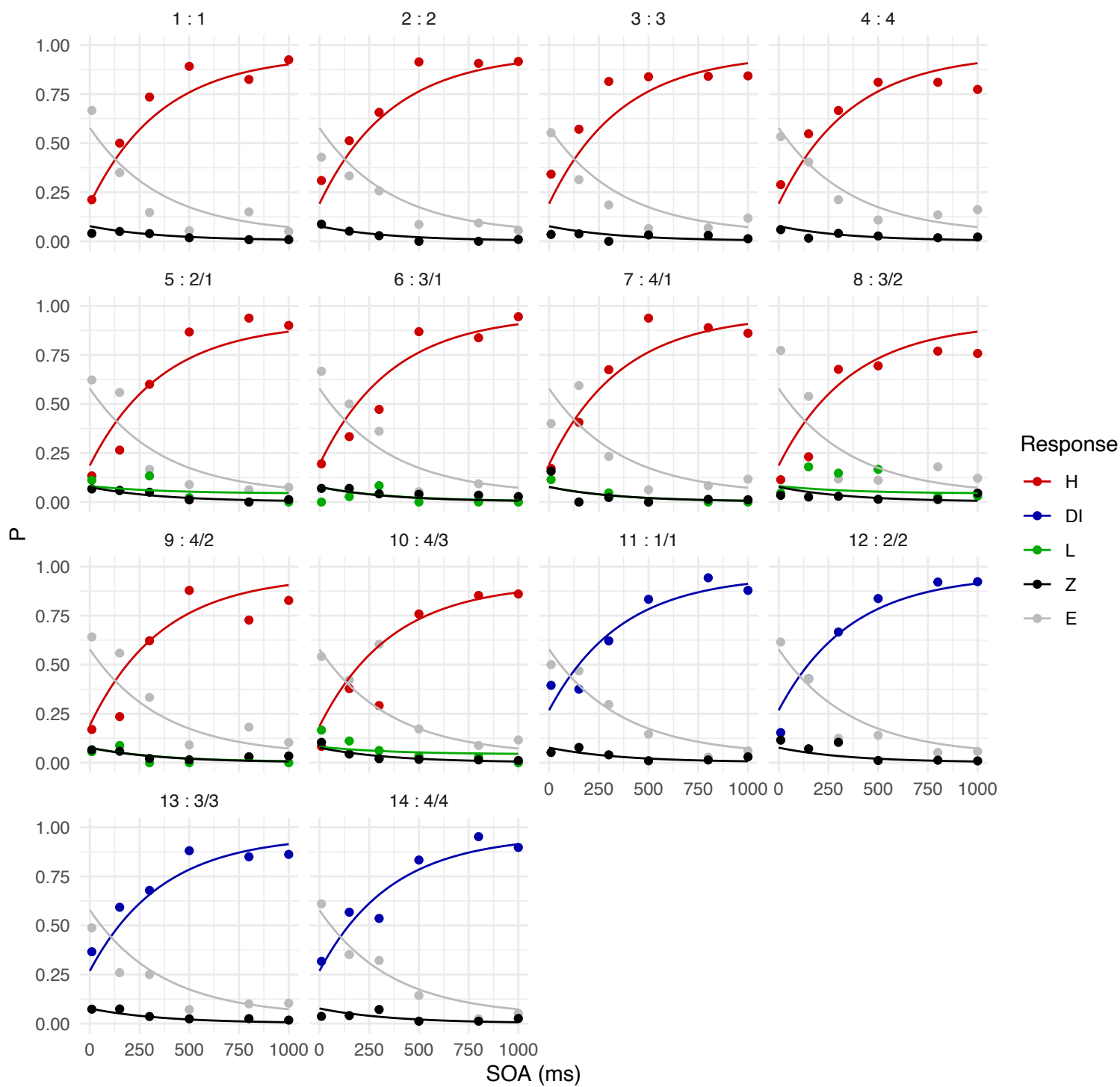
Participant 11



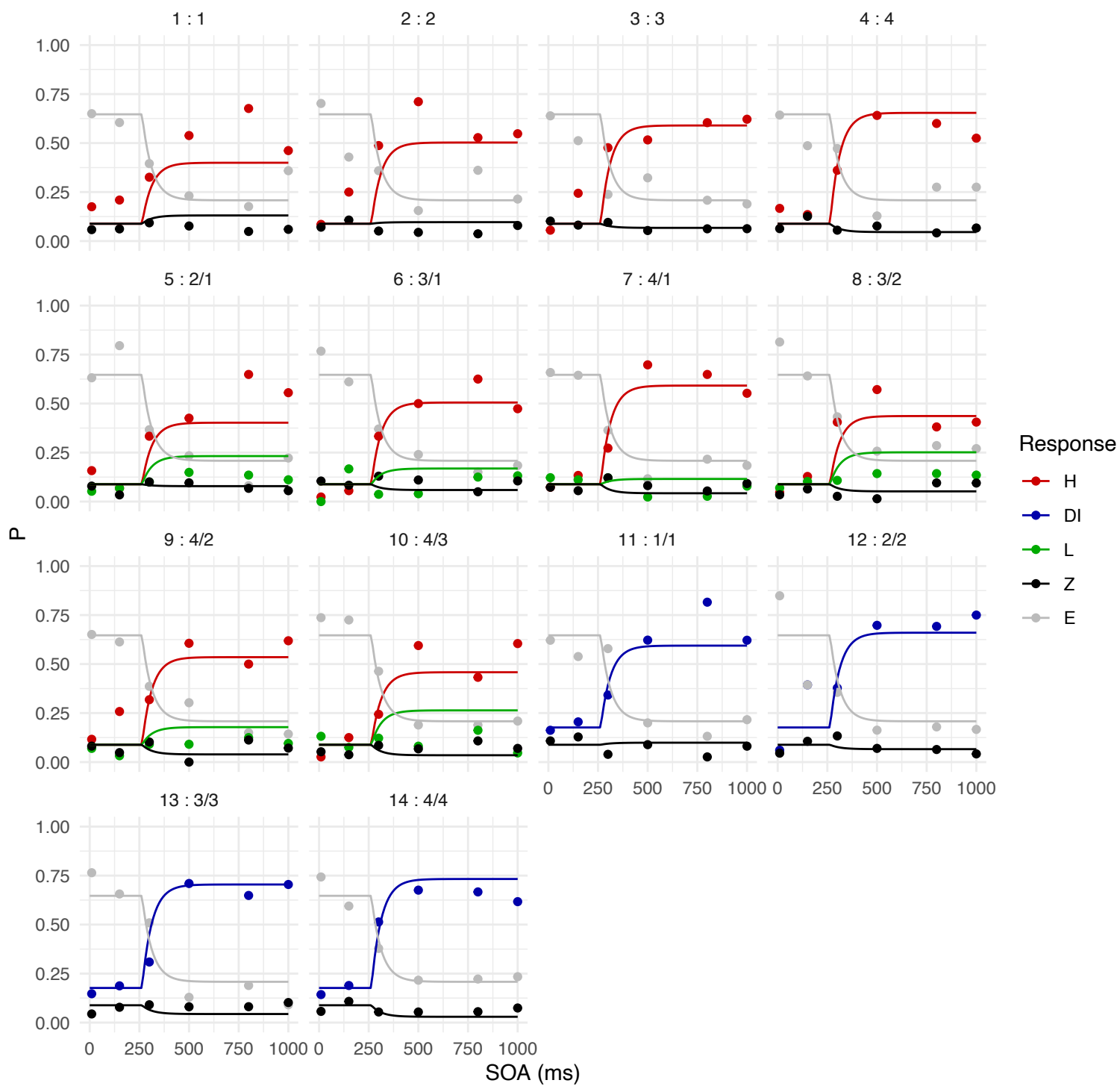
Participant 21



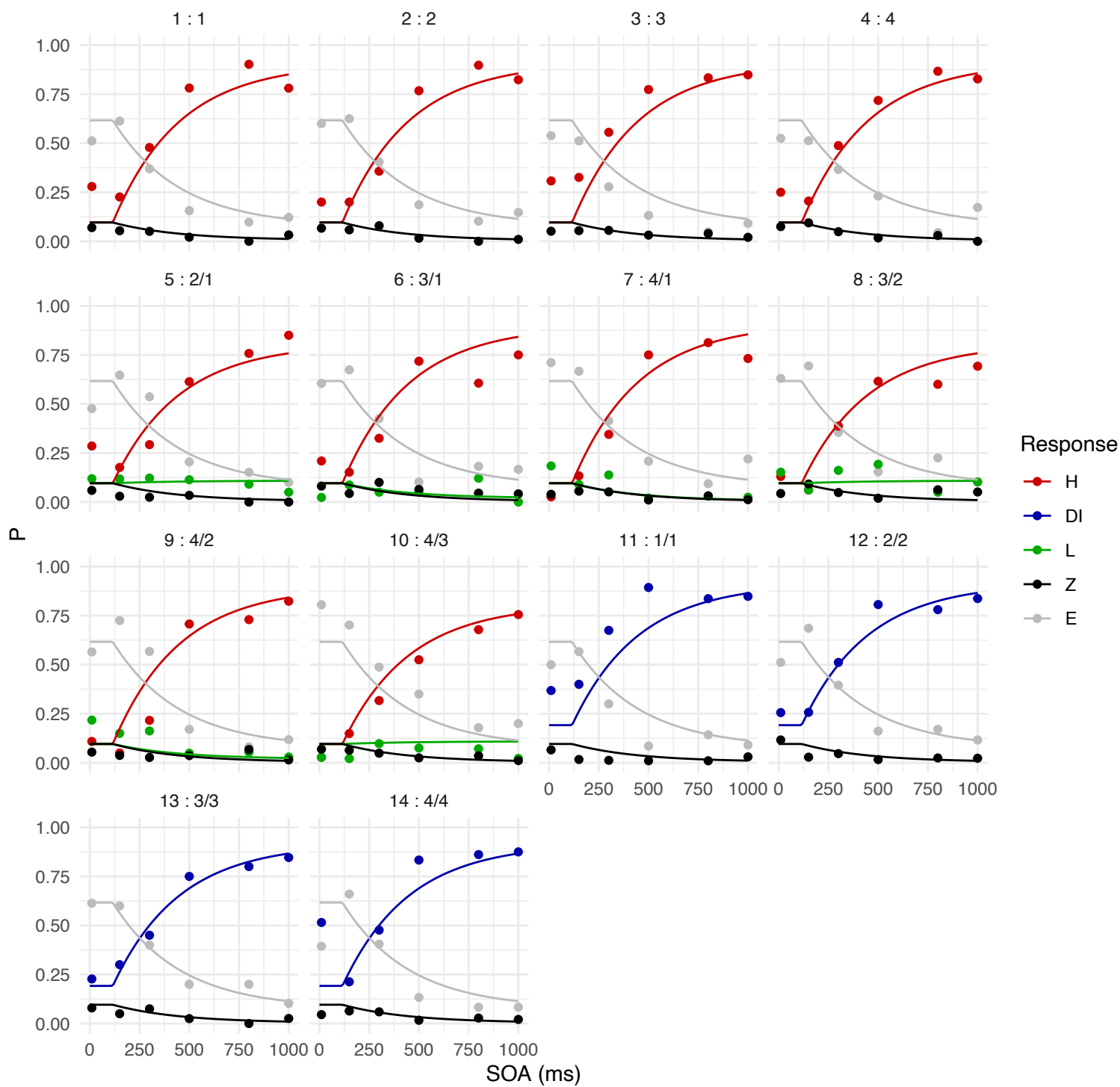
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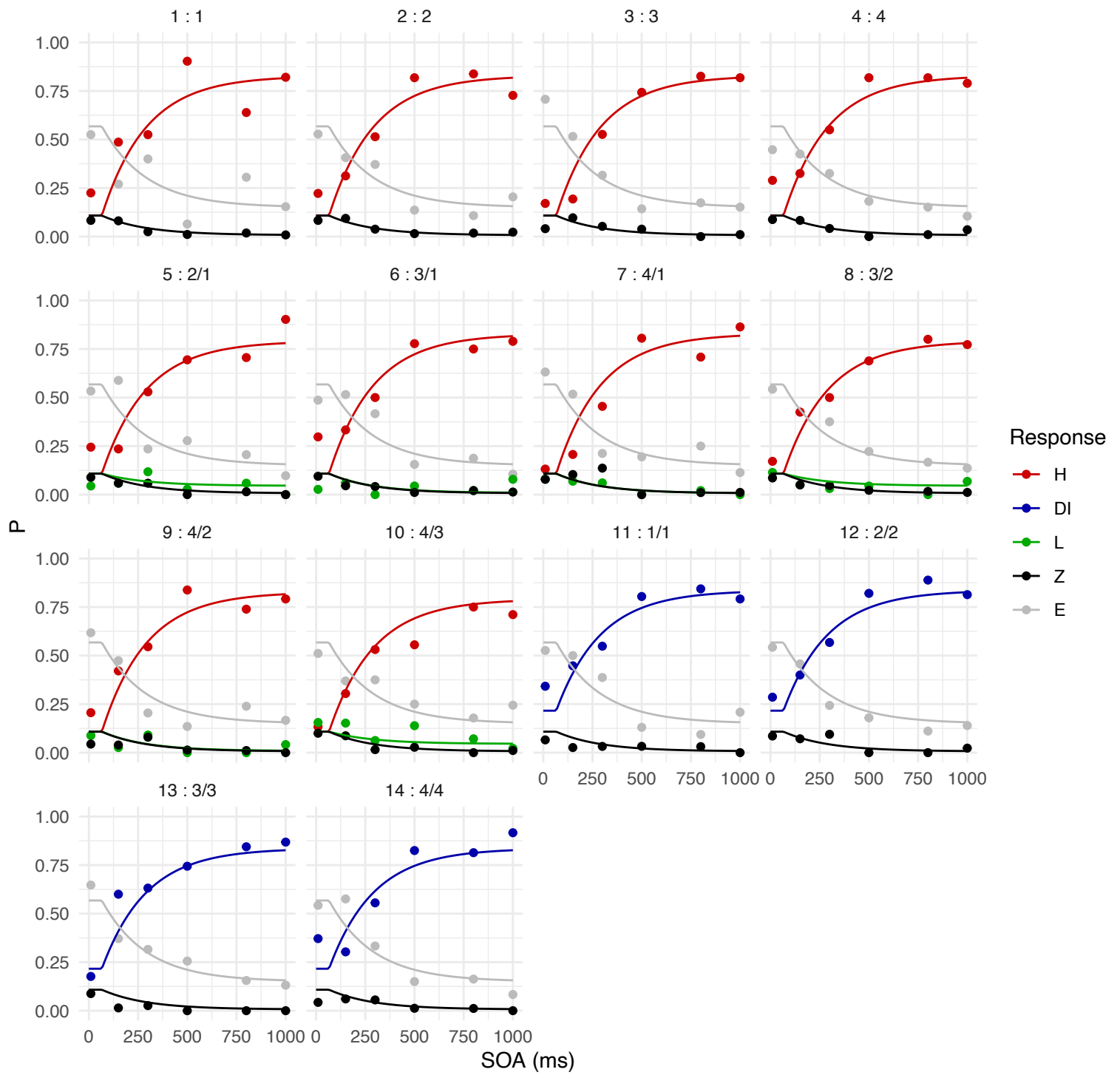
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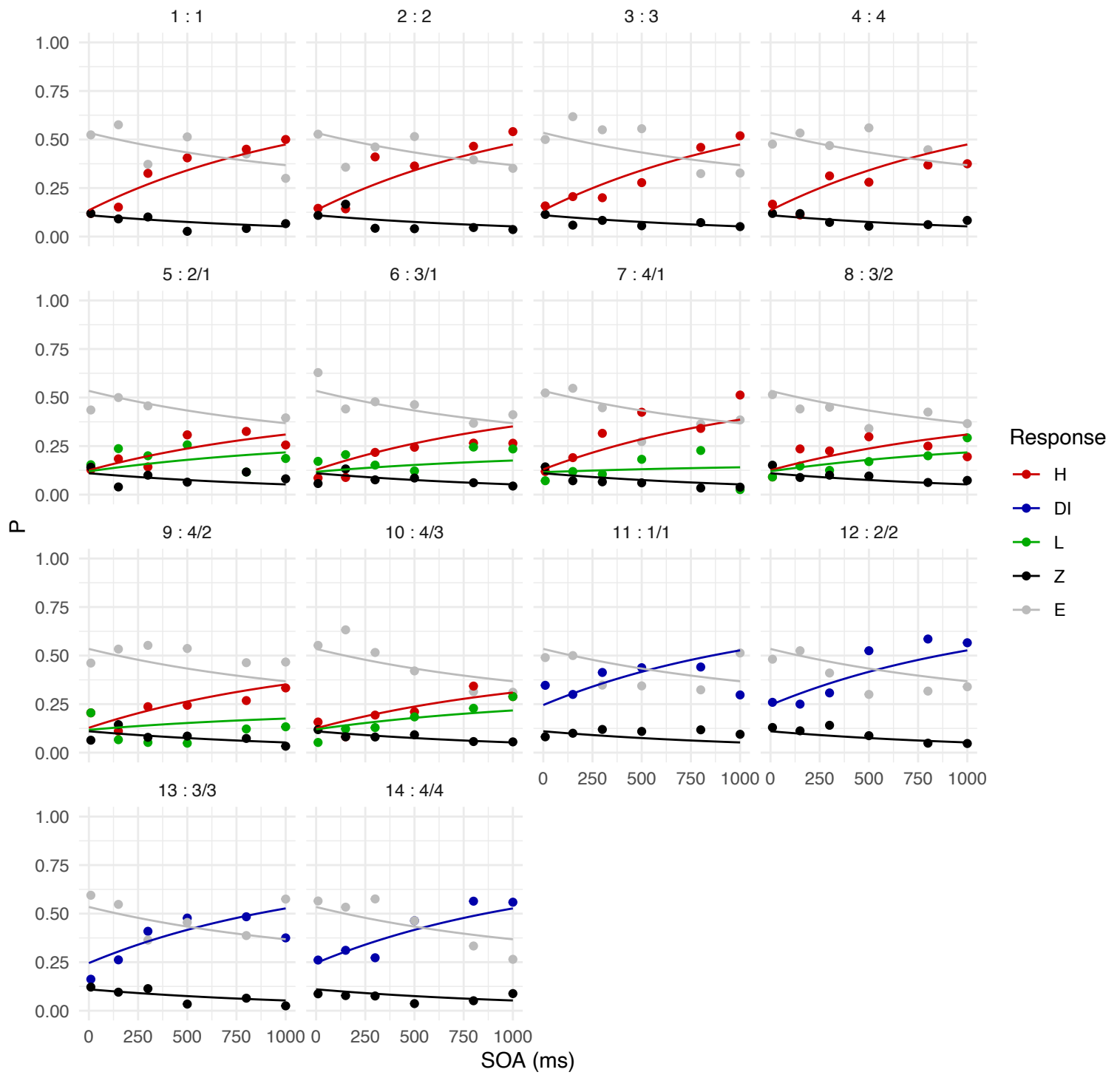
Participant 24



Participant 42



Participant 43



All Participants

