

Supplementary Materials
Intertemporal similarity: Discounting as a last
resort

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Table S1
Questions and Mean Responses for Experiment 1

Short delay	Long delay	Small amount	Large amount	Mean choice for LL	Standard deviation
0	10	2	3	0.43	0.50
0	10	4	6	0.31	0.47
0	10	8	12	0.49	0.50
0	12	4	5	0.08	0.27
0	12	8	10	0.22	0.42
0	12	12	15	0.24	0.43
0	15	1	2	0.14	0.35
0	15	4	6	0.18	0.39
0	15	5	10	0.67	0.48
0	15	9	18	0.80	0.40
0	22	1	10	0.94	0.24
0	22	3	10	0.82	0.39
0	22	5	10	0.59	0.50
0	22	7	10	0.16	0.37
0	22	7	10	0.25	0.44
3	33	8	12	0.24	0.43
3	33	8	12	0.25	0.44
3	33	8	12	0.25	0.44
3	33	8	12	0.25	0.44
3	33	8	12	0.27	0.45
3	33	8	12	0.37	0.49
4	16	2	3	0.16	0.37
4	16	4	6	0.24	0.43
4	16	8	12	0.65	0.48
4	22	7	10	0.37	0.49
5	25	1	2	0.29	0.46
5	25	5	10	0.69	0.47
5	25	9	18	0.84	0.37
5	38	6	8	0.10	0.30
5	38	6	8	0.12	0.33
5	38	6	8	0.12	0.33
5	38	6	8	0.12	0.33
5	38	6	8	0.14	0.35
5	38	6	8	0.22	0.42
8	22	4	5	0.08	0.27
8	22	7	10	0.53	0.50
8	22	8	10	0.31	0.47
8	22	12	15	0.47	0.50
12	17	8	12	0.90	0.30
12	22	7	10	0.55	0.50
15	22	1	10	1.00	0.00
15	22	3	10	0.98	0.14
15	22	5	10	0.94	0.24
15	22	7	10	0.76	0.43
16	22	7	10	0.86	0.35
20	22	7	10	0.96	0.20

Table S2
Magnitude Effect Questions for Experiment 1

Short Delay (Days)	Long Delay (Days)	Small Amount (€)	Large Amount (€)	k	Delay Ratio	Delay Difference (days)	Amount Ratio	Amount Difference (€)
0	15	1	2	0.07	0.00	15	0.50	1
0	15	5	10	0.07	0.00	15	0.50	5
0	15	9	18	0.07	0.00	15	0.50	9
5	25	1	2	0.07	0.20	20	0.50	1
5	25	5	10	0.07	0.20	20	0.50	5
5	25	9	18	0.07	0.20	20	0.50	9
0	10	2	3	0.05	0.00	10	0.67	1
0	10	4	6	0.05	0.00	10	0.67	2
0	10	8	12	0.05	0.00	10	0.67	4
4	16	2	3	0.05	0.25	12	0.67	1
4	16	4	6	0.05	0.25	12	0.67	2
4	16	8	12	0.05	0.25	12	0.67	4
0	12	4	5	0.02	0.00	12	0.80	1
0	12	8	10	0.02	0.00	12	0.80	2
0	12	12	15	0.02	0.00	12	0.80	3
8	22	4	5	0.02	0.36	14	0.80	1
8	22	8	10	0.02	0.36	14	0.80	2
8	22	12	15	0.02	0.36	14	0.80	3

Table S3
Median Parameter Estimates for Models

Model	Experiment 1	Experiment 2	Experiment 3 Gains	Experiment 3 Losses
Exponential	$\delta = 0.016$	$\delta = 0.009$	$\delta = 0.011$	$\delta = 0.008$
Hyperbolic (Mazur)	$k = 0.02$	$k = 0.01$	$k = 0.02$	$k = 0.01$
Hyperbolic (Rachlin)	$k = 0.03, \sigma = 1.2$	$k = 0.05, \sigma = 0.76$	$k = 0.06, \sigma = 0.75$	$k = 0.13, \sigma = 0.55$
Hyperbolic (Kirby)	$k = 0.07, \mu = -0.59$	$k = 0.02, \mu = -0.3$	$k = 0.05, \mu = -0.56$	$k = 0.03, \mu = -0.58$
Hyperbolic (Loewenstein & Prelec)	$\alpha = 0.04, \beta = 0.03$	$\alpha = 0.08, \beta = 0.03$	$\alpha = 45.55, \beta = 2.22$	$\alpha = 2.71, \beta = 0.23$
Arithmetic	$\lambda = 0.14$	$\lambda = 0.03$	$\lambda = 0.07$	$\lambda = -0.05$

Table S4

Questions and Mean Responses for Experiment 2

Short delay	Long delay	Small amount	Large amount	k	Mean choice for LL	Standard deviation
18	27	7	10	0.33	0.72	0.45
81	117	7	10	0.33	0.44	0.50
88	127	7	10	0.33	0.33	0.48
40	58	7	10	0.50	0.67	0.48
61	88	7	10	0.50	0.65	0.48
75	108	7	10	0.50	0.44	0.50
82	118	7	10	0.50	0.37	0.49
89	128	7	10	0.50	0.44	0.50
73	105	7	10	0.60	0.50	0.50
87	125	7	10	0.60	0.37	0.49
36	52	7	10	0.75	0.65	0.48
50	72	7	10	0.75	0.56	0.50
71	102	7	10	0.75	0.50	0.50
85	122	7	10	0.75	0.37	0.49
141	202	7	10	0.75	0.26	0.44
55	79	7	10	1.00	0.50	0.50
76	109	7	10	1.00	0.43	0.50
83	119	7	10	1.00	0.43	0.50
97	139	7	10	1.00	0.39	0.49
118	169	7	10	1.00	0.41	0.50
146	209	7	10	1.00	0.26	0.44
153	219	7	10	1.00	0.24	0.43
160	229	7	10	1.00	0.20	0.41
195	279	7	10	1.00	0.28	0.45
216	309	7	10	1.00	0.26	0.44

Table S5

Questions and Mean Responses for Experiment 3

Short delay	Long delay	Small amount	Large amount	Choice LL (gain)	SD (gain)	Choice LL (loss)	SD (loss)
0	20	32	55	0.58	0.50	0.21	0.42
0	20	40	70	0.86	0.35	0.21	0.42
0	25	40	55	0.39	0.49	0.46	0.51
0	40	25	35	0.18	0.38	0.36	0.49
0	50	30	85	0.74	0.44	0.11	0.31
10	20	10	18	0.61	0.49	0.29	0.46
10	25	15	35	0.77	0.42	0.14	0.36
10	27	40	65	0.56	0.50	0.11	0.31
10	30	30	35	0.09	0.29	0.36	0.49
10	30	40	62	0.49	0.50	0.61	0.50
10	35	25	34	0.21	0.41	0.36	0.49
10	37	21	30	0.16	0.37	0.57	0.50
10	37	65	75	0.14	0.35	0.39	0.50
10	40	67	85	0.35	0.48	0.46	0.51
10	65	45	70	0.33	0.48	0.50	0.51
10	85	21	30	0.04	0.19	0.46	0.51
20	25	10	12	0.46	0.50	0.36	0.49
20	27	20	26	0.47	0.50	0.18	0.39
20	37	27	30	0.12	0.33	0.64	0.49
20	40	32	45	0.53	0.50	0.36	0.49
20	43	34	35	0.04	0.19	0.61	0.50
20	50	47	60	0.28	0.45	0.86	0.36
20	50	83	85	0.02	0.13	0.54	0.51
20	65	48	55	0.07	0.26	0.57	0.50
20	85	30	35	0.05	0.23	0.46	0.51
30	37	10	12	0.33	0.48	0.14	0.36
30	37	20	24	0.40	0.49	0.25	0.44
30	37	48	55	0.70	0.46	0.29	0.46
30	40	15	19	0.28	0.45	0.29	0.46
30	50	32	43	0.33	0.48	0.25	0.44
30	55	40	50	0.28	0.45	0.25	0.44
30	60	32	55	0.60	0.49	0.75	0.44
30	60	53	55	0.02	0.13	0.32	0.48
30	65	16	24	0.18	0.38	0.25	0.44
30	70	16	30	0.44	0.50	0.39	0.50
30	70	24	55	0.58	0.50	0.18	0.39
30	70	50	80	0.46	0.50	0.29	0.46
30	80	47	58	0.19	0.40	0.50	0.51
30	85	53	55	0.04	0.19	0.68	0.48
30	100	50	74	0.21	0.41	0.39	0.50

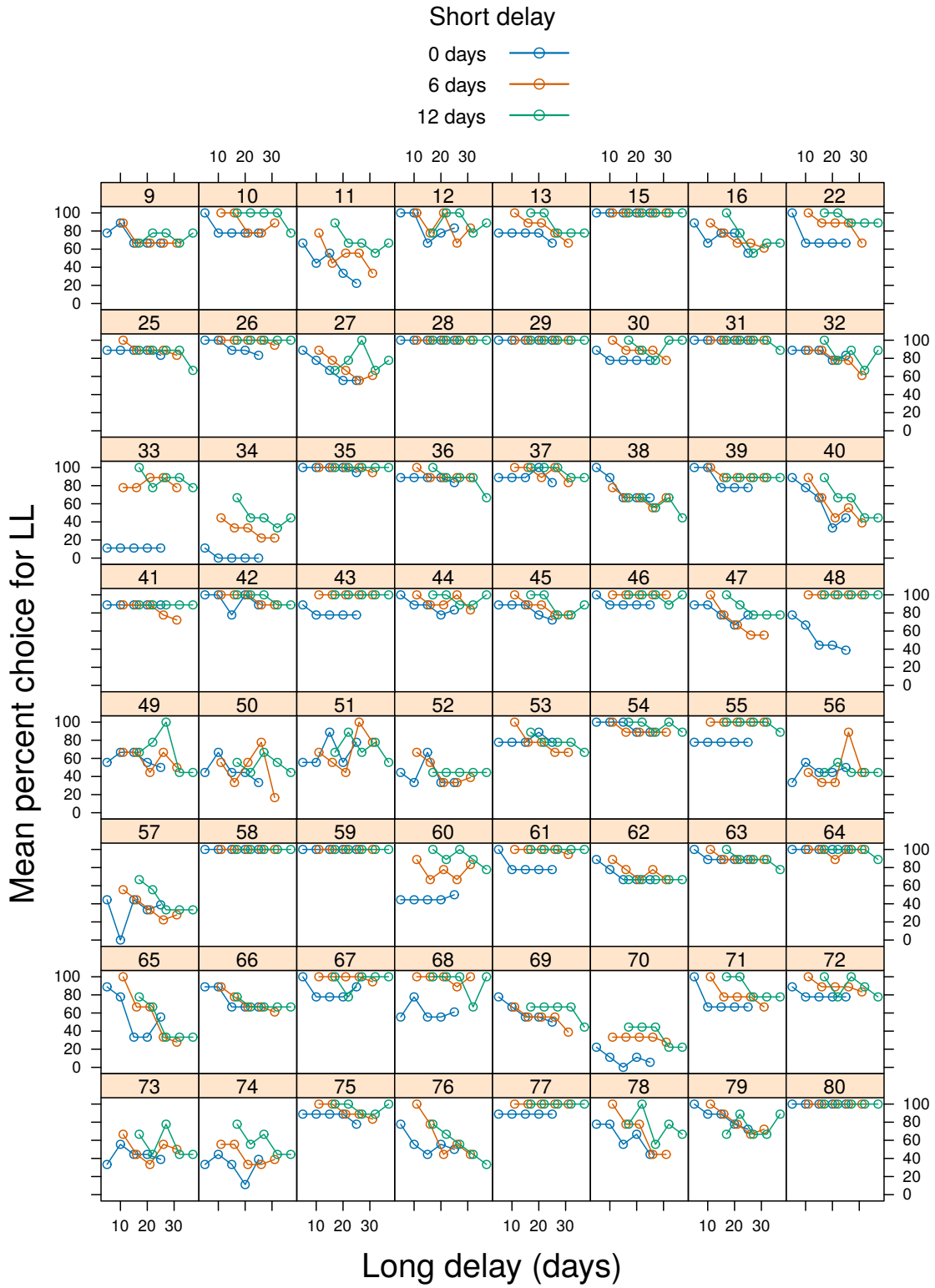


Figure S1. Mean choice percentages for staircase data in Experiment 1. Participants experienced three short delays and five long delays in the staircase phase of Experiment 1.

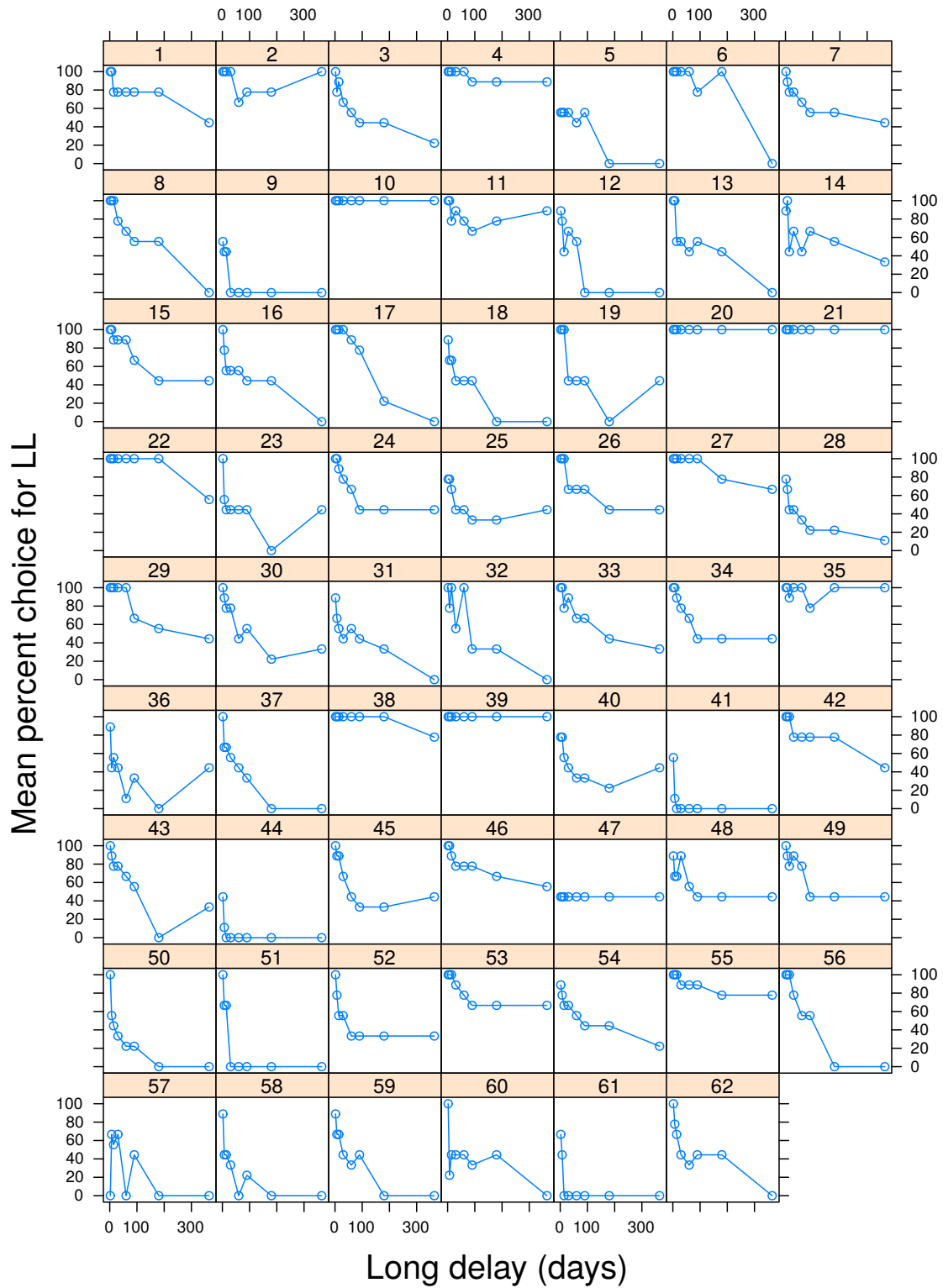
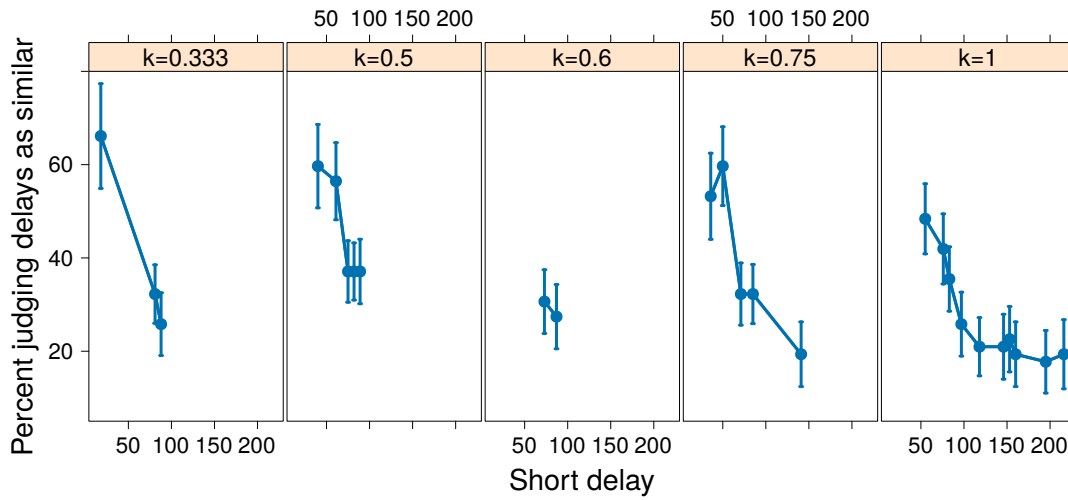


Figure S2. Mean choice percentages for staircase data in Experiment 2. Participants experienced eight long delays in the staircase phase of Experiment 2.

(a)



(b)

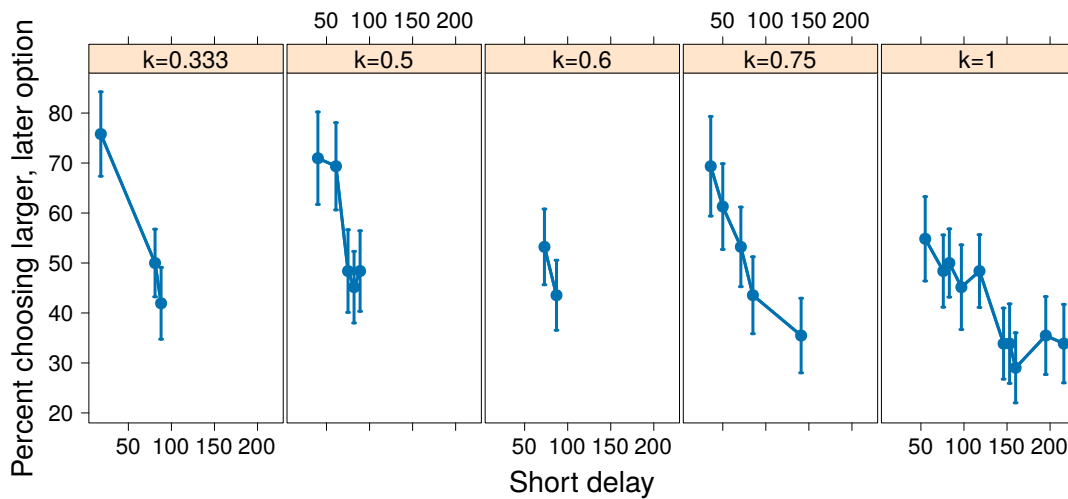


Figure S3. Tests effect of delay in Experiment 2. Each panel represents a block of questions with same k parameter at indifference. (a) The percentage of participants who rated the delays as similar decreased as the short delay magnitude increased. (b) Choice for the larger, later option in the binary choices decreased with the short delay magnitude. Points and error bars represent means and within-subjects 95% confidence intervals.

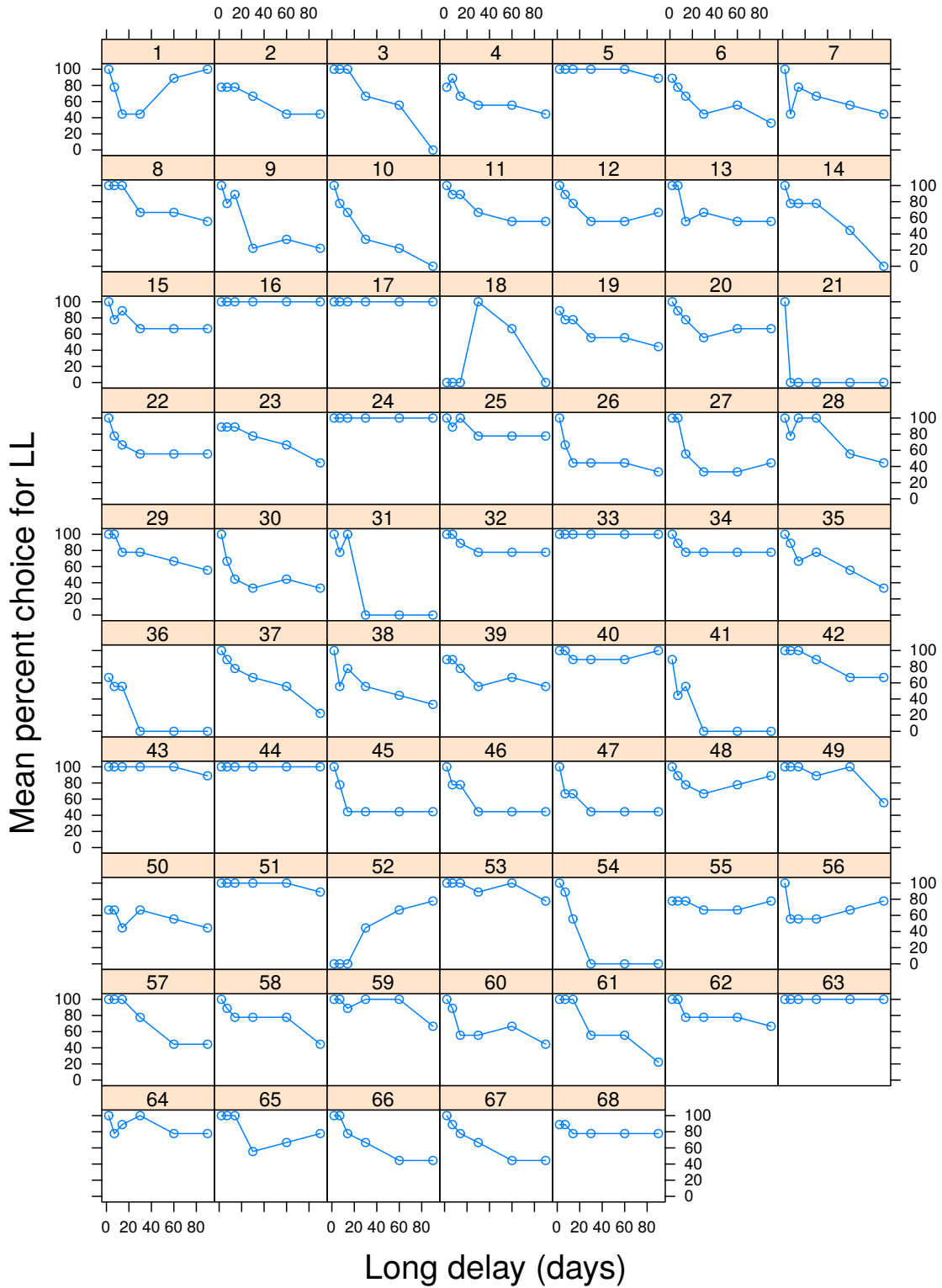


Figure S4. Choice percentages for staircase data in Experiment 3 gain condition. Participants experienced six long delays in the staircase phase of Experiment 3.

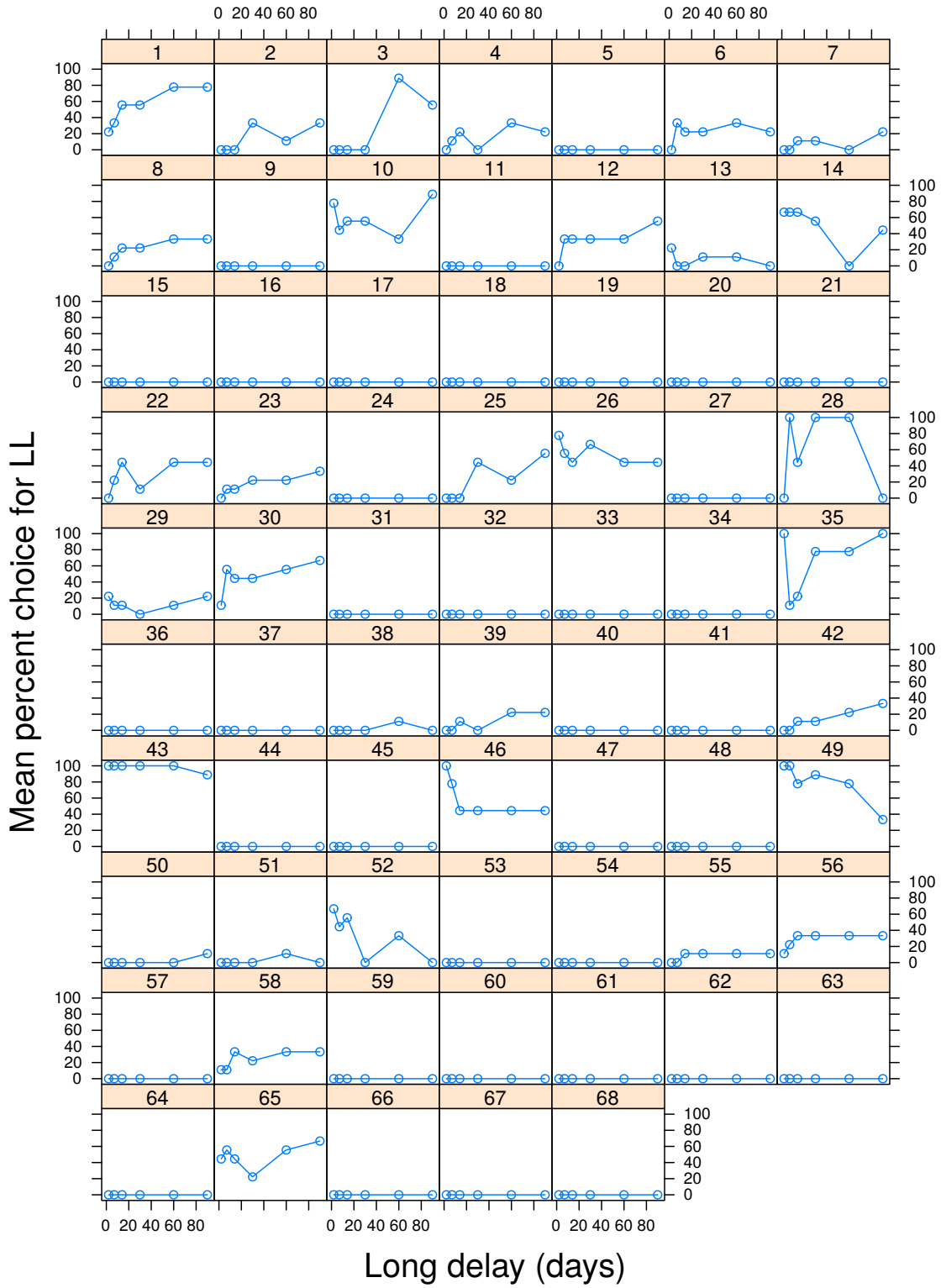


Figure S5. Choice percentages for staircase data in Experiment 3 loss condition. Participants experienced six long delays in the staircase phase of Experiment 3.