Supplemental Materials

**Table S1**

*Participant Demographics* (*N=260*)

|  |  |  |  |
| --- | --- | --- | --- |
| Measure | *M* (*SD)* | *n* | Percent of Sample |
| Age | 36.4 (10.2) |  |  |
| Sex |  |  |  |
| Male |  | 144 | 55.4 |
| Female |  | 98 | 37.7 |
| Other |  | 1 | 0.4 |
| Not reported |  | 17 | 6.5 |
| Nationality |  |  |  |
| American |  | 205 | 78.8 |
| Brazilian |  | 9 | 3.5 |
| Indian |  | 18 | 6.9 |
| Other |  | 11 | 4.2 |
| Not reported |  | 17 | 6.5 |
| Place of Residence |  |  |  |
| United States |  | 212 | 81.5 |
| Brazil |  | 9 | 3.5 |
| India |  | 18 | 6.9 |
| Other |  | 4 | 1.5 |
| Not reported |  | 17 | 6.5 |
| Color Blindness |  | 16 | 6.2 |
| Red-green |  | 14 | 5.4 |
| Blue-yellow |  | 2 | 0.8 |
| Not reported |  | 17 | 6.5 |
| Attrition Rate |  | 193/453 | 42.6 |

*Note. M=*Mean; *SD*=Standard deviation. We did not exclude participants with color blindness due to redundant cues during reinforcer deliveries (see Fig. 1).

able S1. Participant demographic

**Table S2**

*Results of Linear Mixed-Effects Regression for Target Responding*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor** | ***β* (SE)** | ***df*** | ***t*** | ***p*** |
| **Intercept** | **-2.43 (1.11)** | **1079.52** | **-2.20\*** | **.028** |
| **Time** | **-4.01 (0.46)** | **989.57** | **-8.80\*\*\*** | **<.001** |
| **Phase (1)** | **56.51 (3.83)** | **247.77** | **14.74\*\*\*** | **<.001** |
| **Phase (3)** | **15.27 (1.90)** | **332.68** | **8.05\*\*\*** | **<.001** |
| Group (RC-100) | 0.85 (1.53) | 1079.52 | 0.55 | .581 |
| Group (RC-320) | 0.44 (1.56) | 1079.52 | 0.29 | .775 |
| Group (RC-1000) | 1.30 (1.56) | 1079.52 | 0.83 | .406 |
| **Time \* Phase (1)** | **6.96 (0.60)** | **2448.00** | **11.51\*\*\*** | **<.001** |
| **Time \* Phase (3)** | **2.87 (0.60)** | **2448.00** | **4.75\*\*\*** | **<.001** |
| **Time \* Group (RC-100)** | **1.53 (0.65)** | **989.57** | **2.38\*** | **.018** |
| **Time \* Group (RC-320)** | **1.83 (0.65)** | **989.57** | **2.79\*\*** | **.005** |
| **Time \* Group (RC-1000)** | **2.57 (0.66)** | **989.57** | **3.91\*\*\*** | **<.001** |
| Phase (1) \* Group (RC-100) | -5.02 (5.32) | 247.77 | -0.94 | .347 |
| Phase (1) \* Group (RC-320) | -2.28 (5.40) | 247.77 | -0.42 | .672 |
| Phase (1) \* Group (RC-1000) | -1.97 (5.42) | 247.77 | -0.36 | .717 |
| **Time \* Phase (1) \* Group (RC-100)** | **-2.50 (0.84)** | **2448.00** | **-2.98\*\*** | **.003** |
| **Time \* Phase (1) \* Group (RC-320)** | **-2.89 (0.85)** | **2448.00** | **-3.40\*\*\*** | **<.001** |
| **Time \* Phase (1) \* Group (RC-1000)** | **-3.15 (0.85)** | **2448.00** | **-3.69\*\*\*** | **<.001** |
| Phase (3) \* Group (RC-100) | -2.32 (2.63) | 332.68 | -0.88 | .377 |
| Phase (3) \* Group (RC-320) | -2.38 (2.67) | 332.68 | -0.89 | .373 |
| Phase (3) \* Group (RC-1000) | -2.54 (2.68) | 332.68 | -0.95 | .344 |
| Time \* Phase (3) \* Group (RC-100) | -1.06 (0.84) | 2448.00 | -1.26 | .207 |
| Time \* Phase (3) \* Group (RC-320) | -1.45 (0.85) | 2448.00 | -1.70 | .089 |
| **Time \* Phase (3) \* Group (RC-1000)** | **-1.88 (0.85)** | **2448.00** | **-2.20\*** | **.028** |

*Note****.*** \**p* < .05 \*\**p* < .01 \*\*\**p* < .001. Statistically significant results are shown in bold. SE = standard error. The Phase (2) and Group (RC-1) factors served as the individual contrasts.

**Table S3**

*Raw data values are used to calculate effect sizes for each study during DRA (Phase 2).*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Punishment | | | No Punishment | | |
| Study | N | M | SD | N | M | SD |
| Rawson & Leitenberg, 1973 | 9 | 5.72 | 1.49 | 9 | 93.02 | 61.96 |
| Okouchi, 2015 | 6 | 0.34 | 0.55 | 6 | 12.77 | 12.28 |
| Kestner et al., 2015 | 5 | 0.013 | 0.028 | 5 | 3.45 | 3.84 |
| Kestner et al., 2018\* | 3 | 3.9 | 4.39 | 3 | 20.53 | 48.08 |
| Kuroda et al., 2020\* | 10 | 0.47 | 0.95 | 10 | 0.77 | 1.12 |
| Bolivar & Dallery, 2020 (Equal) | 17 | 0.52 | 1.14 | 16 | 3.28 | 4.69 |
| Bolivar & Dallery, 2020 (Double) | 16 | 0.51 | 0.79 | 16 | 3.28 | 4.69 |
| Houchins et al., 2021\* | 4 | 0 | 0 | 4 | 11.58 | 14.43 |
| Current Experiment (Low) | 54 | 3.53 | 8.21 | 50 | 5.75 | 11.17 |
| Current Experiment (Med) | 51 | 2.54 | 7.19 | 50 | 5.75 | 11.17 |
| Current Experiment (High) | 50 | 1.91 | 4.77 | 50 | 5.75 | 11.17 |

Note. \* = within-subject research design.

**Table S4**

*Raw data values used to calculate standardized mean differences for each study during resurgence testing (Phase 3).*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Punishment | | | No Punishment | | |
| Study | N | M | SD | N | M | SD |
| Rawson & Leitenberg, 1973 | 9 | 876.93 | 139.71 | 9 | 763.14 | 217.84 |
| Okouchi, 2015 | 6 | 3.66 | 1.9 | 6 | 3.58 | 2.63 |
| Kestner et al., 2015 | 4 | 0.38 | 0.72 | 5 | 1.86 | 2.91 |
| Kestner et al., 2018\* | 3 | 34.2 | 30.54 | 3 | 32.33 | 28.18 |
| Kuroda et al., 2020\* | 10 | 0.29 | 0.41 | 10 | 0.63 | 0.49 |
| Bolivar & Dallery, 2020 (Equal) | 17 | 8.71 | 4.87 | 16 | 8.18 | 4.41 |
| Bolivar & Dallery, 2020 (Double) | 16 | 7.66 | 5.29 | 16 | 8.18 | 4.41 |
| Houchins et al., 2021\* | 4 | 20.56 | 19.63 | 4 | 18.64 | 15.39 |
| Current Experiment (Low) | 54 | 9.87 | 14.12 | 50 | 10.41 | 14.37 |
| Current Experiment (Med) | 51 | 9.22 | 13.77 | 50 | 10.41 | 14.37 |
| Current Experiment (High) | 50 | 10.55 | 17.96 | 50 | 10.41 | 14.37 |

Note. \* = within-subject research design.