Learning Task

*Supplemental Learning Data Descriptions*

The learning task analyses reported in the main text revealed statistically significant trial number-by-linear and -quadratic age interactions. To better visualize the age effects represented by these results, we plotted learning performance collapsed across stimulus type with age on the x-axis, proportion optimal choice on the y-axis, and quadratic lines fit to the learning task data (Fig. S1).

**Figure S1.** Visualization of block-wise learning performance across age. Optimal choices improved then plateaued with increasing age, especially as the task progressed. Trials are binned into blocks of 30 trials (10
trials of each stimulus type) for data visualization purposes, but trial number was treated as a continuous variable in all analyses. Shading represents a 95% confidence interval around fitted lines.

We also replotted the learning data in Fig. 2A to: 1) visualize age as a continuous variable, consistent with the way that age was analyzed (Fig. S2) and 2) visualize trial-wise optimal choice in the first block of the task (Fig. S3). For the latter, we averaged proportion optimal choice by stimulus type (previously high-reward, previously-low reward, and novel) across all participants within an age group for each trial in the first block.

Figure S2. Visualization of learning performance for each stimulus type across the task and continuous age. Trials are binned into 30 trial blocks (10 trials of each stimulus type) for data visualization purposes, but trial number was treated as a continuous variable in all analyses. Shading represents a 95% confidence interval around fitted lines.

Full linear mixed-effects model outputs for the learning task analyses reported in the main text are included here (Tables S1A and S1C), as well as model estimates, standard error, and Z-values (Tables S1B and S1D).
**Figure S3.** Visualization of trial-wise learning performance during the first block. Age is binned into children (8-12 yr), adolescent (13-17 yr), and adult (18-25 yr) groups for data visualization purposes, but age was treated as a continuous variable in all analyses. While only the first block of 30 trials (10 trials of each stimulus type) is plotted here to highlight how prior reward interferes with early learning, the full six blocks of 180 trials (60 trials of each stimulus type) are included in all analyses. Error bars represent standard error.
Supplemental Table 1A: Analysis of Deviance for Learning Task Performance Model Including Previously High-Reward, Previously Low-Reward, and Novel Stimuli

| Predictors                              | Chisq     | Df | P-value |
|-----------------------------------------|-----------|----|---------|
| (Intercept)                             | 188.68970 | 1  | 0.00000 |
| Trial Number                            | 230.15534 | 1  | 0.00000 |
| Stimulus Type                           | 30.97171  | 2  | 0.00000 |
| Linear Age                              | 26.28412  | 1  | 0.00000 |
| Quadratic Age                           | 3.66636   | 1  | 0.05552 |
| High-Reward Source Image Category       | 0.43074   | 1  | 0.51163 |
| Trial Number*Stimulus Type              | 9.78118   | 2  | 0.00752 |
| Trial Number*Linear Age                 | 30.31914  | 1  | 0.00000 |
| Stimulus Type*Linear Age                | 2.11421   | 2  | 0.34746 |
| Trial Number*Quadratic Age              | 4.06959   | 1  | 0.04366 |
| Stimulus Type*Quadratic Age             | 0.85376   | 2  | 0.65254 |
| Trial Number*Stimulus Type*Linear Age   | 1.84369   | 2  | 0.39778 |
| Trial Number*Stimulus Type*Quadratic Age| 5.18707   | 2  | 0.07476 |
Supplemental Table 1B: Learning Task Performance Analysis Including Previously High-Reward, Previously Low-Reward, and Novel Stimuli

| Predictors                              | Estimate | Standard Error | Z-value | P-value |
|-----------------------------------------|----------|----------------|---------|---------|
| (Intercept)                             | 2.13972  | 0.15577        | 13.73644| 0.00000 |
| Trial Number                            | 0.54874  | 0.03617        | 15.17087| 0.00000 |
| Stimulus Type (High)                    | -0.24422 | 0.04934        | -4.95015| 0.00000 |
| Stimulus Type (Low)                     | -0.00023 | 0.05041        | -0.00457| 0.99636 |
| Linear Age                              | 0.58397  | 0.11391        | 5.12680 | 0.00000 |
| Quadratic Age                           | -0.21394 | 0.11173        | -1.91477| 0.05552 |
| High-Reward Source Image Category (Face)| 0.07052  | 0.10745        | 0.65631 | 0.51163 |
| Trial Number*Stimulus Type (High)       | 0.11709  | 0.04908        | 2.38569 | 0.01705 |
| Trial Number*Stimulus Type (Low)        | 0.03567  | 0.05017        | 0.71097 | 0.47711 |
| Trial Number*Linear Age                 | 0.13438  | 0.02440        | 5.50628 | 0.00000 |
| Stimulus Type (High)*Linear Age         | -0.03353 | 0.03363        | -0.99675| 0.31889 |
| Stimulus Type (Low)*Linear Age          | -0.01709 | 0.03401        | -0.50264| 0.61522 |
| Trial Number*Quadratic Age              | -0.05001 | 0.02479        | -2.01732| 0.04366 |
| Stimulus Type (High)*Quadratic Age      | 0.03010  | 0.03410        | 0.88270 | 0.37740 |
| Stimulus Type (Low)*Quadratic Age       | -0.02190 | 0.03454        | -0.63405| 0.52605 |
| Trial Number*Stimulus Type (High)*Linear Age | 0.03782 | 0.03347        | 1.12982 | 0.25855 |
| Trial Number*Stimulus Type (Low)*Linear Age | 0.00559 | 0.03386        | 0.16497 | 0.86897 |
| Trial Number*Stimulus Type (High)*Quadratic Age | -0.04371 | 0.03383        | -1.29204| 0.19634 |
| Trial Number*Stimulus Type (Low)*Quadratic Age | -0.03797 | 0.03429        | -1.10732| 0.26816 |
### Supplemental Table 1C: Analysis of Deviance for Learning Task Performance Model Including Previously High-Reward and Previously Low-Reward Stimuli

| Predictors                                             | Chisq   | Df | P-value |
|--------------------------------------------------------|---------|----|---------|
| (Intercept)                                            | 153.31331 | 1  | 0.00000 |
| Trial Number                                           | 208.62927 | 1  | 0.00000 |
| Stimulus Type                                          | 8.12936  | 1  | 0.00436 |
| Linear Age                                             | 24.34660 | 1  | 0.00000 |
| Quadratic Age                                          | 2.41392  | 1  | 0.12026 |
| High-Reward Source Image Category                      | 0.29085  | 1  | 0.58968 |
| Trial Number*Stimulus Type                             | 0.92080  | 1  | 0.33726 |
| Trial Number*Linear Age                                | 30.52872 | 1  | 0.00000 |
| Stimulus Type*Linear Age                               | 0.09499  | 1  | 0.75793 |
| Trial Number*Quadratic Age                             | 8.47903  | 1  | 0.00359 |
| Stimulus Type*Quadratic Age                            | 0.72966  | 1  | 0.39299 |
| Trial Number*Stimulus Type*Linear Age                  | 0.33095  | 1  | 0.56510 |
| Trial Number*Stimulus Type*Quadratic Age               | 0.00725  | 1  | 0.93213 |
Reward-motivated memories influence new learning across development.

Supplemental Reaction Time Analyses

To further probe how existing high-reward associations may interfere with new learning, we repeated the analyses described in the main text using learning reaction times, rather than learning performance, as the response variable in linear mixed-effects models. That is, we first examined trial-wise reaction times during learning as a function of trial number, stimulus type (previously high-reward, previously low-reward, and novel), continuous linear age, continuous quadratic age, and their interactions, controlling for the high-reward source image category (faces or places). As before, we found significant effects of trial number (reaction times decreased through the task; $\chi^2(1, N = 89) = 465.58, p < 0.001$) and stimulus type (responding was longest for previously high-reward stimuli and shortest for novel stimuli; $\chi^2(2, N = 89) = 14.67, p < 0.001$). We also observed similar age effects: there was a trending effect of linear age ($\chi^2(1, N = 89) = 3.38, p = 0.066$) and a significant effect of quadratic age (reaction times decreased with age, plateauing at their minimum during adolescence; $\chi^2(1, N = 89) = 4.40, p = 0.036$). Again, there was no significant effect of high-reward source image category ($\chi^2(1, N = 89) = 1.31, p = 0.252$). These learning reaction time results are aligned with the

**Supplemental Table 1D: Learning Task Performance Analysis Including Previously High-Reward and Previously Low-Reward Stimuli**

| Predictors | Estimate | Standard Error | Z-value | P-value |
|------------|----------|----------------|---------|---------|
| (Intercept) | 1.99933  | 0.16147        | 12.38198| 0.00000 |
| Trial Number | 0.61721  | 0.04273        | 14.44400| 0.00000 |
| Stimulus Type (High) | -0.11995 | 0.04207        | -2.85120| 0.00436 |
| Linear Age | 0.58333  | 0.11822        | 4.93423 | 0.00000 |
| Quadratic Age | -0.18013 | 0.11594        | -1.55368| 0.12026 |
| High-Reward Source Image Category (Face) | 0.06010  | 0.11144        | 0.53930 | 0.58968 |
| Trial Number*Stimulus Type (High) | 0.04019  | 0.04188        | 0.95958 | 0.33726 |
| Trial Number*Linear Age | 0.16053  | 0.02905        | 5.52528 | 0.00000 |
| Stimulus Type (High)*Linear Age | -0.00888 | 0.02881        | -0.30820| 0.75793 |
| Trial Number*Quadratic Age | -0.08430 | 0.02895        | -2.91188| 0.00359 |
| Stimulus Type (High)*Quadratic Age | 0.02454  | 0.02873        | 0.85420 | 0.39299 |
| Trial Number*Stimulus Type (High)*Linear Age | 0.01652  | 0.02871        | 0.57529 | 0.56510 |
| Trial Number*Stimulus Type (High)*Quadratic Age | -0.00244 | 0.02859        | -0.08517| 0.93213 |
learning performance results detailed in the main text, strengthening the conclusion that choice efficiency improved with age and throughout the task but was impeded for previously high-reward relative to low-reward stimuli.

Two- and three-way interactions qualified the learning reaction time main effects in a manner generally consistent with the conclusions drawn from learning performance. There were significant trial number-by-linear age and trial number-by-quadratic age interactions (as the task progressed, younger participants did not speed up their responding as much as adolescents and older participants did; trial number-by-linear age $\chi^2(1, N = 89) = 4.78, p = 0.029$; trial number-by-quadratic age $\chi^2(1, N = 89) = 13.57, p < 0.001$). Additionally, a significant stimulus type-by-quadratic age interaction indicated that reaction times were speeded most for previously low-reward relative to high-reward stimuli in adolescents (stimulus type-by-quadratic age $\chi^2(2, N = 89) = 6.58, p = 0.037$). A significant trial number-by-stimulus type-by-quadratic age interaction clarified that this pattern was concentrated during early learning (trial number-by-stimulus type-by-quadratic age $\chi^2(2, N = 89) = 9.40, p = 0.009$). Together, these two- and three-way interactions suggest that deliberation became more efficient throughout the task, with trajectories varying by stimulus type and age (Fig. S4). There were no other significant two- or three-way interactions ($p_s > 0.187$; see Tables S2A and S2B for full linear mixed-effects model output). Considering these learning reaction time results in tandem with learning performance, we find that while prior reward associations stymied the learning process, the reaction time data suggest that this interference was ameliorated as the task progressed, especially for older participants.

As with learning performance, we also directly investigated the effect of the level of prior reward (i.e., high versus low) on learning reaction times by conducting a linear mixed-effects model without the novel stimulus trials. Again, we reproduced our main effects: there was a significant effect of trial number ($\chi^2(1, N = 89) = 343.15, p < 0.001$), a trending effect of linear age ($\chi^2(1, N = 89) = 2.88, p = 0.090$), a significant effect of quadratic age ($\chi^2(1, N = 89) = 3.85, p = 0.050$), and, importantly, a significant effect of stimulus type ($\chi^2(1, N = 89) = 5.51, p = 0.019$). The interactions between trial number and age also persisted (trial number-by-linear age $\chi^2(1, N = 89) = 2.73, p = 0.099$; trial number-by-quadratic age $\chi^2(1, N = 89) = 20.06, p < 0.001$), as did the stimulus type-by-quadratic age interaction ($\chi^2(1, N = 89) = 4.41, p = 0.036$), but not as a function of trial
number (trial number-by-stimulus type-by-quadratic age $\chi^2(1, N = 89) = 2.56, p = 0.110$). In all, these results continue to illustrate that differences in deliberation for each stimulus type were driven by the degree of previous reward. There were no other significant main effects or two- or three-way interactions ($p$s > 0.256; see Tables S2C and S2D for full linear mixed-effects model output). These learning reaction time findings, together with the learning performance results, indicate that learning, as indexed through optimal and efficient choice, was subject to interference by prior high-reward associations, but overall improved with increasing age.

**Figure S4.** Reaction times decreased throughout the learning task and with age, especially into adolescence. Stimulus type also modulated reaction times during learning, such that responding was longest for previously high-reward stimuli and shortest for novel stimuli. Trials are binned into 30 trial blocks (10 trials of each stimulus type) for data visualization purposes, but trial number was treated as a continuous variable in all analyses. Shading represents a 95% confidence interval around fitted lines.
### Supplemental Table 2A: Analysis of Deviance for Learning Task Reaction Time Model Including Previously High-Reward, Previously Low-Reward, and Novel Stimuli

| Predictors                                      | Chisq    | Df | P-value |
|-------------------------------------------------|----------|----|---------|
| (Intercept)                                     | 572.99081| 1  | 0.00000 |
| Trial Number                                    | 465.57760| 1  | 0.00000 |
| Stimulus Type                                   | 14.67032 | 2  | 0.00065 |
| Linear Age                                      | 3.38476  | 1  | 0.06580 |
| Quadratic Age                                   | 4.40047  | 1  | 0.03593 |
| High-Reward Source Image Category               | 1.31061  | 1  | 0.25228 |
| Trial Number*Stimulus Type                      | 3.34955  | 2  | 0.18735 |
| Trial Number*Linear Age                         | 4.77543  | 1  | 0.02887 |
| Stimulus Type*Linear Age                        | 2.57198  | 2  | 0.27638 |
| Trial Number*Quadratic Age                      | 13.56714 | 1  | 0.00023 |
| Stimulus Type*Quadratic Age                     | 6.58187  | 2  | 0.03722 |
| Trial Number*Stimulus Type*Linear Age           | 0.50356  | 2  | 0.77742 |
| Trial Number*Stimulus Type*Quadratic Age        | 9.39991  | 2  | 0.00910 |
Supplemental Table 2B: Learning Task Reaction Time Analysis Including Previously High-Reward, Previously Low-Reward, and Novel Stimuli

| Predictors                        | Estimate  | Standard Error | Df      | Z-value | P-value |
|-----------------------------------|-----------|----------------|---------|---------|---------|
| (Intercept)                       | 673.77582 | 28.14761       | 84.98589| 23.93723| 0.00000 |
| Trial Number                      | -72.89016 | 3.37810        | 15789.00721| -21.57725| 0.00000 |
| Stimulus Type (High)              | 16.95137  | 4.76835        | 15789.00501| 3.55497  | 0.00038 |
| Stimulus Type (Low)               | -2.58905  | 4.76346        | 15789.00194| -0.54352 | 0.58678 |
| Linear Age                        | -38.11150 | 20.71534       | 84.99342| -1.83977| 0.06929 |
| Quadratic Age                     | 42.55883  | 20.28804       | 84.99256| 2.09773 | 0.03890 |
| High-Reward Source Image Category (Face) | -22.35735 | 19.52918       | 84.98997| -1.14482| 0.25550 |
| Trial Number*Stimulus Type (High) | -5.28181  | 4.78221        | 15789.02402| -1.10447| 0.26941 |
| Trial Number*Stimulus Type (Low)  | -3.39336  | 4.77389        | 15789.01581| -0.71082| 0.47721 |
| Trial Number*Linear Age           | -5.44425  | 2.49133        | 15789.01565| -2.18528| 0.02888 |
| Stimulus Type (High)*Linear Age   | 1.24520   | 3.51736        | 15789.01750| 0.35401 | 0.72333 |
| Stimulus Type (Low)*Linear Age    | 4.13746   | 3.51448        | 15789.00673| 1.17726 | 0.23911 |
| Trial Number*Quadratic Age        | 8.96996   | 2.43527        | 15789.00586| 3.68336 | 0.00023 |
| Stimulus Type (High)*Quadratic Age| -8.80154  | 3.44116        | 15789.01452| -2.55773| 0.01055 |
| Stimulus Type (Low)*Quadratic Age | 3.80810   | 3.43759        | 15789.00981| 1.10778 | 0.26797 |
| Trial Number*Stimulus Type (High)*Linear Age | -1.71030 | 3.52432        | 15789.04342| -0.48529| 0.62748 |
| Trial Number*Stimulus Type (Low)*Linear Age | 2.43526 | 3.52364        | 15789.03123| 0.69112 | 0.48950 |
| Trial Number*Stimulus Type (High)*Quadratic Age | 9.29205 | 3.44705        | 15789.04116| 2.69565 | 0.00703 |
| Trial Number*Stimulus Type (Low)*Quadratic Age | -0.29352 | 3.44261        | 15789.02433| -0.08526| 0.93206 |

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Supplemental Table 2C: Analysis of Deviance for Learning Task Reaction Time Model Including Previously High-Reward and Previously Low-Reward Stimuli

| Predictors                                | Chisq   | Df | P-value |
|-------------------------------------------|---------|----|---------|
| (Intercept)                               | 576.96636 | 1  | 0.00000 |
| Trial Number                              | 343.15409 | 1  | 0.00000 |
| Stimulus Type                             | 5.51042  | 1  | 0.01890 |
| Linear Age                                | 2.88299  | 1  | 0.08952 |
| Quadratic Age                             | 3.84817  | 1  | 0.04980 |
| High-Reward Source Image Category         | 1.28671  | 1  | 0.25665 |
| Trial Number*Stimulus Type                | 0.05175  | 1  | 0.82005 |
| Trial Number*Linear Age                   | 2.72745  | 1  | 0.09864 |
| Stimulus Type*Linear Age                  | 0.22305  | 1  | 0.63673 |
| Trial Number*Quadratic Age                | 20.05910 | 1  | 0.00001 |
| Stimulus Type*Quadratic Age               | 4.41225  | 1  | 0.03568 |
| Trial Number*Stimulus Type*Linear Age     | 0.46491  | 1  | 0.49534 |
| Trial Number*Stimulus Type*Quadratic Age  | 2.56080  | 1  | 0.10954 |
Supplemental Table 2D: Learning Task Reaction Time Analysis Including Previously High-Reward and Previously Low-Reward Stimuli

| Predictors                                             | Estimate | Standard Error | Df       | Z-value | P-value  |
|--------------------------------------------------------|----------|----------------|----------|---------|----------|
| (Intercept)                                            | 680.94508| 28.34894       | 84.97405 | 24.02012| 0.00000  |
| Trial Number                                           | -77.20640| 4.16782        | 10497.00946| -18.52442| 0.00000  |
| Stimulus Type (High)                                   | 9.75794  | 4.15687        | 10497.00012| 2.34743 | 0.01892  |
| Linear Age                                             | -35.42598| 20.86412       | 84.98628 | -1.69794| 0.09318  |
| Quadratic Age                                          | 40.08517 | 20.43415       | 84.98680 | 1.96168 | 0.05307  |
| High-Reward Source Image Category (Face)               | -22.31115| 19.66894       | 84.97950 | -1.13433| 0.25984  |
| Trial Number*Stimulus Type (High)                      | -0.94814 | 4.16790        | 10497.02800| -0.22749| 0.82005  |
| Trial Number*Linear Age                                | -5.07682 | 3.07407        | 10497.01924| -1.65150| 0.09867  |
| Stimulus Type (High)*Linear Age                        | -1.44839 | 3.06681        | 10497.01627| -0.47228| 0.63674  |
| Trial Number*Quadratic Age                             | 13.45931 | 3.00516        | 10497.00131| 4.47874 | 0.00001  |
| Stimulus Type (High)*Quadratic Age                     | -6.30271 | 3.00053        | 10497.01719| -2.10053| 0.03571  |
| Trial Number*Stimulus Type (High)*Linear Age           | -2.09612 | 3.07420        | 10497.05723| -0.68184| 0.49535  |
| Trial Number*Stimulus Type (High)*Quadratic Age       | 4.80925  | 3.00531        | 10497.05176| 1.60025 | 0.10957  |
Individual Differences in Learning

Full linear mixed-effects model outputs for the analysis of individual differences in learning reported in the main text are included here (Table S3A), as well as model estimates, standard error, and Z-values (Table S3B).

### Supplemental Table 3A: Analysis of Deviance for Individual Differences in Learning Model Including Previously High-Reward and Previously Low-Reward Stimuli

| Predictors                                      | Chisq     | Df | P-value |
|-------------------------------------------------|-----------|----|---------|
| (Intercept)                                     | 151.13778 | 1  | 0.00000 |
| Trial Number                                    | 211.80338 | 1  | 0.00000 |
| Stimulus Type                                   | 9.91231   | 1  | 0.00164 |
| Linear Age                                      | 24.10652  | 1  | 0.00000 |
| General Reward Source Memory                    | 0.15609   | 1  | 0.69278 |
| Quadratic Age                                   | 1.00922   | 1  | 0.31509 |
| High-Reward Source Image Category               | 0.15772   | 1  | 0.69126 |
| Trial Number*Stimulus Type                      | 0.53421   | 1  | 0.46484 |
| Trial Number*Linear Age                         | 15.48283  | 1  | 0.00008 |
| Stimulus Type*Linear Age                        | 0.01869   | 1  | 0.89127 |
| Trial Number*General Reward Source Memory       | 7.07697   | 1  | 0.00781 |
| Stimulus Type*General Reward Source Memory      | 2.43631   | 1  | 0.11855 |
| Linear Age*General Reward Source Memory         | 2.00818   | 1  | 0.15645 |
| Trial Number*Quadratic Age                      | 8.72505   | 1  | 0.00314 |
| Stimulus Type*Quadratic Age                     | 3.49895   | 1  | 0.06141 |
| General Reward Source Memory*Quadratic Age      | 0.08601   | 1  | 0.76931 |
| Trial Number*Stimulus Type*Linear Age           | 0.32458   | 1  | 0.56887 |
| Trial Number*Stimulus Type*General Reward Source Memory | 0.27374   | 1  | 0.60083 |
| Trial Number*Linear Age*General Reward Source Memory | 0.00004   | 1  | 0.99528 |
| Stimulus Type*Linear Age*General Reward Source Memory | 0.00002   | 1  | 0.99677 |
| Trial Number*Stimulus Type*Quadratic Age        | 0.54687   | 1  | 0.45960 |
| Trial Number*General Reward Source Memory*Quadratic Age | 5.32352   | 1  | 0.02104 |
| Stimulus Type*General Reward Source Memory*Quadratic Age | 6.20079   | 1  | 0.01277 |
| Trial Number*Stimulus Type*Linear Age*General Reward Source Memory | 0.01801   | 1  | 0.89324 |
| Trial Number*Stimulus Type*General Reward Source Memory*Quadratic Age | 1.96715   | 1  | 0.16075 |
### Supplemental Table 3B: Individual Differences in Learning Analysis Including Previously High-Reward and Previously Low-Reward Stimuli

| Predictors                                                                 | Estimate | Standard Error | Z-value | P-value |
|---------------------------------------------------------------------------|----------|----------------|---------|---------|
| (Intercept)                                                               | 2.00702  | 0.16325        | 12.29381| 0.00000 |
| Trial Number                                                              | 0.64288  | 0.04417        | 14.55347| 0.00000 |
| Stimulus Type (High)                                                      | -0.13716 | 0.04357        | -3.14838| 0.00164 |
| Linear Age                                                                | 0.67534  | 0.13755        | 4.90984 | 0.00000 |
| General Reward Source Memory                                              | 0.93852  | 2.37550        | 0.39508 | 0.69278 |
| Quadratic Age                                                             | -0.13328 | 0.13267        | -1.00460| 0.31509 |
| High-Reward Source Image Category (Face)                                  | 0.04539  | 0.11429        | 0.39714 | 0.69126 |
| Trial Number*Stimulus Type (High)                                         | 0.03162  | 0.04326        | 0.73090 | 0.46484 |
| Trial Number*Linear Age                                                   | 0.14337  | 0.03644        | 3.93482 | 0.00008 |
| Stimulus Type (High)*Linear Age                                           | 0.00498  | 0.03644        | 0.13670 | 0.89127 |
| Trial Number*General Reward Source Memory                                 | 1.62006  | 0.60899        | 2.66026 | 0.00781 |
| Stimulus Type (High)*General Reward Source Memory                         | -0.93768 | 0.60074        | -1.56087| 0.11855 |
| Linear Age*General Reward Source Memory                                   | 1.90960  | 1.34754        | 1.41710 | 0.15645 |
| Trial Number*Quadratic Age                                                | -0.10156 | 0.03438        | -2.95382| 0.00314 |
| Stimulus Type (High)*Quadratic Age                                        | 0.06425  | 0.03435        | 1.87055 | 0.06141 |
| General Reward Source Memory*Quadratic Age                                | 0.43735  | 1.49123        | 0.29328 | 0.76931 |
| Trial Number*Stimulus Type (High)*Linear Age                             | 0.02055  | 0.03606        | 0.56972 | 0.56887 |
| Trial Number*Stimulus Type (High)*General Reward Source Memory           | -0.31187 | 0.59609        | -0.52320| 0.60083 |
| Trial Number*Linear Age*General Reward Source Memory                     | 0.00217  | 0.36650        | 0.00592 | 0.99528 |
| Stimulus Type (High)*Linear Age*General Reward Source Memory             | -0.00148 | 0.36589        | -0.00405| 0.99677 |
| Trial Number*Stimulus Type (High)*Quadratic Age                          | 0.02514  | 0.03399        | 0.73950 | 0.45960 |
| Trial Number*General Reward Source Memory*Quadratic Age                  | -0.86519 | 0.37498        | -2.30727| 0.02104 |
| Stimulus Type (High)*General Reward Source Memory*Quadratic Age          | 0.92593  | 0.37184        | 2.49014 | 0.01277 |
| Trial Number*Stimulus Type (High)*Linear Age*General Reward Source Memory| -0.04866 | 0.36256        | -0.13420| 0.89324 |
| Trial Number*Stimulus Type (High)*General Reward Source Memory*Quadratic Age | 0.51975 | 0.37057        | 1.40255 | 0.16075 |
**Test Phase**

Full regression model outputs for the analysis of the test phase reported in the main text are included here (Tables S4A and S4B).

| Predictors                                      | Estimate | Standard Error | T-value | P-value |
|-------------------------------------------------|----------|----------------|---------|---------|
| (Intercept)                                     | 0.40975  | 0.05271        | 7.77400 | 0.00000 |
| Linear Age                                      | -0.03075 | 0.03727        | -0.82506| 0.41162 |
| High-Reward Source Image Category (Place)       | 0.10812  | 0.07413        | 1.45849 | 0.14835 |

**Supplemental Table 4B: Test Phase Analysis for 30%:30% Pairings**

| Predictors                                      | Estimate | Standard Error | T-value | P-value |
|-------------------------------------------------|----------|----------------|---------|---------|
| (Intercept)                                     | 0.43590  | 0.04815        | 9.05313 | 0.00000 |
| Linear Age                                      | -0.01377 | 0.03405        | -0.40444| 0.68689 |
| High-Reward Source Image Category (Place)       | 0.08974  | 0.06772        | 1.32506 | 0.18866 |
Figure S5. Visualization of the participant sample, approximately evenly distributed across age and sex. Age is binned into years for summarization purposes, but was treated as a continuous variable in all analyses.