

Readme for “Retrieval Practice Benefits Memory Precision” Data

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Color Gradient Description

All possible colors were selected from a LAB color gradient defined by $L = 85$, $A = [0 \dots 120]$, and $B = 85$, where A was calculated by dividing the range from 0 to 120 into 125 increments, with each increment corresponding to one color. The number of increments forming the color gradient was chosen based upon practical limitations resulting from computer hardware. It was found that a 750 pixel-wide gradient best fit a variety of computer monitors, and that a width of six pixels per color resulted in a perceptually indistinguishable gradient effect. The LAB colors were converted to RGB using the built-in MATLAB function `lab2rgb`.

General Data Description

Rows

Each participant studied 80 items (20 in Restudy-1, 20 in Restudy-3, 20 in Retrieval-1 and 20 in Retrieval-3). Each row represents one participant-by-item combination. Therefore, each participant is associated with 80 rows, one for each studied image.

Columns

A detailed description of each column and its values may be found on the next page.

Difference between short_stim and stimulus columns

Five sets of stimuli were generated for this experiment. Each set was composed of the same 125 line-drawn images but was made distinct by randomly assigning different colors to each image. Each participant was shown 80 items from the same set. The “short_stim” column specifies which underlying line-drawn image was shown, regardless of the color it was filled with. The “stimulus” column specifies the exact image-color pairing studied by each participant.

Variable Descriptions

Column Name	Description	Variable Type
participant_id	Randomly generated pseudonym for each participant	Nominal
short_stim	The image being learned, regardless of color	Nominal
stimulus	Unique identifier for the image-color pairing	Nominal
presentations	How many times was the image restudied or retrieved (1 or 3)?	Numeric (1 or 3)
correct_answer	Correct location on the bar for this stimulus (between 0 and 125)	Numeric (between 0 and 125).
study_type	Retrieval practice or restudy?	Nominal (Retrieval or Restudy)
round_1, round_2, round_3, and round_4	Participants' answers for each round of study (round 1) or restudy/retrieval (rounds 2-4). Rounds 3-4 will be NA for 1 presentation items.	Numeric (between 0 and 125)
second_day_answer	Participants' answer for the final test for this stimulus.	Numeric (between 0 and 125)
interval_width	Width of second-day interval metacognitive judgement (i.e., "precision"). Equal to slider_high – slider_low. Secondary DV.	Numeric (between 0 and 125)
round_1_error, round_2_error, round_3_error, round_4_error	Calculated by subtracting the correct_answer column from the appropriate round_x answer columns.	Numeric (between -125 and 125)
second_day_error	Equal to correct_answer - second_day_answer	Numeric (between -125 and 125)
abs_second_day	absolute value of second_day_error, primary DV	Numeric (between 0 and 125)
within_interval	Was the correct_answer within the metacognitive interval specified participant? Tertiary DV	Binary (TRUE or FALSE)

initial_interval_width	Sliders were randomly initialized before participants moved them. (equal to slider_high_initial – slider_low_initial)	Numeric (between 0 and 125)
slider_low_initial, slider_high_initial	Starting locations of the two sliders	Numeric (between 0 and 125)
slider_low, slider_high	Ending locations of the sliders (participant's response)	Numeric (between 0 and 125)
mean_distractor_interval	Mean interval width assigned to distractor intervals on the second day test.	Numeric (between 0 and 125)
total_seconds_spent_between_blocks	<p>Number of seconds that participants spent on instructions blocks during first day learning session.</p> <p>Only counts instruction blocks that occurred during the learning period (which numbered 11). Allows for the calculation of time spent on breaks between trial blocks (this column divided by 11 interstitial breaks).</p>	Numeric (seconds).
total_seconds_spent_on_final_test	<p>Number of seconds that participants spent on second day final test trials.</p> <p>Allows for the calculation of time spent per trial on the final test (this column divided by 80 trials).</p>	Numeric (seconds).