

Combined Experiments

2024-06-14

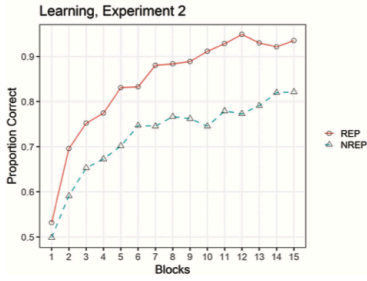
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Paper Figures

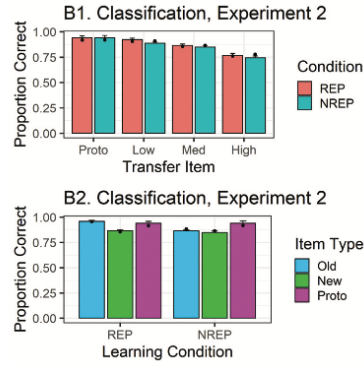
Relevant figures from (Hu & Nosofsky, 2022, 2024)

click on image to enlarge



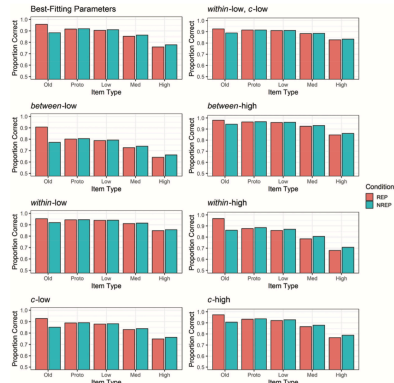
Note. Top panel: Experiment 1, bottom panel: Experiment 2. REP = repeating condition; NREP = nonrepeating condition. See the online article for the color version of this figure.

(a) 2022 Learning Curves



(a) 2022 Test Accuracy

Figure 8
Predictions of Classification-Transfer Accuracy From the Exemplar Model Across Different Parameter Variations in the Model (See Main Text for Details)



Note. The settings of the low and high values for each of the model parameters are described in the main text. REP = repeating condition; NREP = non-repeating condition. See the online article for the color version of this figure.

(a) 2022 Model Predictions

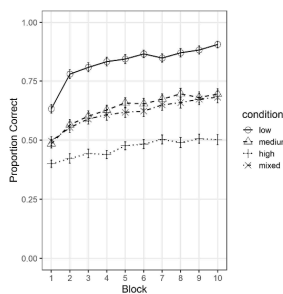


Fig. 2 Mean proportion of correct classifications during the training phase as a function of training condition (low, medium, high, mixed) and training block. Error bars are one standard error of the mean

(a) 2024 Learning Curves

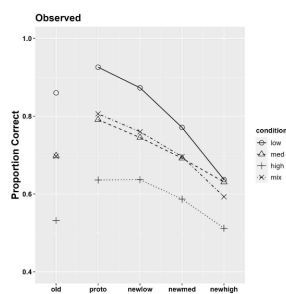


Fig. 3 Mean proportion of correct classifications during the test phase as a function of pattern type and training condition. newlow = new low distortions, newmed = new medium distortions, newhigh = new high distortions

(a) 2024 Test Accuracy

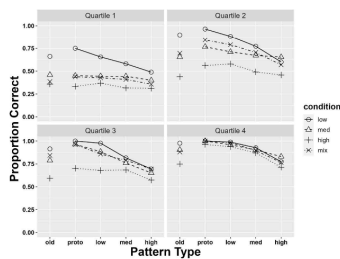
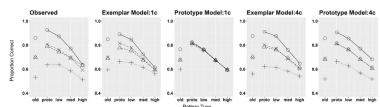


Fig. 4 Mean proportion of correct classifications during the test phase as a function of pattern type and training condition, broken down by overall subject performance quartile

(a) 2024 Test Accuracy - Quartile



(a) 2024 Model Predictions

2022 Paper

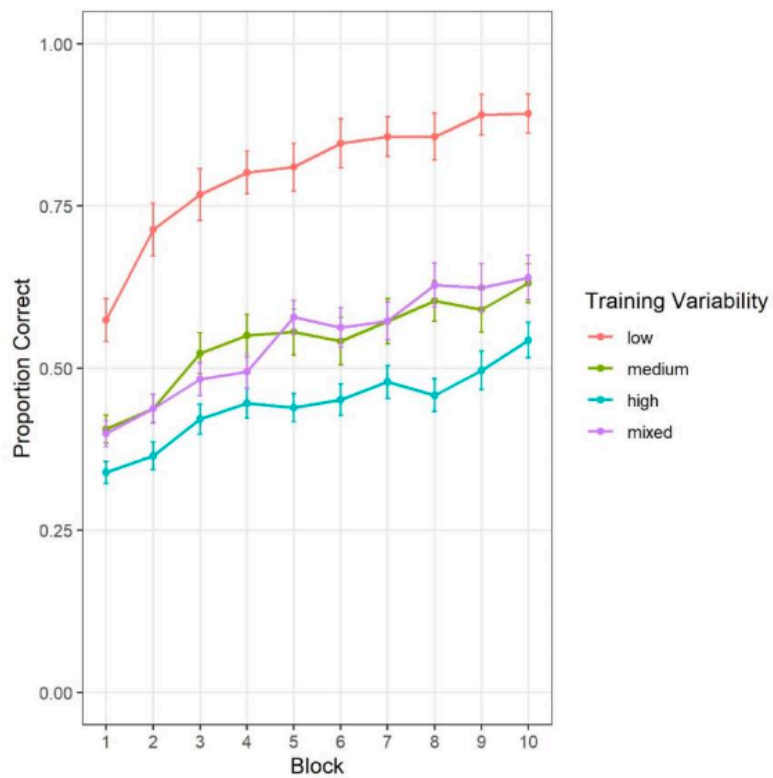
2024 Paper

Fixed Prototype Pilot

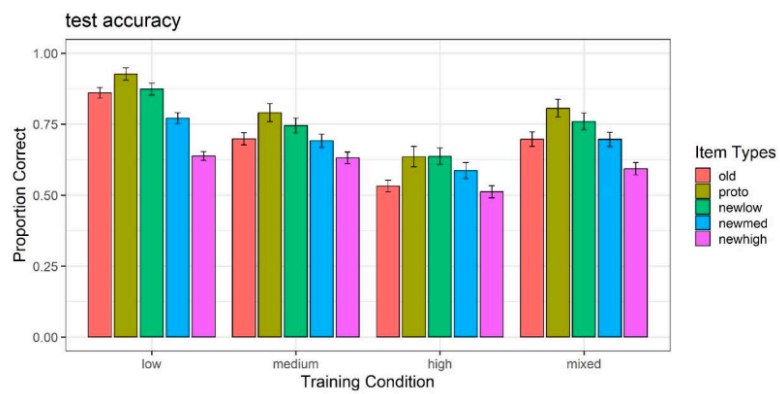
Test Stage Comparisons

Facet by experiment





(a) Pilot Learning Curves

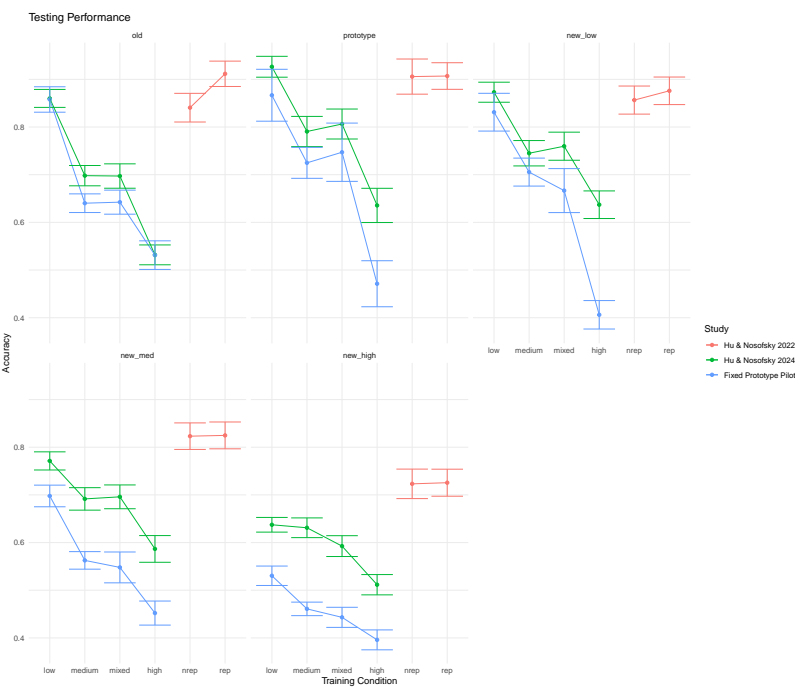


(a) Pilot Test Accuracy

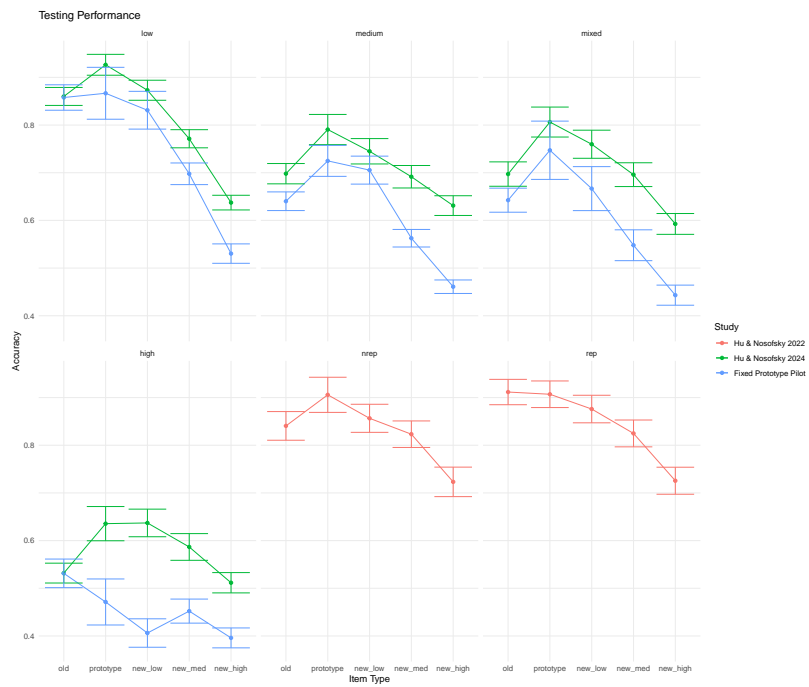
Comparison of Dot-Pattern Classification Studies

Study	Hu & Nosofsky (2022)	Hu & Nosofsky (2024)	Fixed Prototype Pilot Study
Publication	<i>JEP: Learning, Memory, and Cognition</i>	<i>Memory & Cognition</i>	<i>(unpublished pilot study)</i>
Abbreviation	<i>mc22</i>	<i>mc24</i>	<i>fixed_proto</i>
Participants	- 89 Indiana University undergraduates	- 304 Indiana University students	Not specified
	Course credit participation- Random assignment to conditions (REP or NREP)- Normal or corrected vision	Random assignment to conditions (low, medium, high, or mixed distortion)	
Training Stage	Training Stage	Training Stage	Training Stage
•	- REP	- 10 blocks,	- Training patterns
Procedure	Condition: 15 unique patterns (5 per category), repeated across 15 blocks (225 trials total)- NREP Condition: 75 unique patterns (5 per category per block), no repetitions (225 trials total)	27 trials each (270 trials total)- Different set of training patterns in each block- Corrective feedback for 2 seconds after each response	repeated across 10 blocks with randomized presentation order within each block- Four between-subject conditions: low, medium, high, and mixed distortion levels
• Stimuli	- 15 or 75 unique dot patterns	- Variable number of unique dot	- 27 unique dot patterns (9 per category)

Facet by item type



Facet by train group



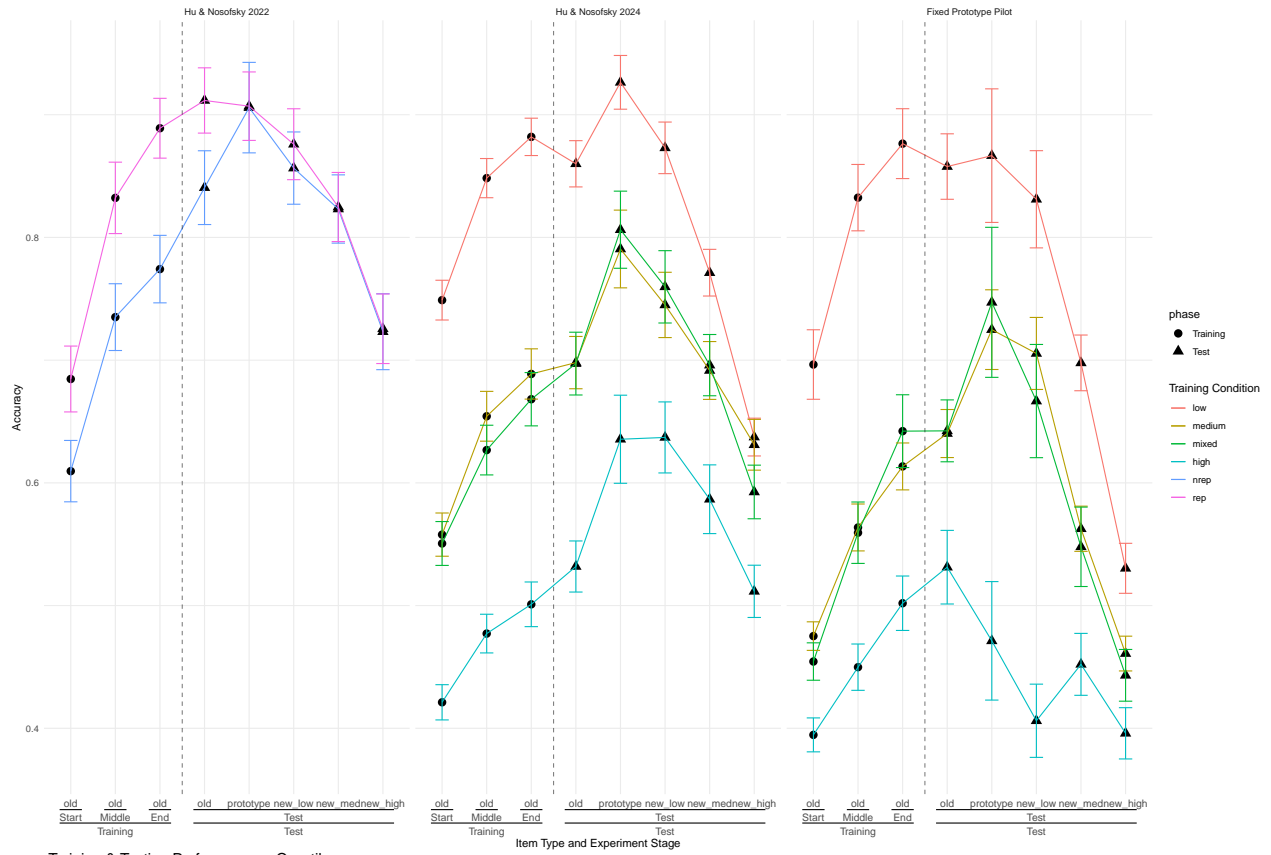
Training & Testing shown together

These plots show mean performance at the start, middle and end of training (first 3 points), and the testing performance for each item type (final 5 points).

click on plots to enlarge

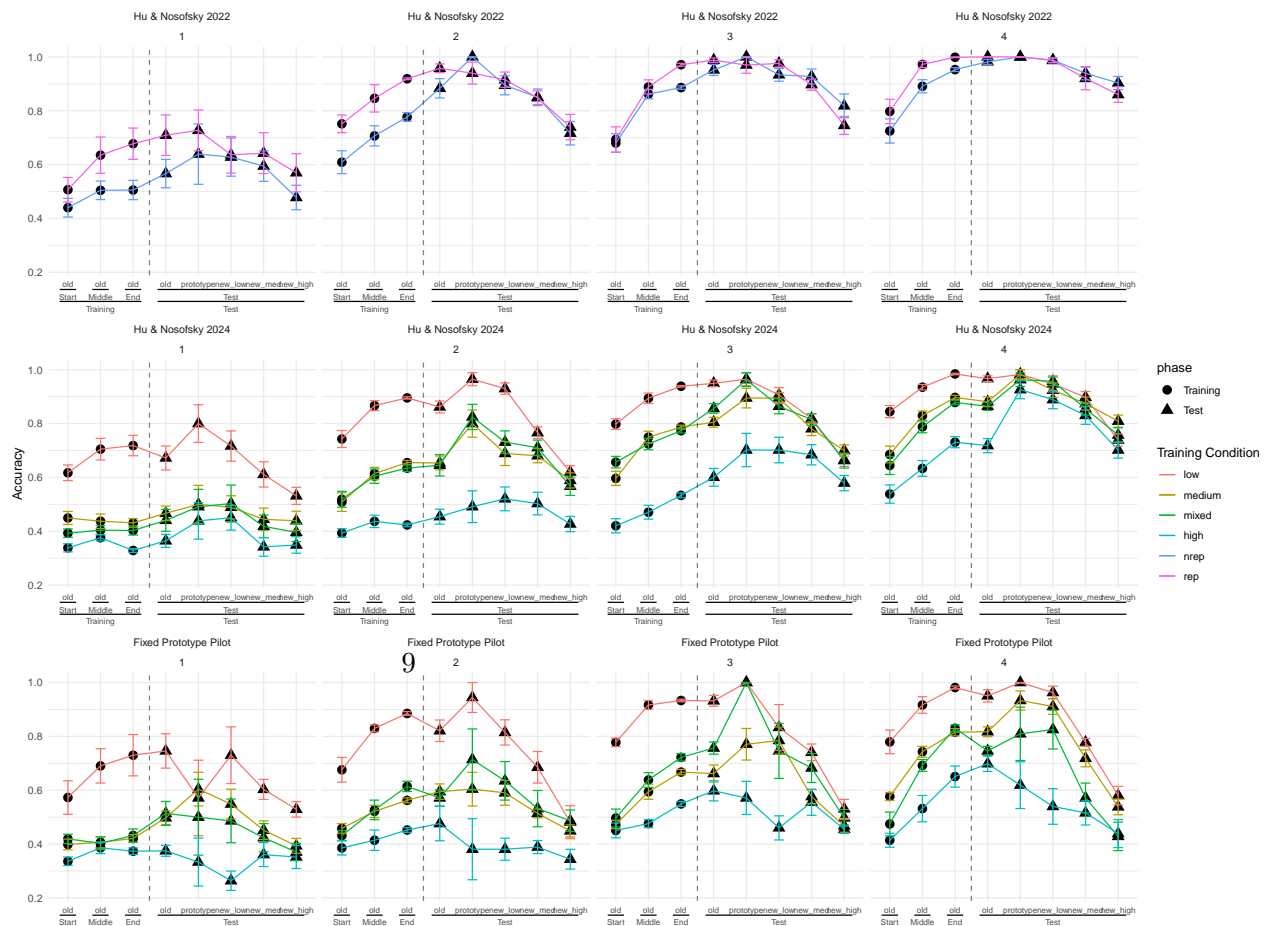
Training & Testing Performance

Training binned into 3 stages, and Testing Performance for each Item Type



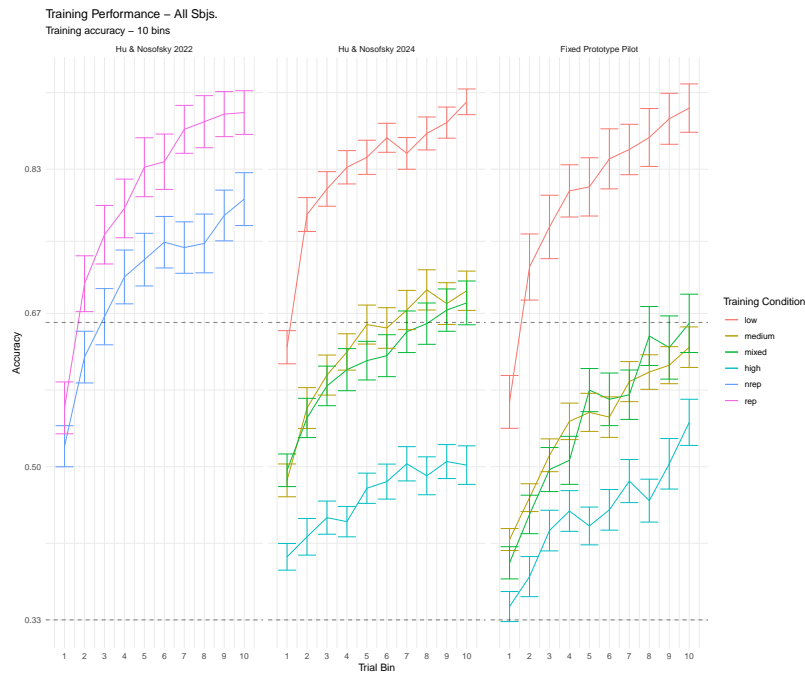
Training & Testing Performance – Quartiles

Training binned into 3 stages, and Testing Performance for each Item Type
Split into 4 quartiles based on end of training performance (1=worst; 4=best)



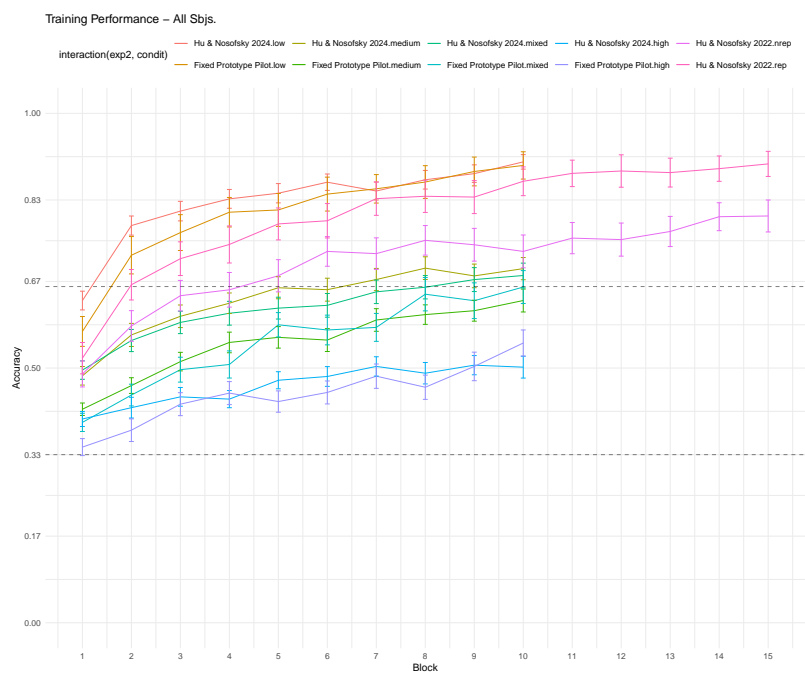
Training Stage Comparisons

Facet by Exp

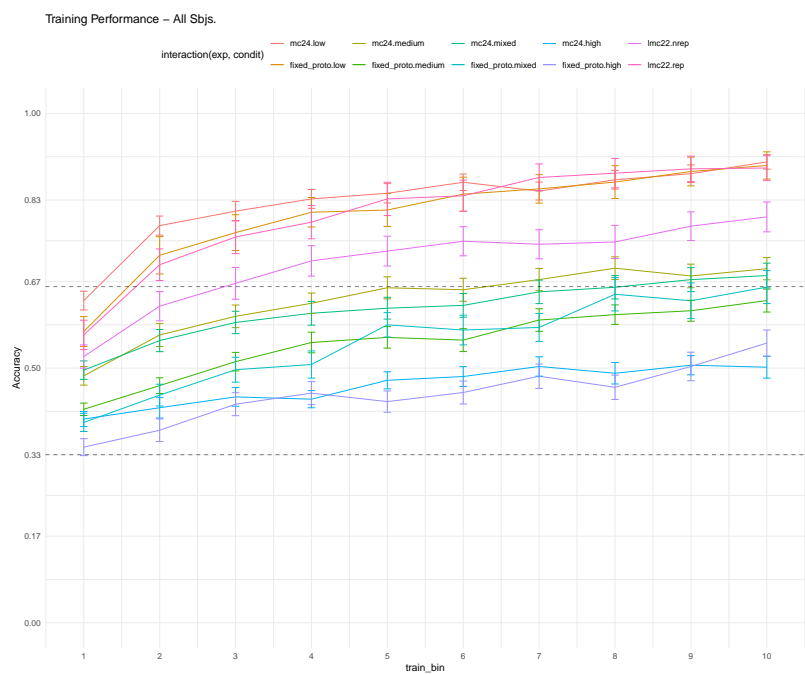


Original Blocks

- Hu & Nosofsky 2022 had 15 blocks of 15 trials each - 225 trials total
- Hu & Nosofsky 2024 & Fixed Prototype pilot each had 10 blocks of 27 trials each - 270 trials total

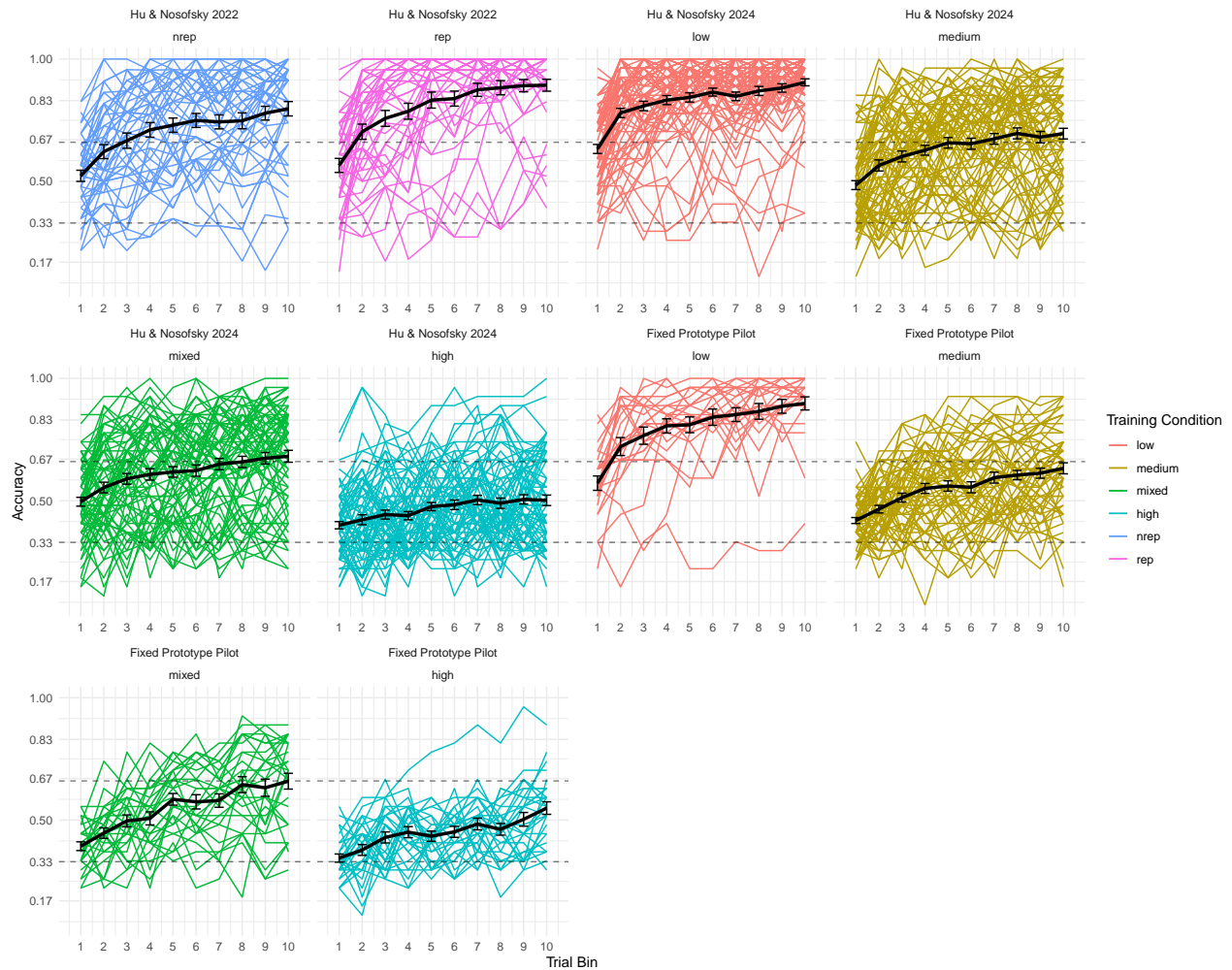


Bin into equal sized blocks



click on plots to enlarge

Training Performance – individual learning curves.
 Training accuracy – each line is an individual subj.
 Black lines are group averages



Hu, M., & Nosofsky, R. M. (2022). Exemplar-model account of categorization and recognition when training instances never repeat. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 48(12), 1947–1969. <https://doi.org/10.1037/xlm0001008>

Hu, M., & Nosofsky, R. M. (2024). High-variability training does not enhance generalization in the prototype-distortion paradigm. *Memory & Cognition*. <https://doi.org/10.3758/>

s13421-023-01516-1