



Paper

# A SMART Mnemonic Sounds like “Glue Tonic”:

## Mixing LLMs with Student Feedback to Make Mnemonic Learning Stick

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GRE vocab is boring...

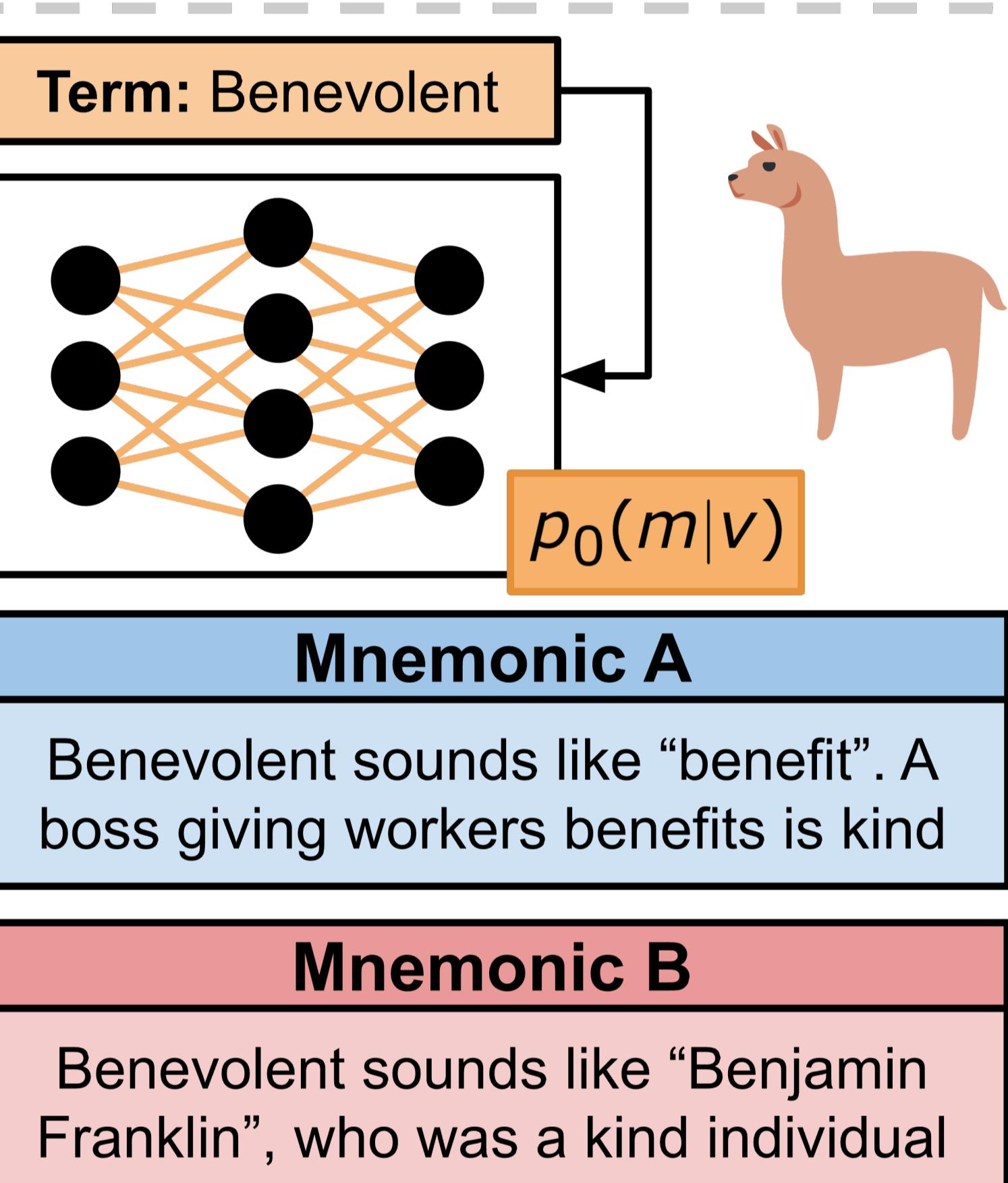
...so we design **SMART** to generate mnemonics aligned with preferences from **47 flashcard learners!**

### SMART-Generated Mnemonic Devices

Lionized	Haptic	Upbraided
Lionized sounds like "lion-eyes," envisioning a lion being admired for its eyes. Lionized means to be admired or treated like a celebrity.	Haptic sounds like "happy tic," which can be associated with a happy tickle, relating to touch. Haptic refers to the sense of touch.	Upbraided sounds like "up" + "braid." Imagine a teacher scolding a student for not braiding her hair properly. This scolding or reprimanding is upbraiding.

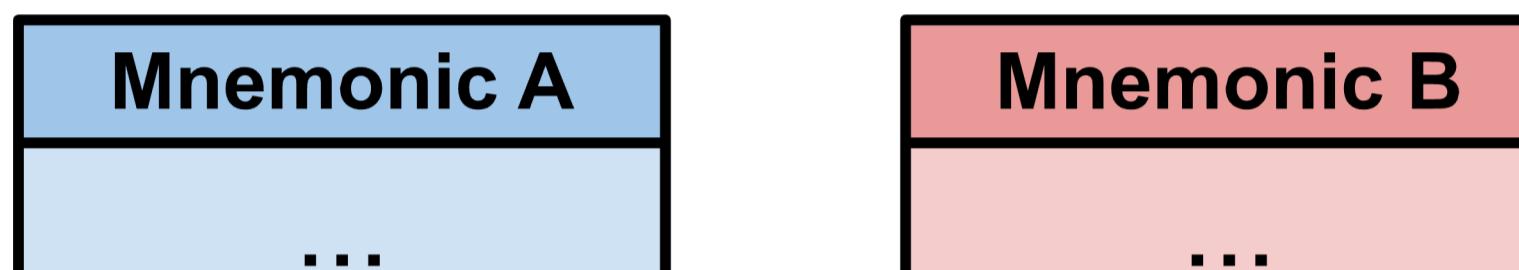
### SMART: Student Mnemonic Alignment to aid the Recall of Terms

#### Supervised Fine-Tuning (§2)

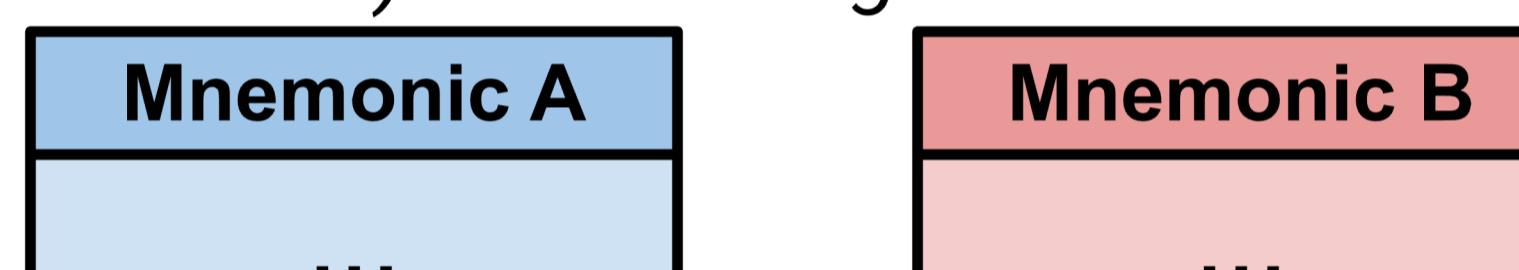


#### Preference Collection (§3)

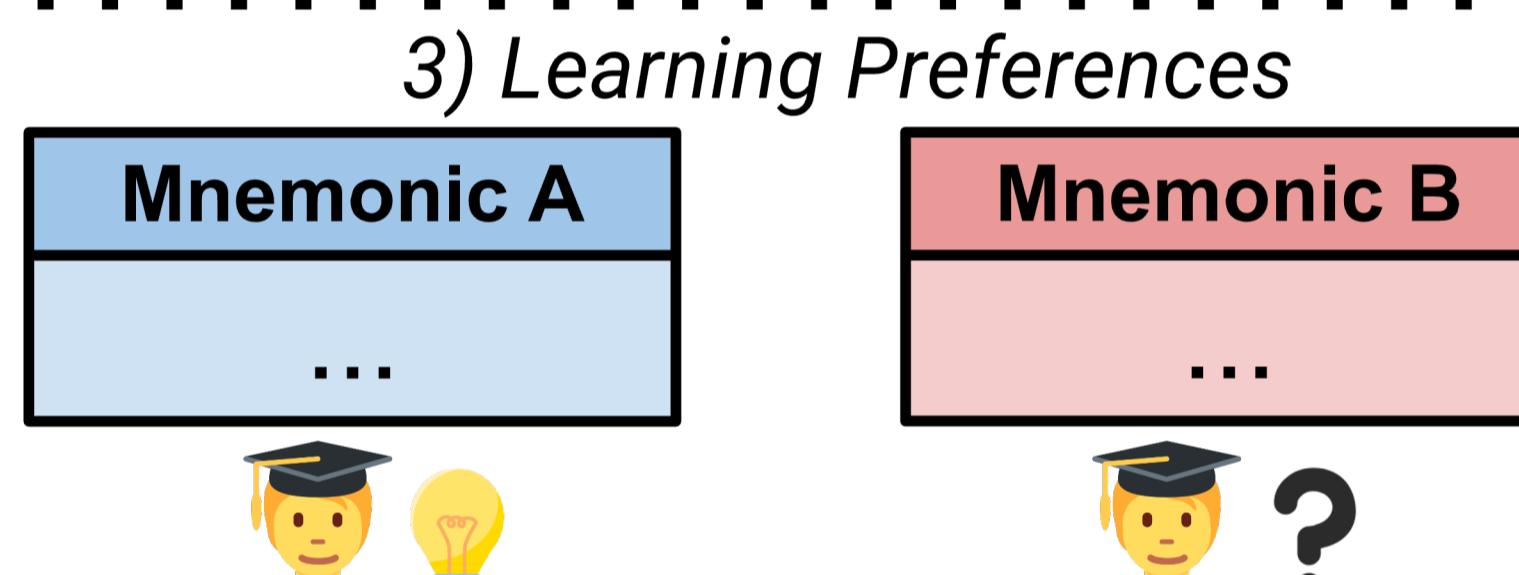
##### 1) Pairwise Comparison Preferences



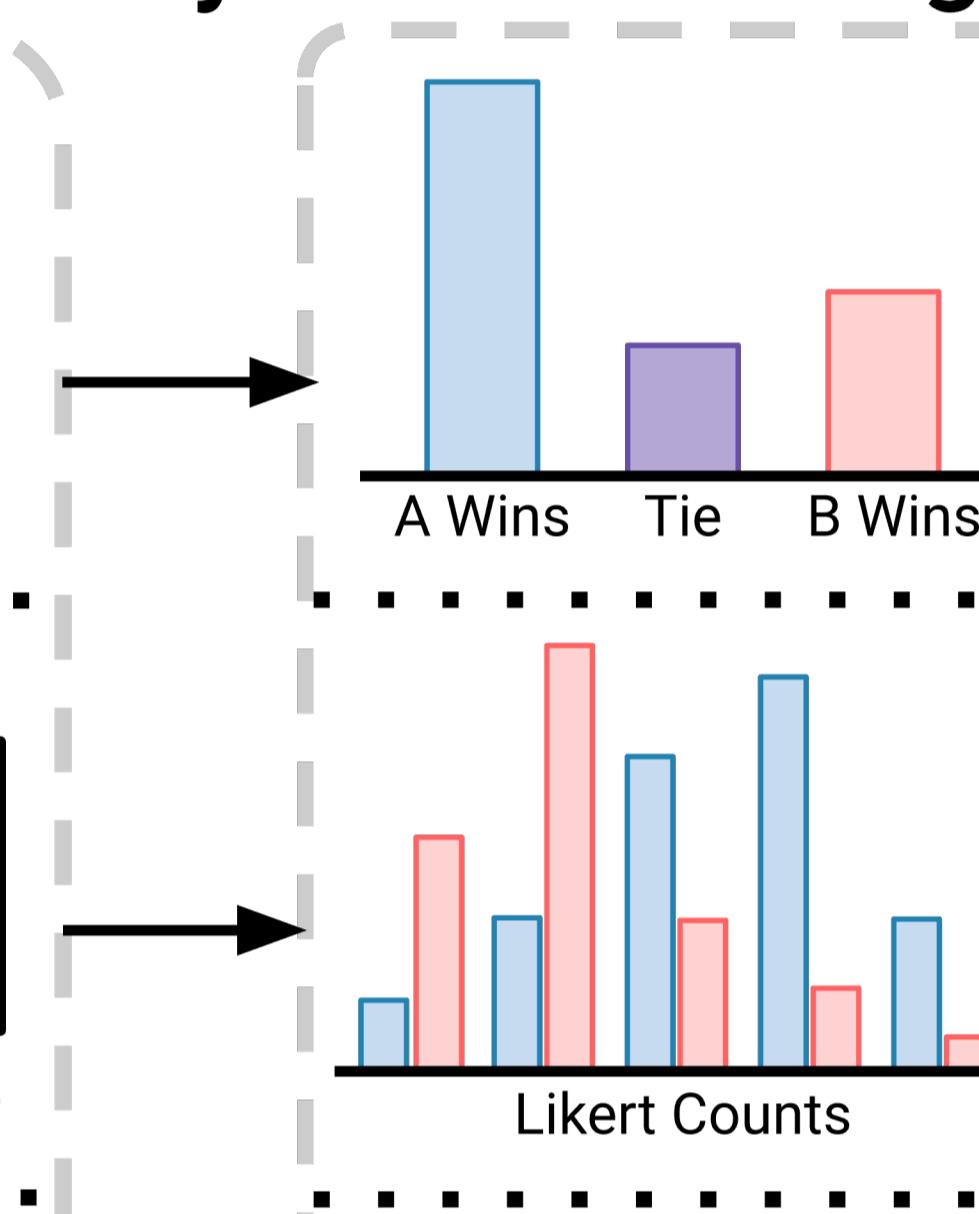
##### 2) Likert Rating Preferences



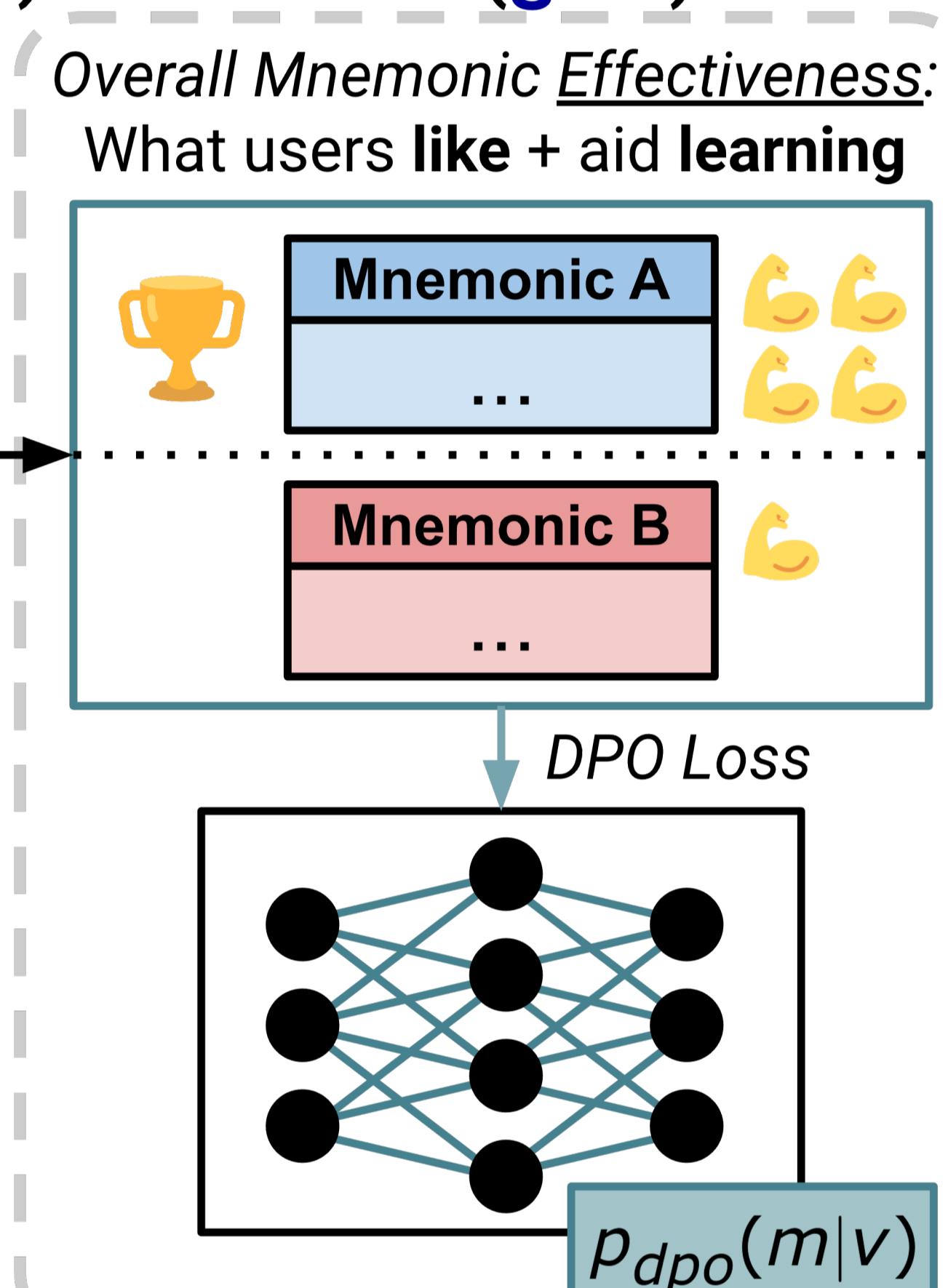
##### 3) Learning Preferences



#### Bayesian Modeling (§5.1)



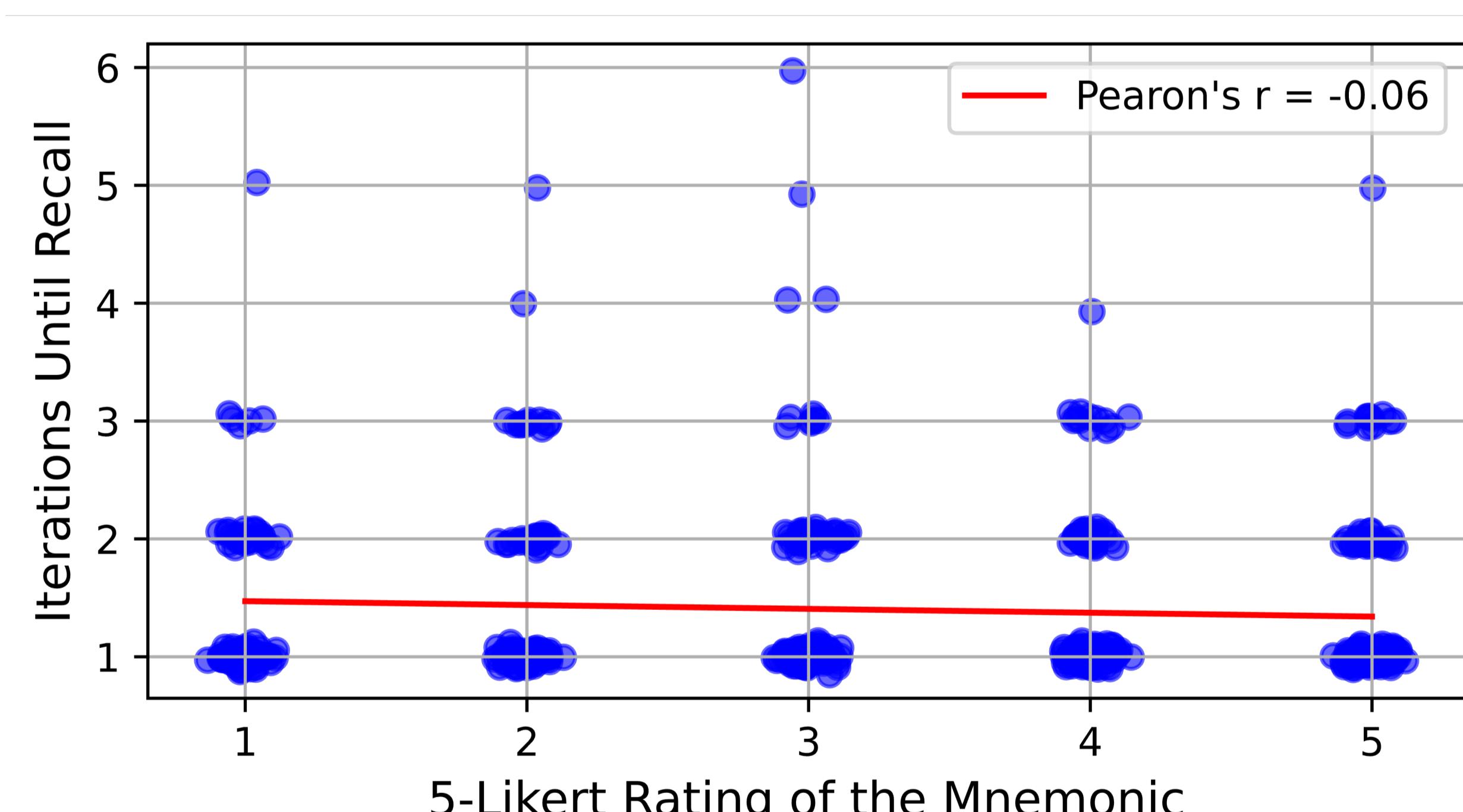
#### DPO (§5.2)



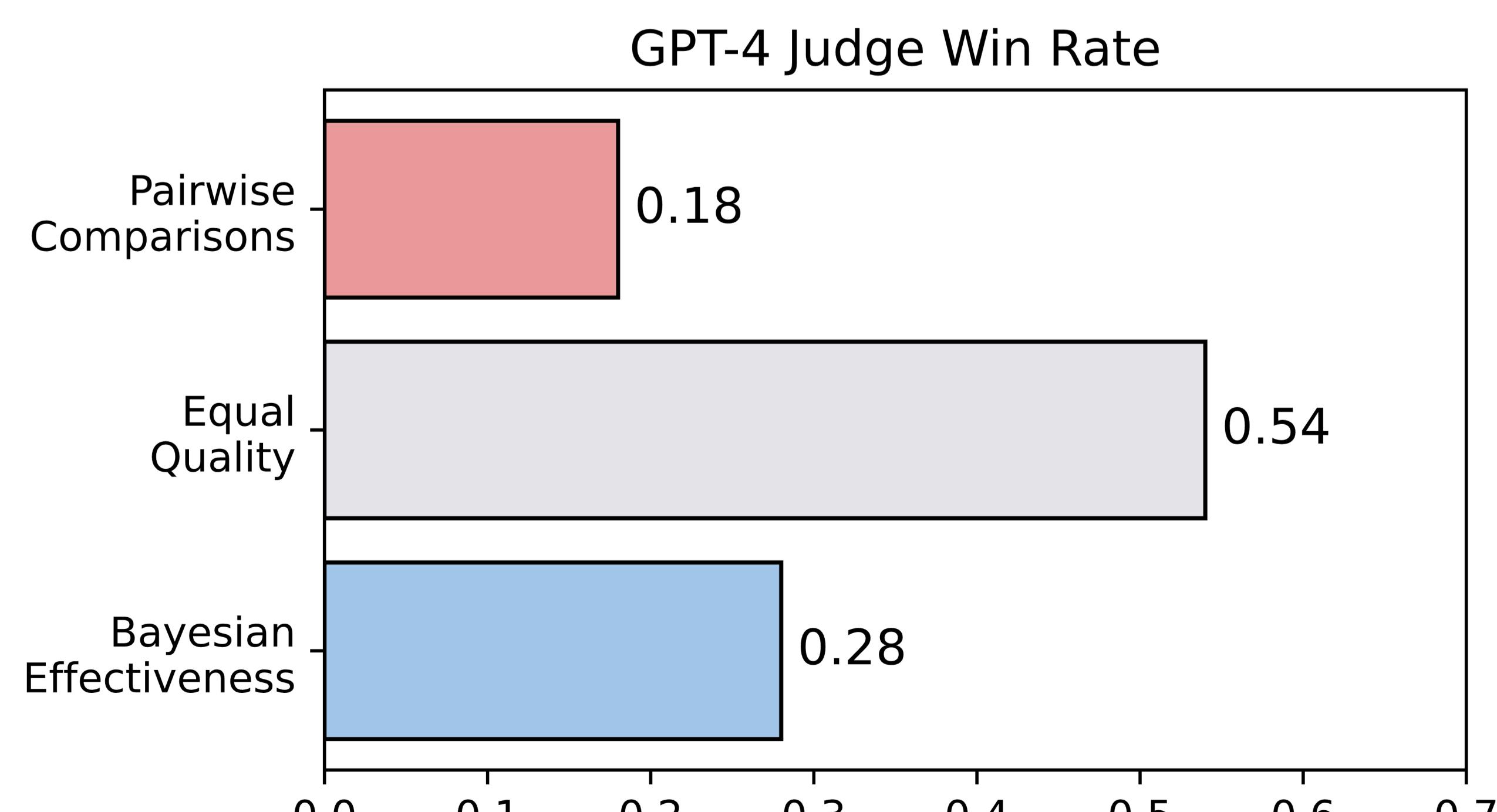
**Finding 1:** What students think help them learn **is not the same** as what actually helps them learn

Raw Agreement Between Preference Types			
	Pairwise Comp.	Likert Ratings	Learning
Pairwise Comp.	1.000	0.646	0.466
Likert Ratings	0.646	1.000	0.593
Learning	0.466	0.593	1.000

Pairwise Comp. Likert Ratings Learning



**Finding 2:** We can **break ties** in pairwise comps.



**Finding 3:** SMART more efficiently matches GPT-4

