



Comparing Assessments of Graph Comprehension

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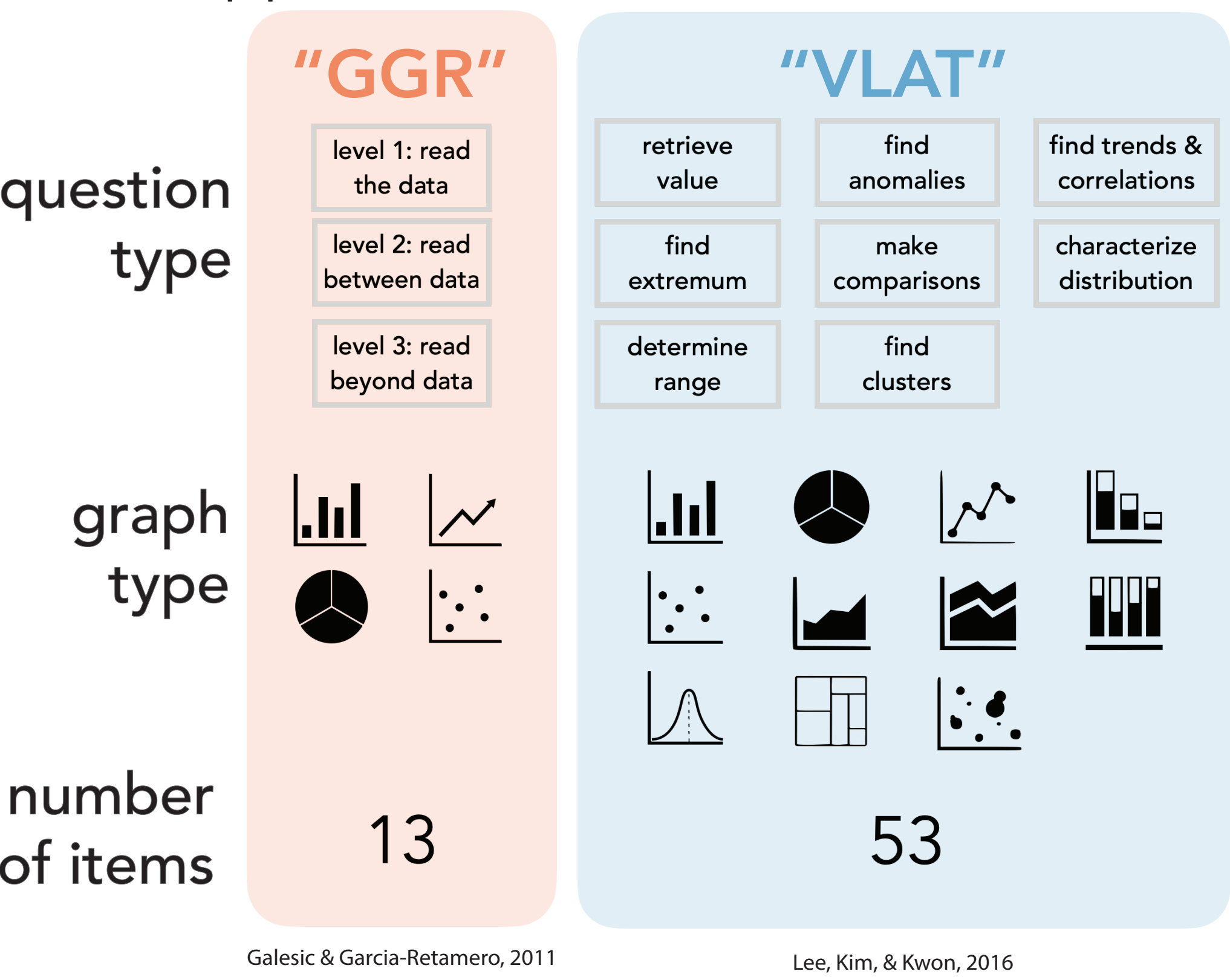


Overview

Current approaches to **graph comprehension**:

Graph comprehension is important.

How reliable are existing assessments for measuring it?



Galesic & Garcia-Retamero, 2011

Lee, Kim, & Kwon, 2016

2 assessments

"GGR" & "VLAT"

11 question types

i.e., retrieve value, find clusters

13 graph types

i.e., bar chart, line chart, histogram

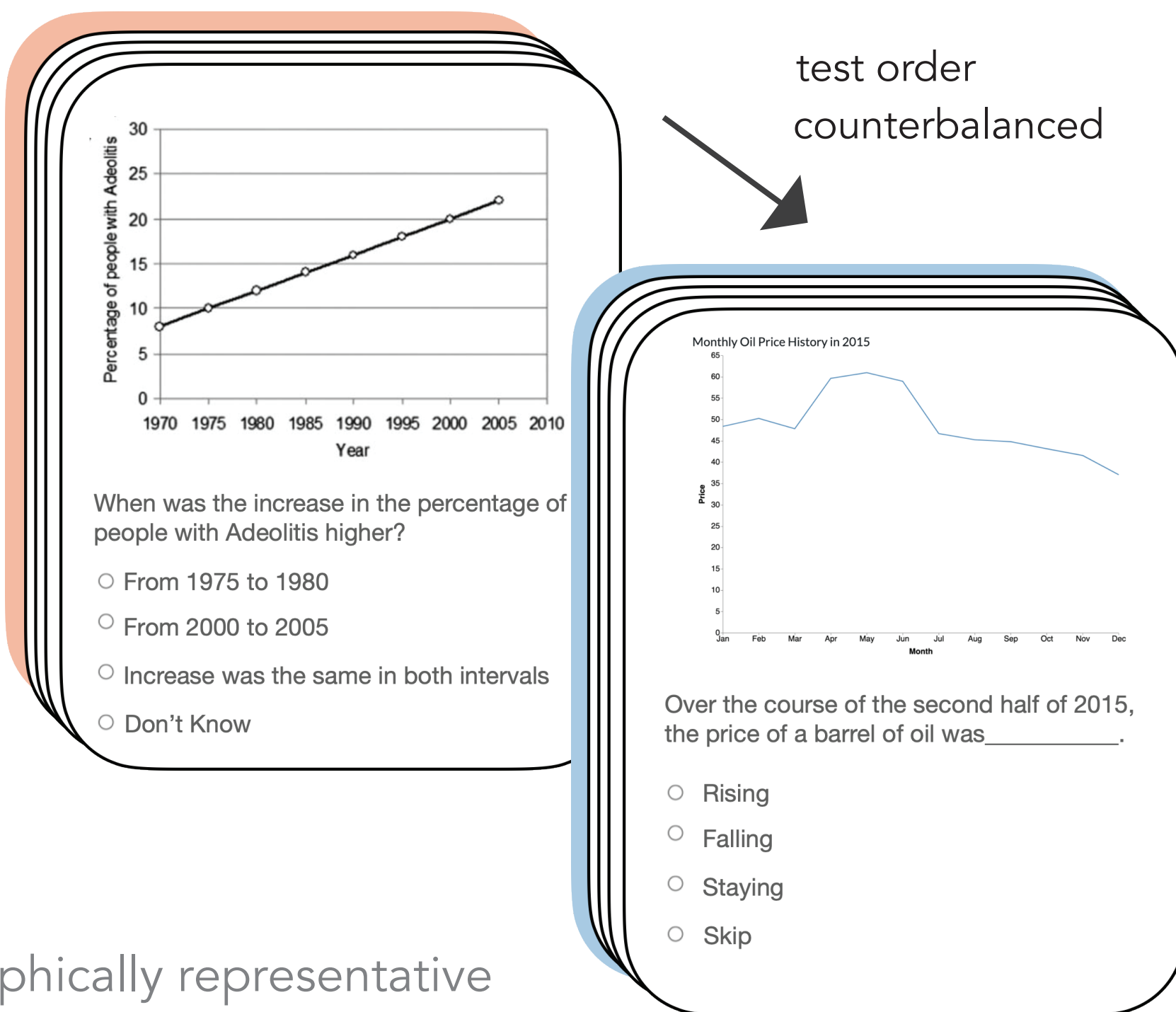
66 items

i.e., retrieve value & line chart

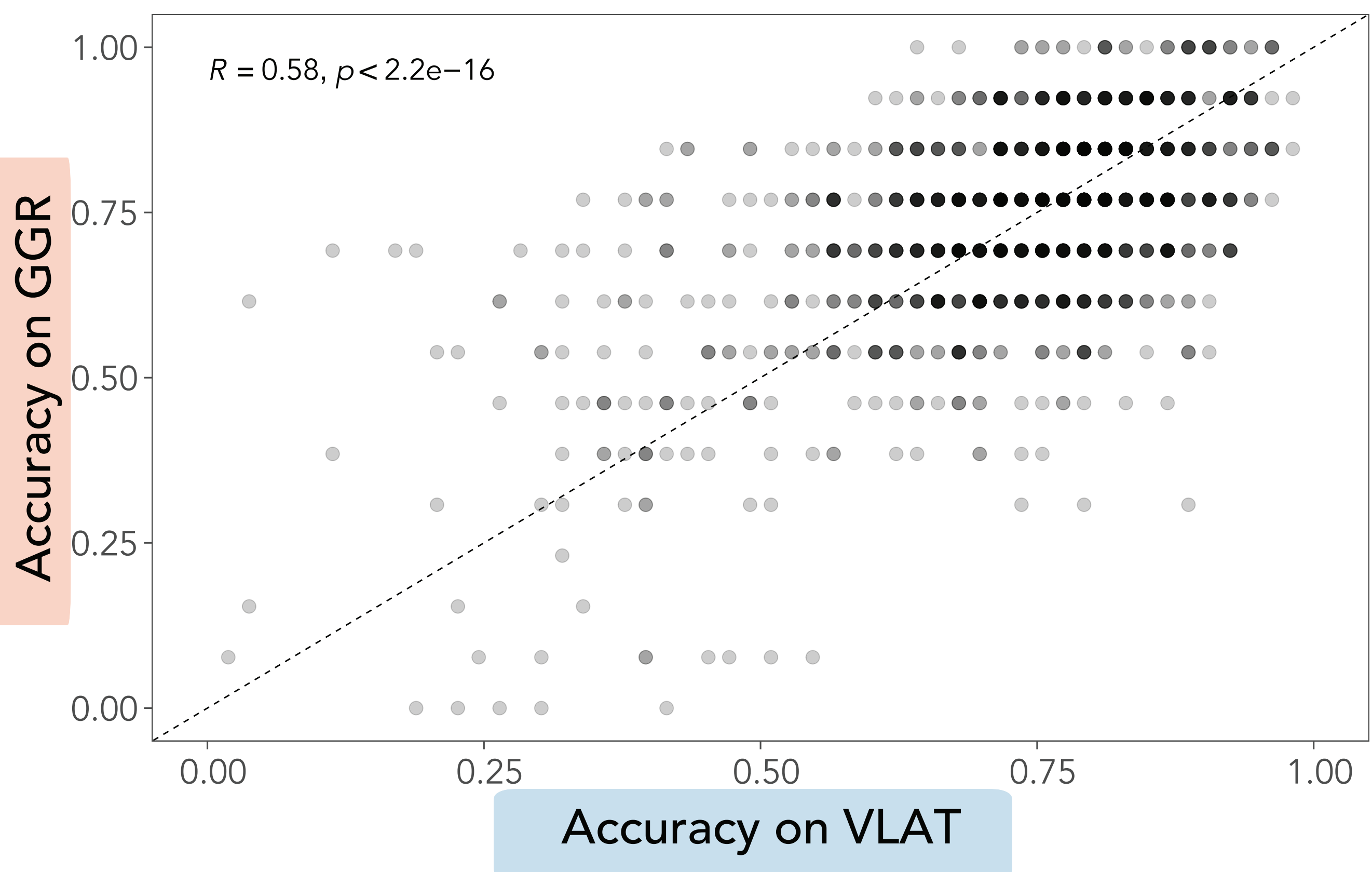
n = 1,140

University students and U.S. demographically representative

Study Design

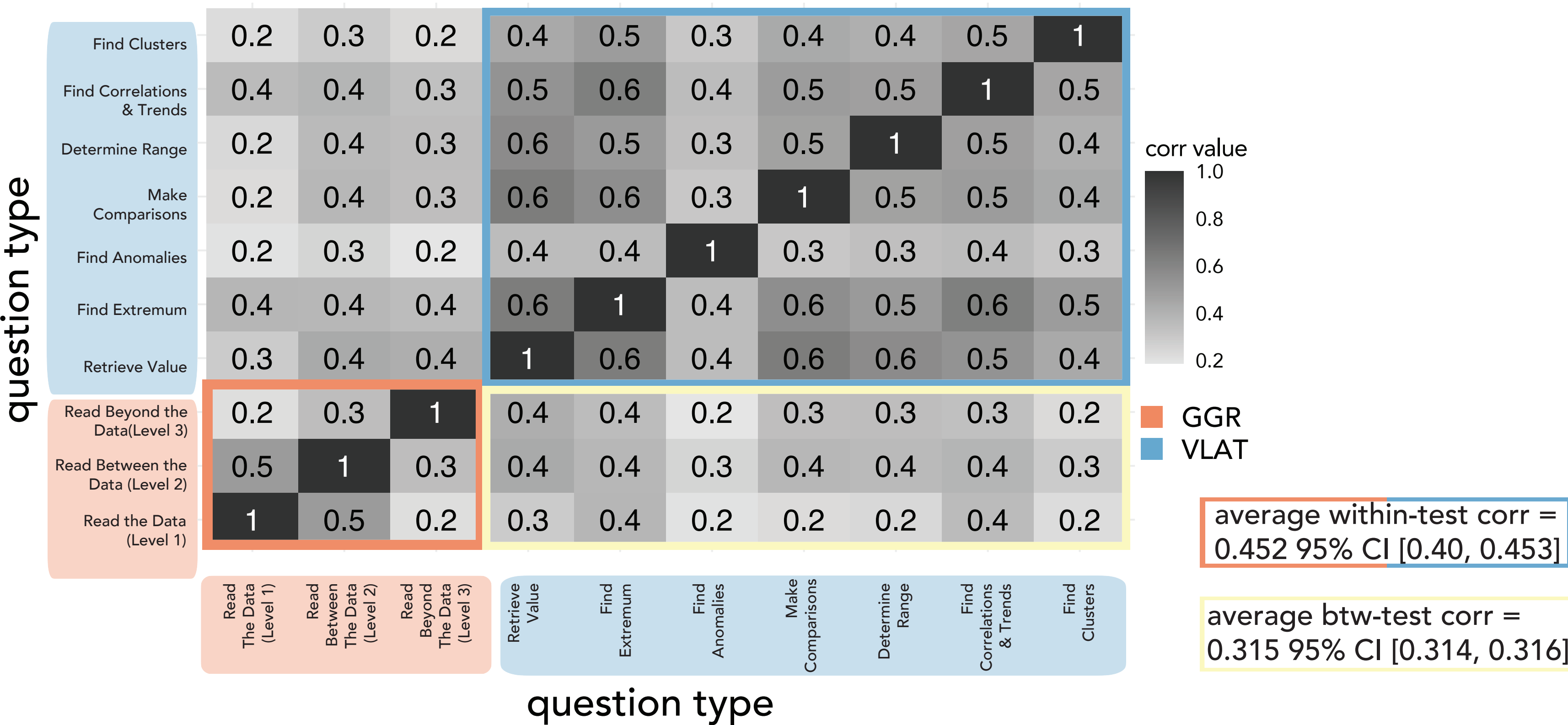


How well does performance on one test predict performance on the other?



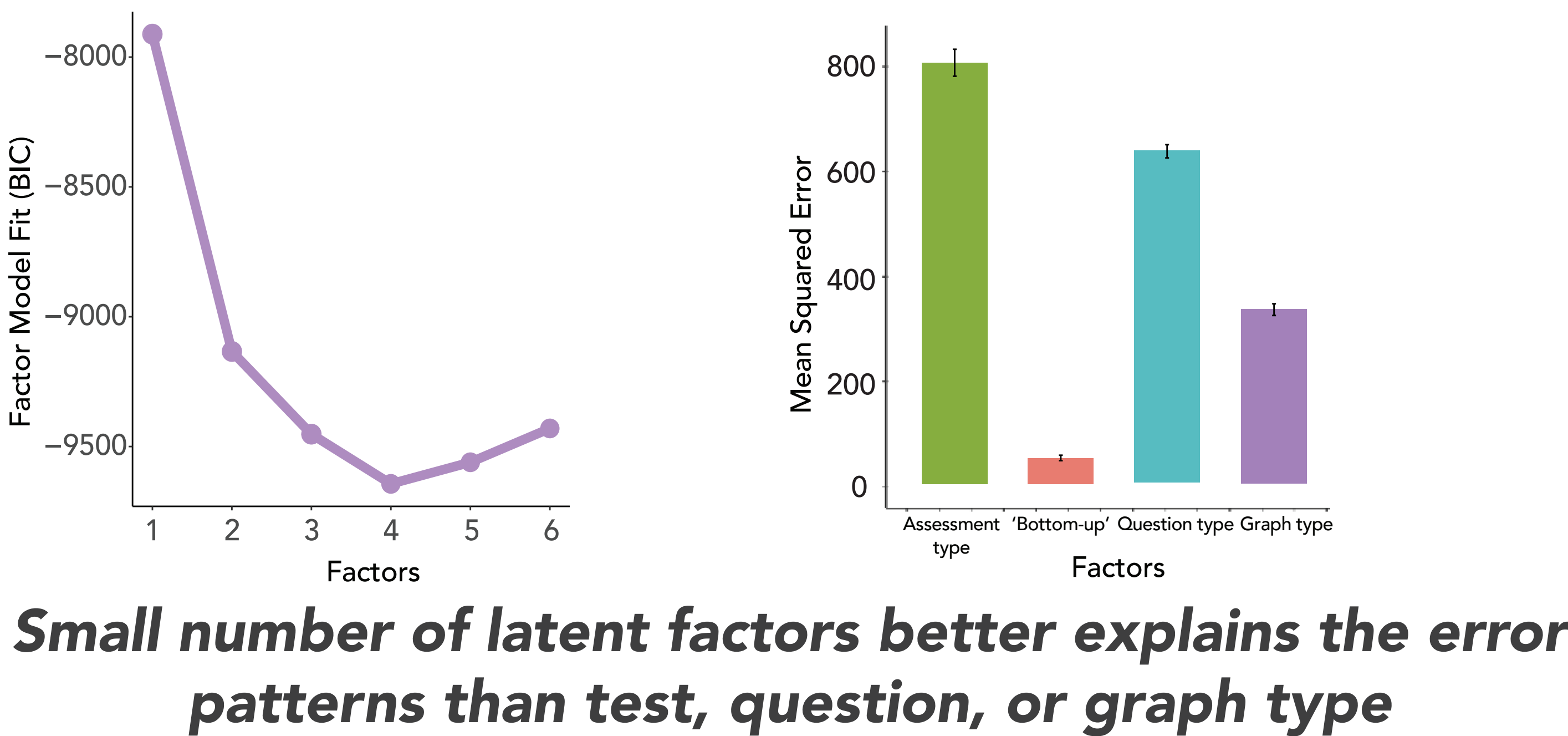
GGR and VLAT scores are moderately correlated

How well does performance on one question type predict performance on the others?

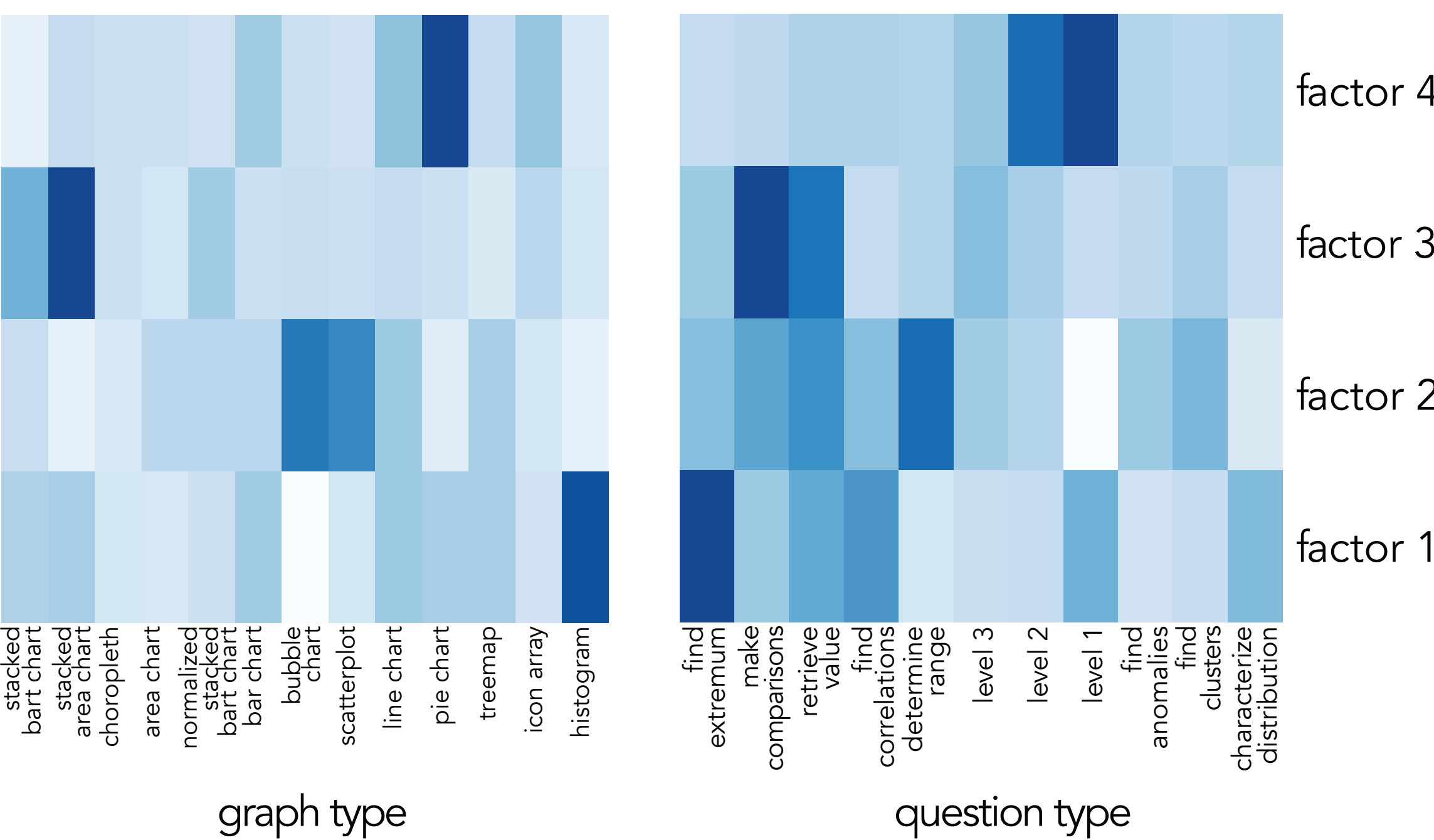


Scores for individual question types are more strongly correlated within test than between test

What grouping of test items best predict observed error patterns?

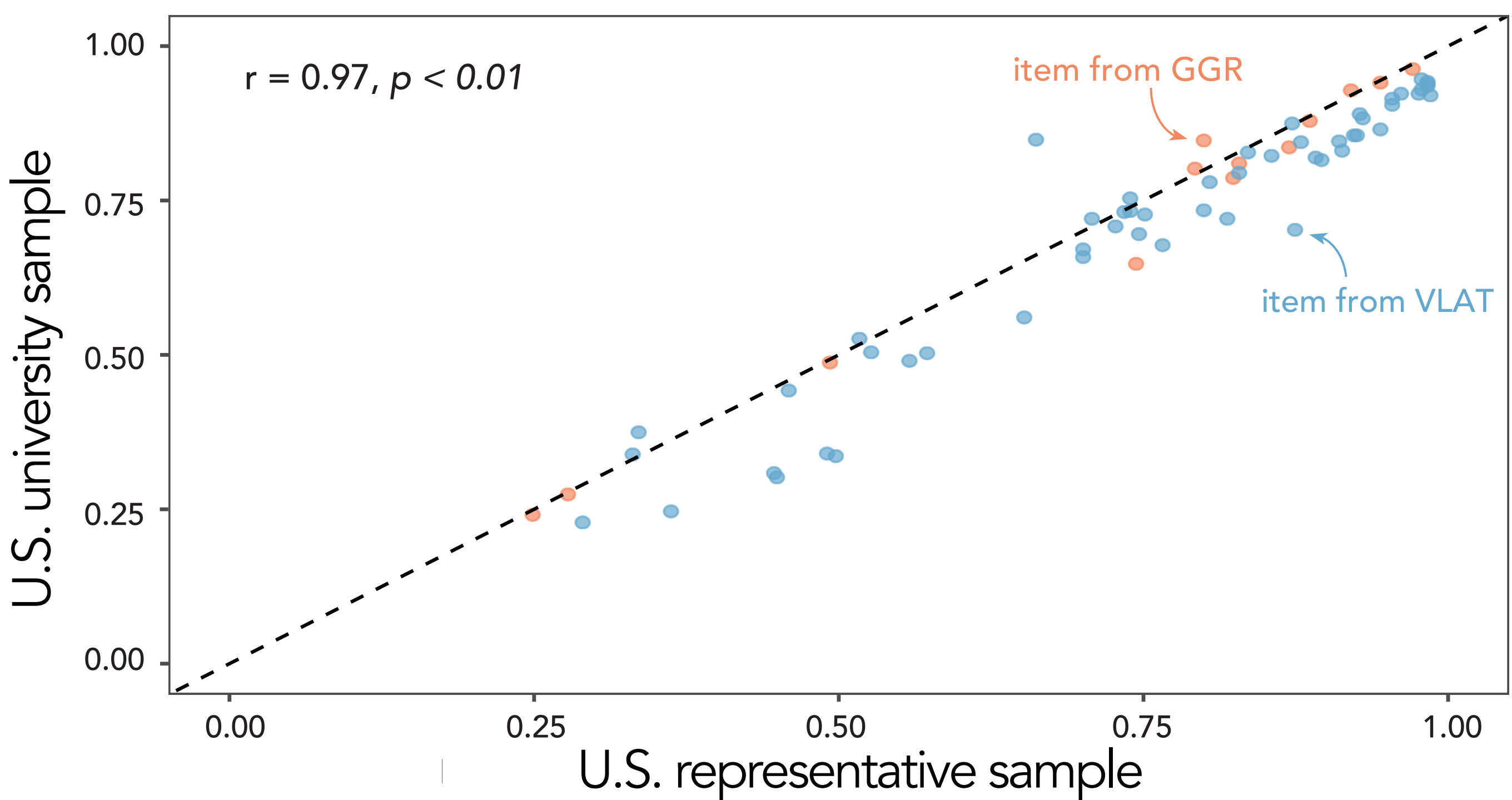


Small number of latent factors better explains the error patterns than test, question, or graph type

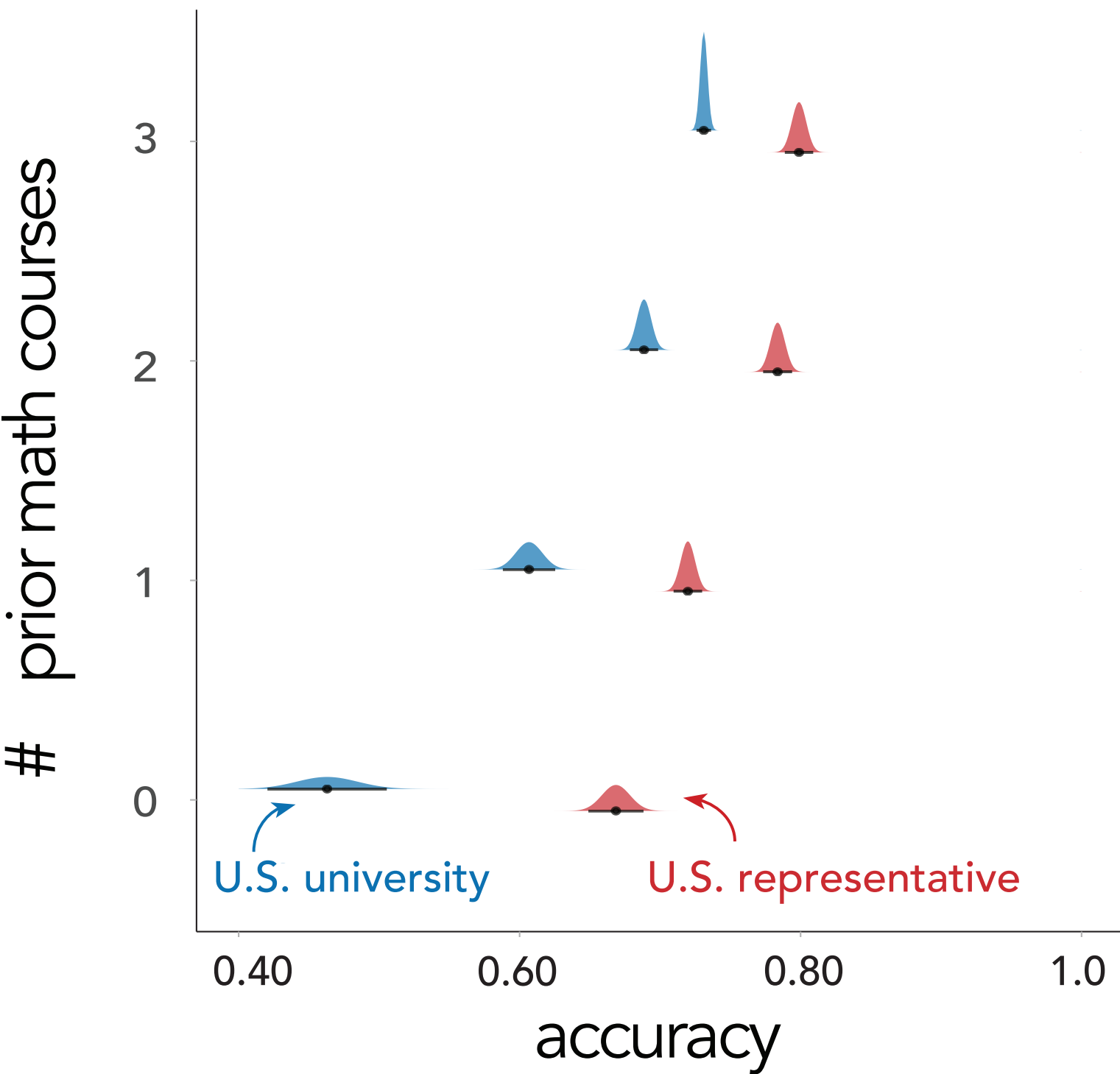


Latent factors seem to load more strongly on graph type than question type

What is the relationship between formal math training and graph comprehension?



High reliability between U.S. university and U.S. representative samples



Positive relationship between formal math/stats training and performance in both samples

Takeaways

Our findings suggest that graph comprehension encompasses a suite of capabilities that do not cleanly correspond to graph or task.

More work is needed to develop reliable and valid assessments of graph literacy that predict response patterns.

[cogtoolslab.github.io](https://github.com/cogtoolslab/gcb_public2023)
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data & materials will soon be available:

https://github.com/cogtoolslab/gcb_public2023

