



Comparing Assessments of Graph Comprehension



Hannah S. Lloyd^a, Holly Huey^a, Erik Brockbank^a, Lace Padilla^b & Judith E. Fan^{a,c}

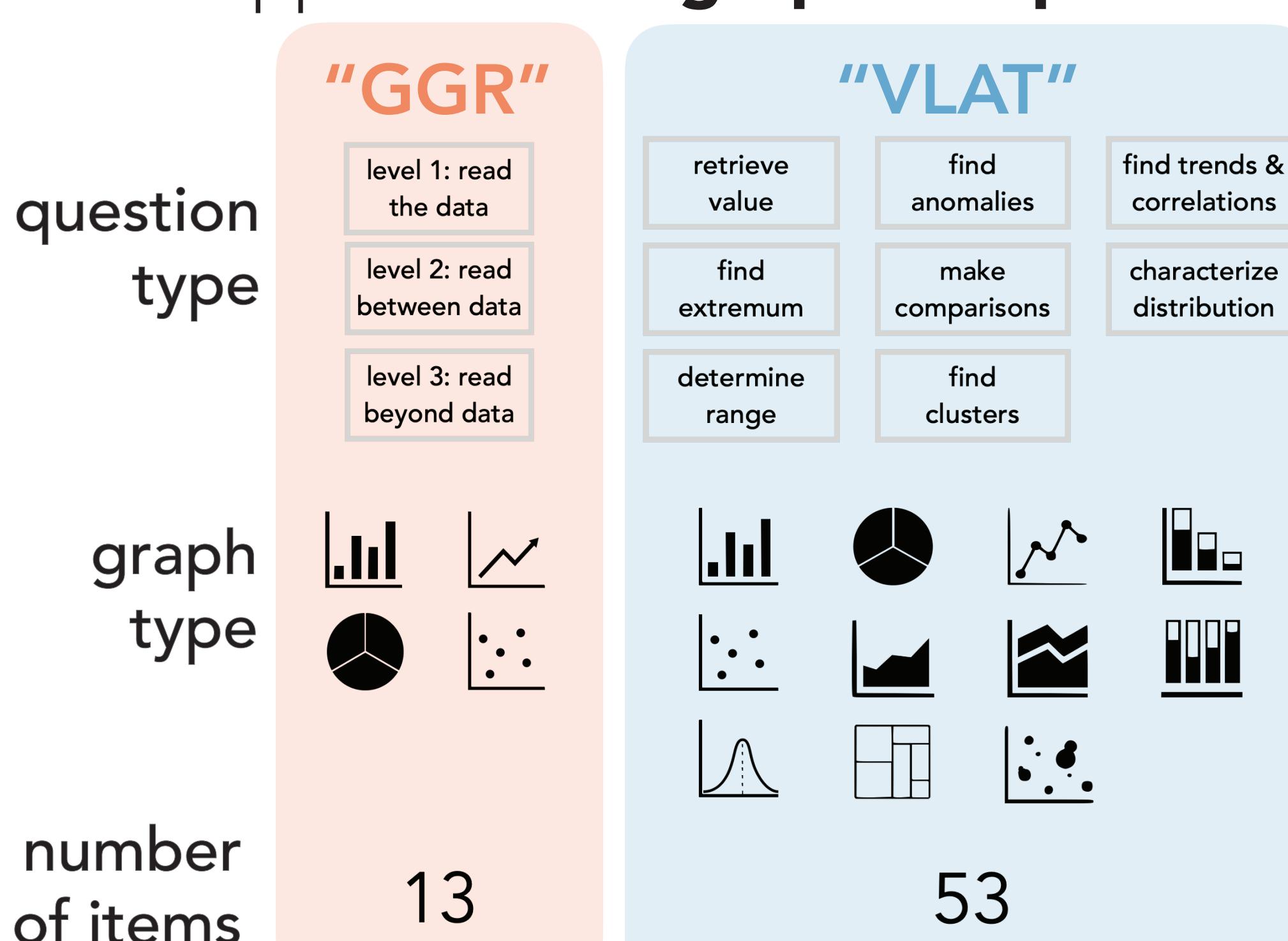
^aUniversity of California San Diego, ^bNortheastern University, ^cStanford University

Overview

Current approaches to **graph comprehension**:

Graph comprehension is important.

How reliable are existing assessments for measuring it?



Study Design

2 assessments

"GGR" & "VLAT"

11 question types

i.e., retrieve value, find clusters

13 graph types

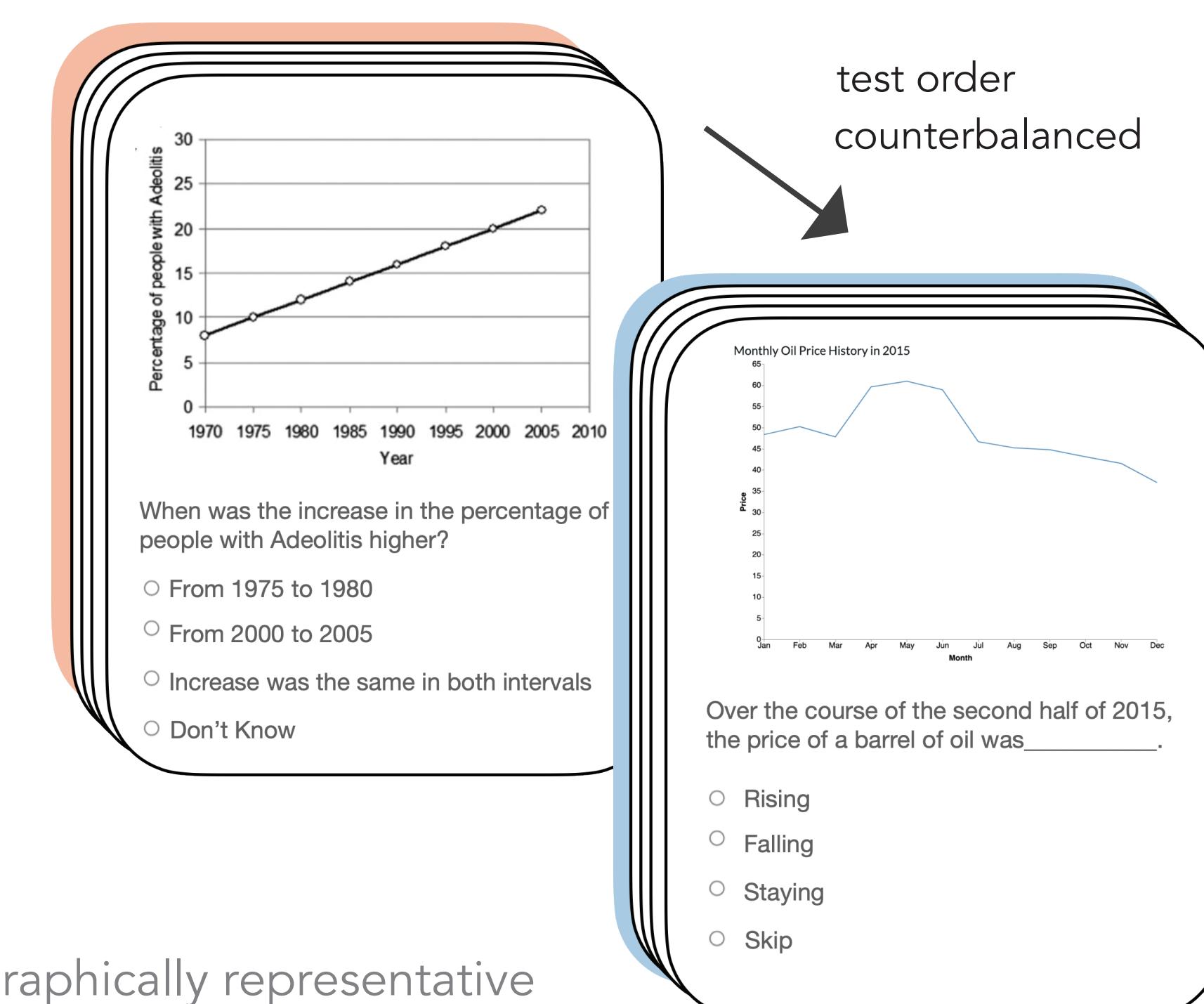
i.e., bar chart, line chart, histogram

66 items

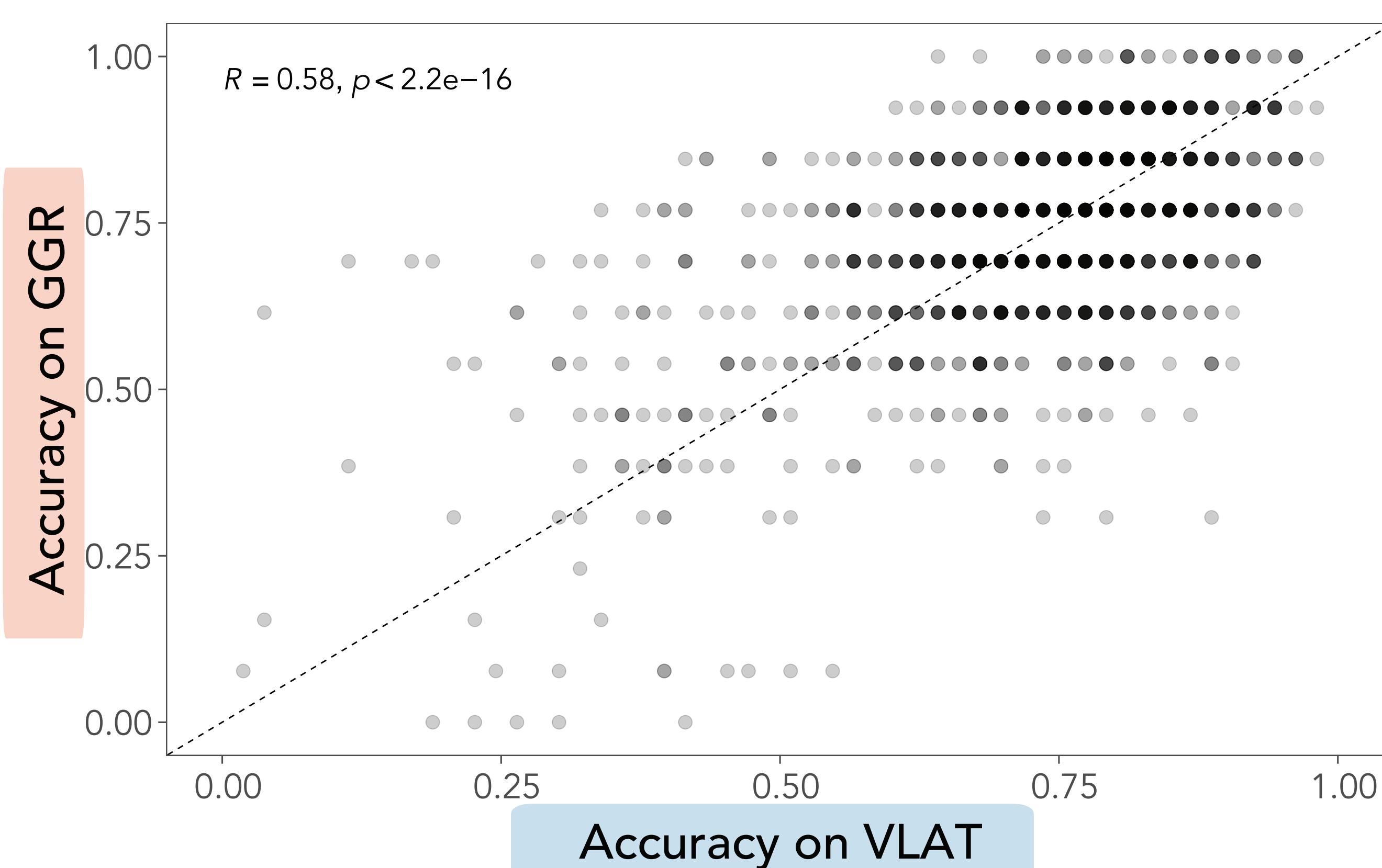
i.e., retrieve value & line chart

n = 1,140

University students and U.S. demographically representative

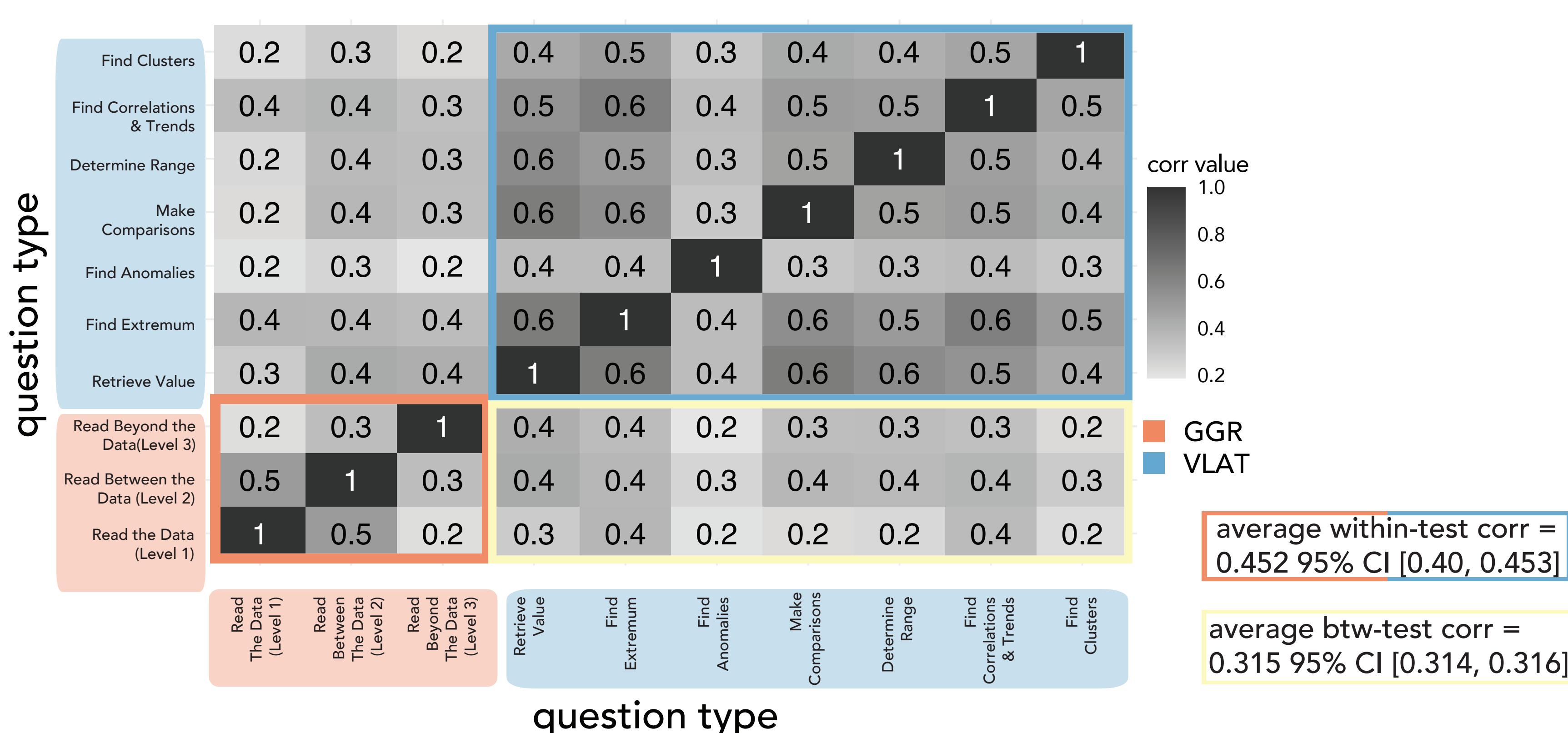


How well does performance on one test predict performance on the other?

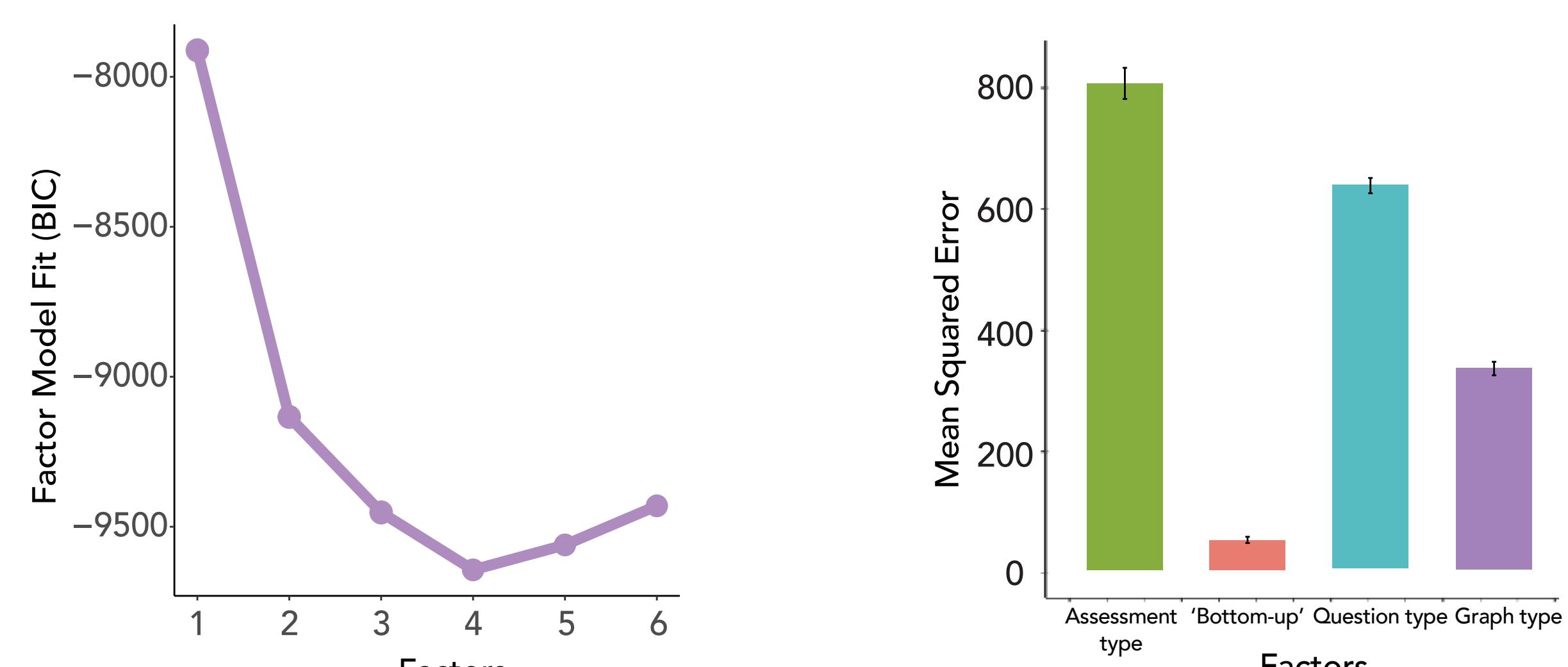


GGR and VLAT scores are moderately correlated

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

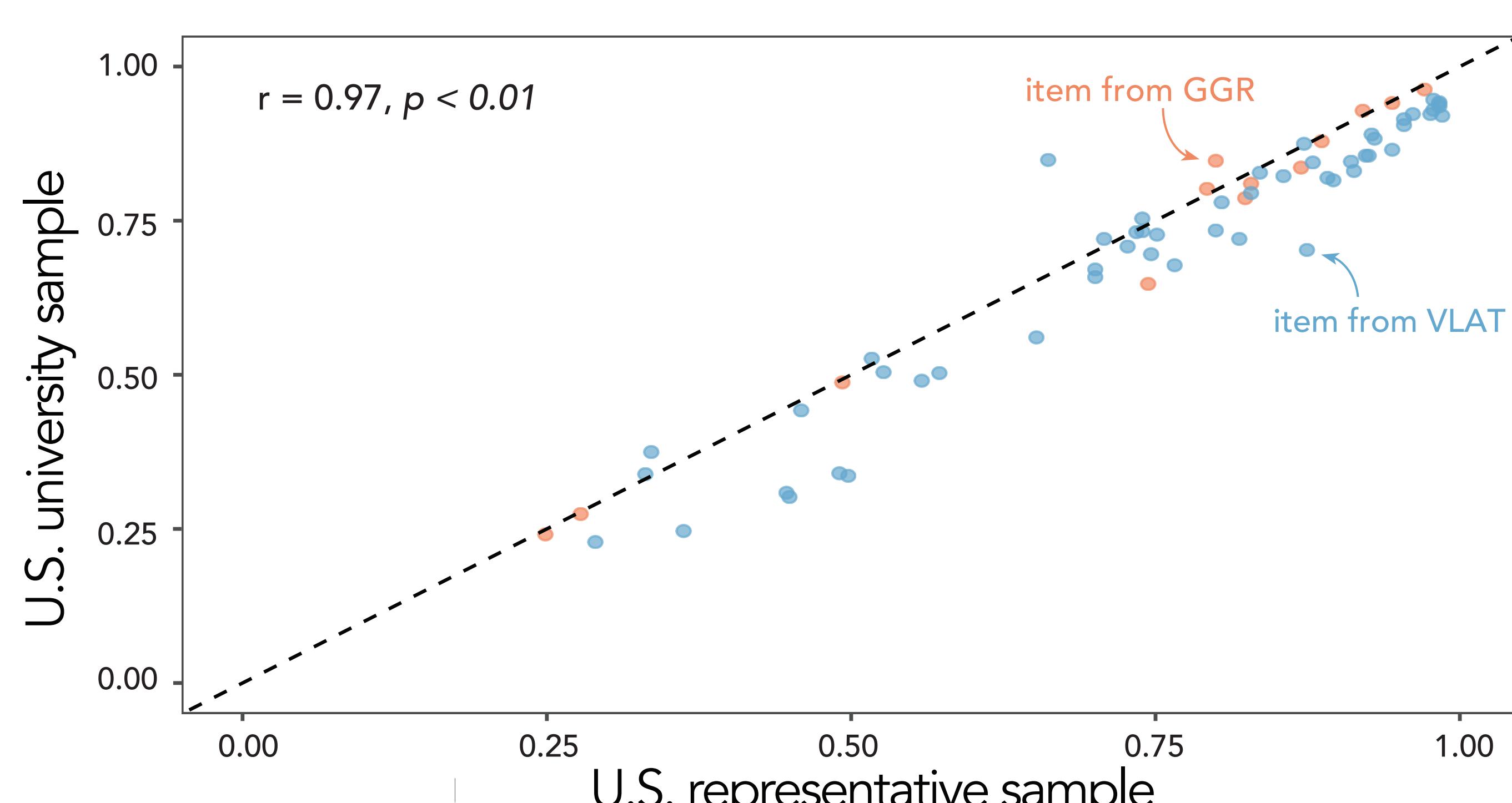


What grouping of test items best predict observed error patterns?

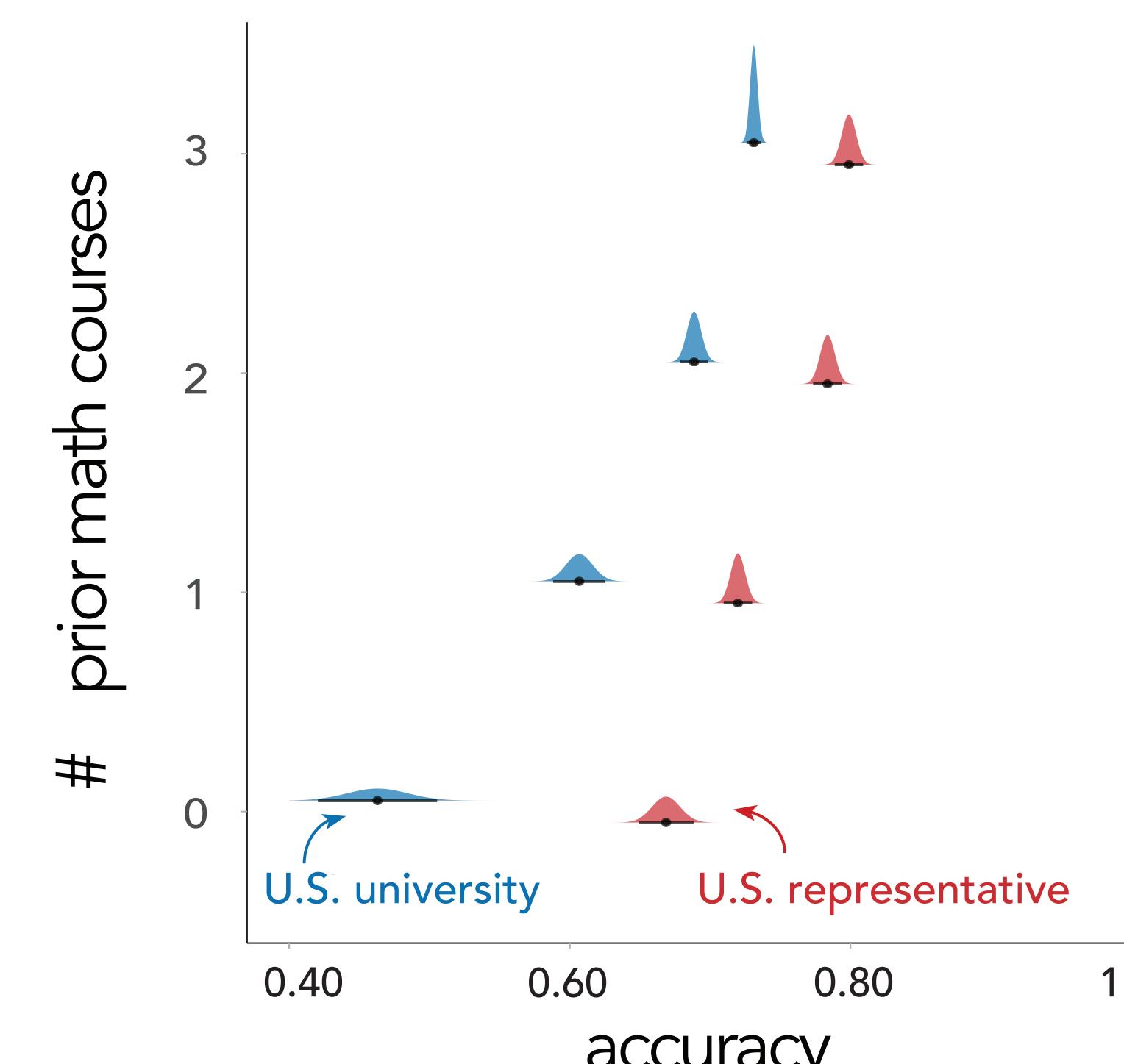


Small number of latent factors better explains the error patterns than test, question, or graph type

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

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
hsllloyd@ucsd.edu

data & materials will soon be available:

https://github.com/cogtoolslab/gcb_public2023

