Comparing Assessments of Graph Comprehension

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Overview

Graph comprehension is important.

How reliable are existing assessments for measuring it?

Current approaches to **graph comprehension**:

	"GGR"	"VLAT"
question type	level 1: read the data level 2: read between data level 3: read beyond data	retrieve value find anomalies find trends & correlations find extremum make comparisons characterize distribution determine range find clusters
graph type		
number of items	13	53
	Galesic & Garcia-Retamero, 2011	Lee, Kim, & Kwon, 2016

Study Design

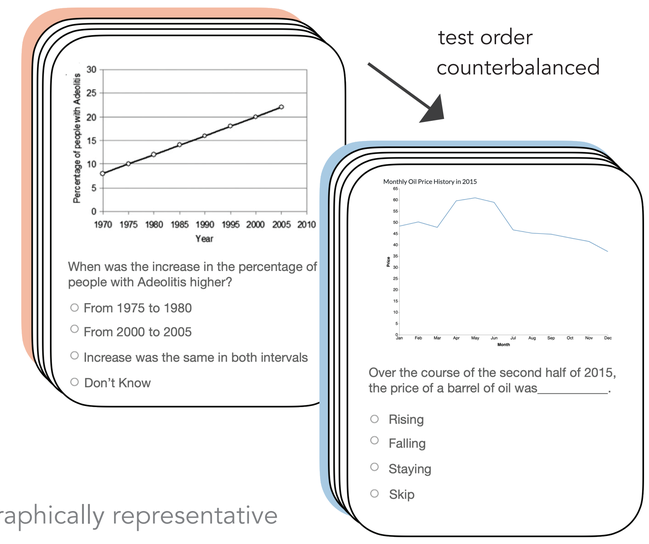
2 assessments
"GGR" & "VLAT"

11 question types
i.e., retrieve value, find clusters

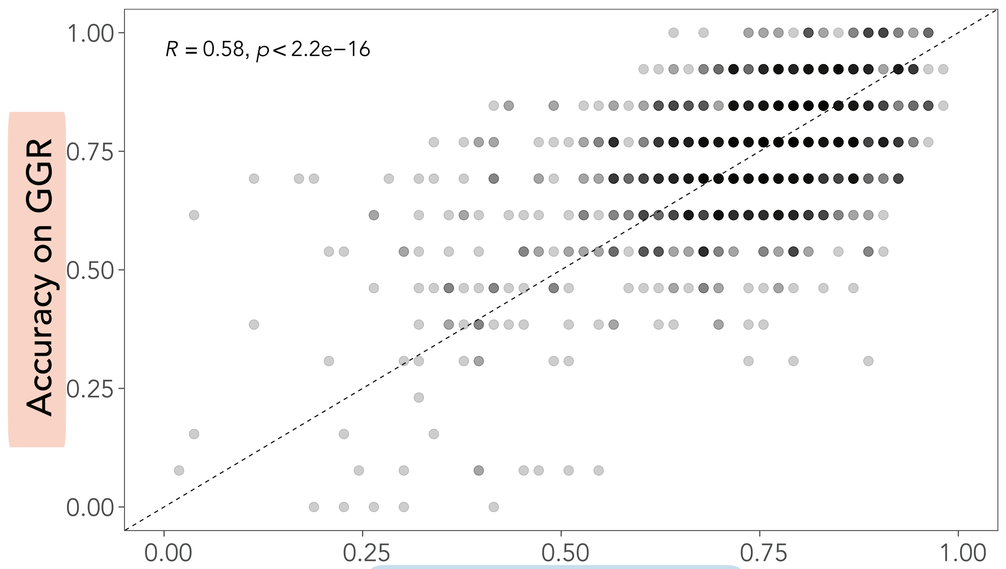
13 graph types
i.e., bar chart, line chart, histogram

66 items
i.e., retrieve value & line chart

n = 1,140
University students and U.S. demographically representative

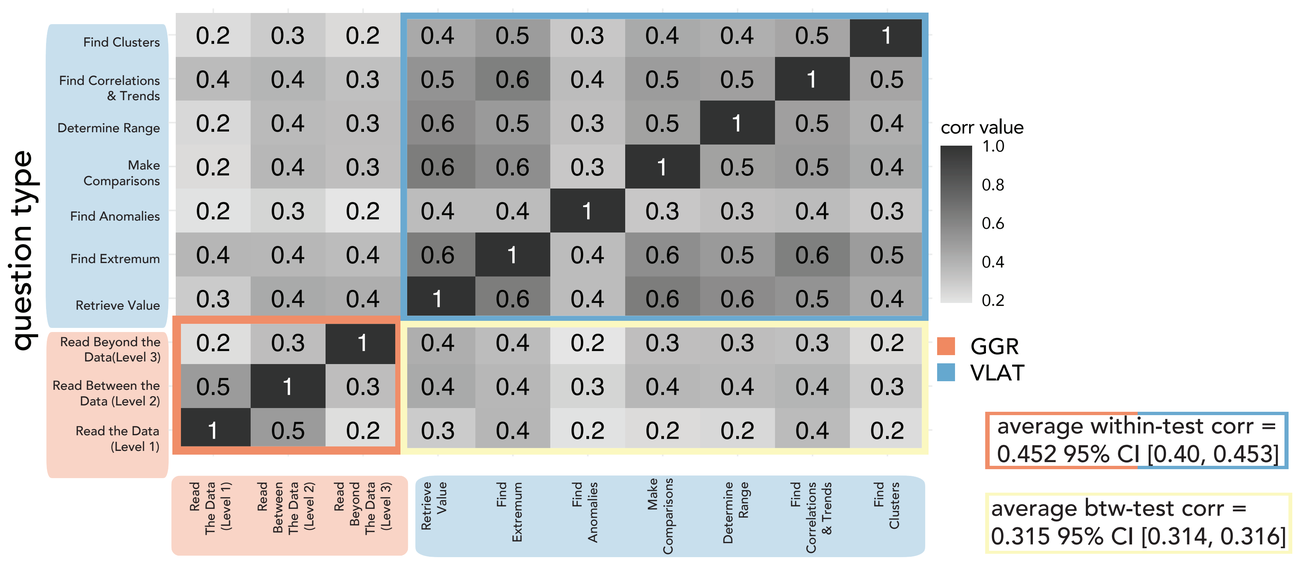


How well does performance on one test predict performance on the other?



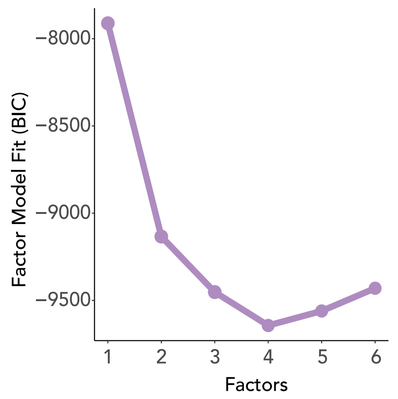
GGR and VLAT scores are moderately correlated

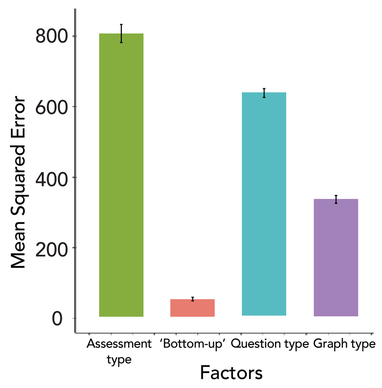
How well does performance on one question type predict performance on the others?



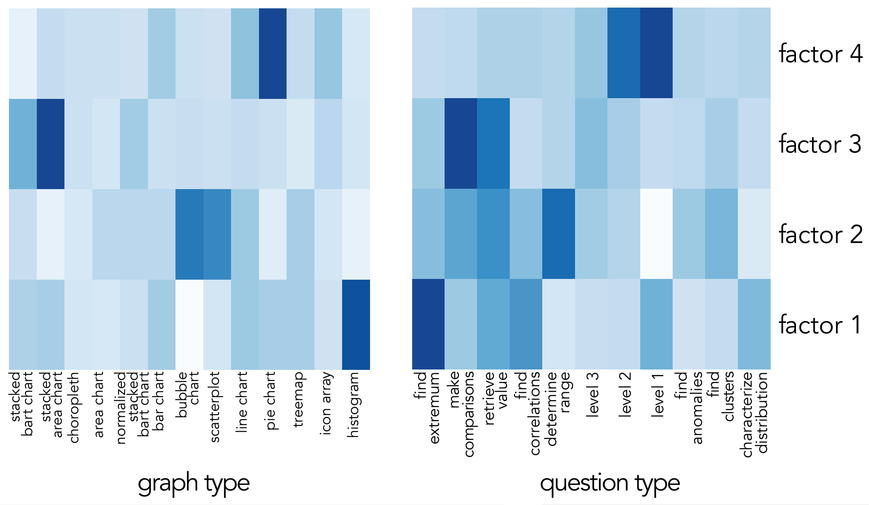
Scores for individual question types are more strongly correlatedwithin test than between test

What grouping of test items best predict observed error patterns?



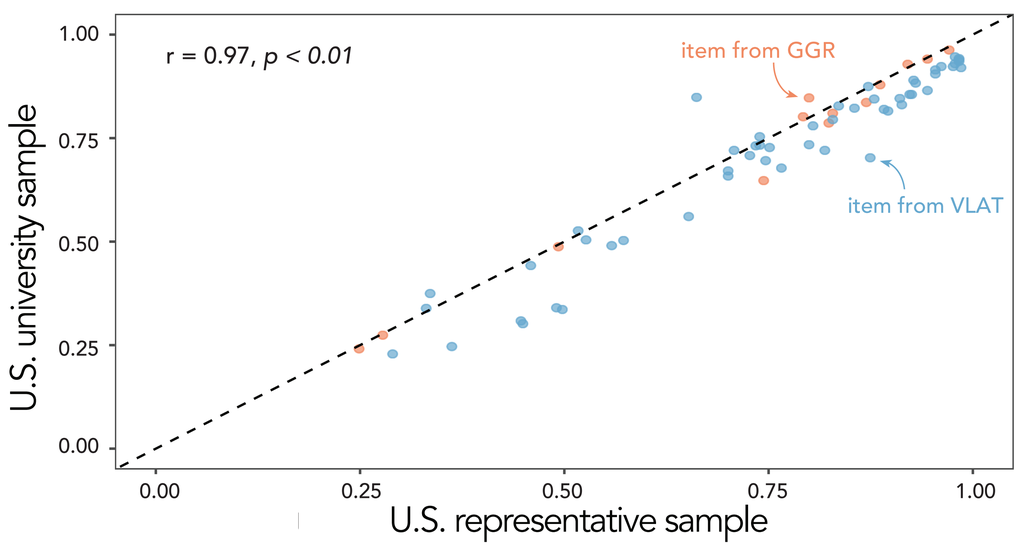


Small number of latent factors better explains the error patterns than test, question, or graph type

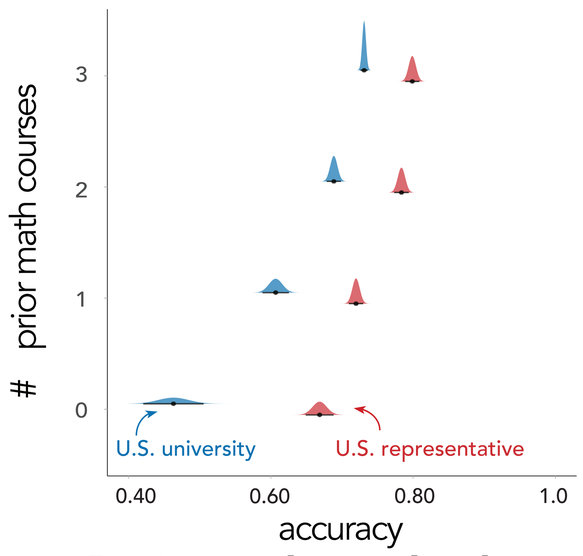


Latent factors seem to load more strongly on graph type than question type

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.

submit your email to talk more about the project here

or see more information at:
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