Evaluating the Validity of Compound Remote Associates Items

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Introduction

- Creativity, according to one theory, is fundamentally rooted in the ability to generate original connections between ideas and concepts (Mednick, 1962).
- Compound Remote Associates (CRA) items, particularly those found on the Remote Associates Test (RAT; Mednick, 1968), are frequently used to assess creativity.

Objectives:

- **Evaluate the psychometric properties of Compound Remote Associates items (CRA).**
- **Establish validity of the items using a multiple-choice response mode.**

Compound Remote Associates Items

3 stimuli words:

Pine | Crab | Sauce

1 solution word: ?

Solution:

Pine – Apple

Crab – Apple

Apple – Sauce

Method

3 Samples:

SAPA Project sample (N = 1,148,423)
- Mean age 28.26 (*SD* = 14); 65.2% female; 233 countries; 1,023 occupations; 146 majors.

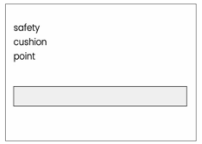


Undergraduate sample (N = 688)
- Mean age 19.52 (*SD* = 2.37); 68% female.

Prolific sample (N = 311)
- Mean age 34.22 (*SD* = 12.6); 33% female.

Total item pool (97 items)

Open-ended (random subset)



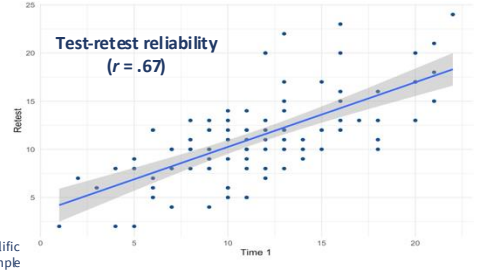
Multiple-choice (random subset)



Structure and Reliability

unidimensionality of the items was supported by McDonald's Omega (ω_h = .79)

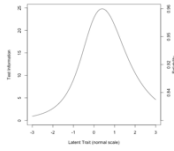
Internal Consistency: ω_t = 0.94; α = 0.94



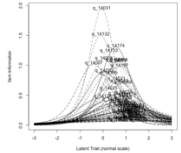
Prolific Sample

Item Response Theory Analysis:

This set of CRA items is most useful for distinguishing between participants with slightly above average associative ability.

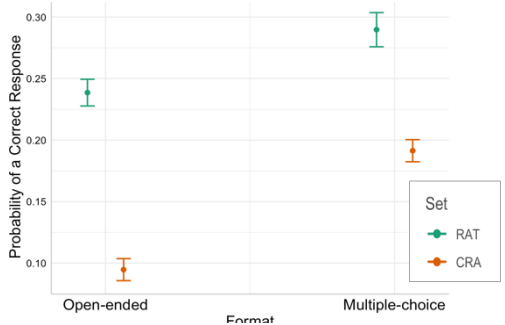


SAPA sample — Test Information Function



Item Information Function

Does response mode matter?



		Odds ratio	95% CI lower	95% CI upper
Undergraduate sample	Format (MC)	1.05	1.04	1.07
	Set (CRA)	0.87	0.86	0.88
	Interaction	1.05	1.03	1.06

Highest scoring majors and occupations

Majors

Major	Ability and Percentile: Associative	General
Classical Languages (Latin and Greek)	0.99	0.95
American Studies	0.97	0.71
Spanish	0.97	0.78
Comparative Literature Studies	0.96	0.77
Slavic Languages	0.95	0.79
Fiction Writing	0.95	0.70
Anthropology	0.94	0.86
Neuroscience	0.93	0.99
Performance Studies	0.92	0.61
Government	0.92	0.45

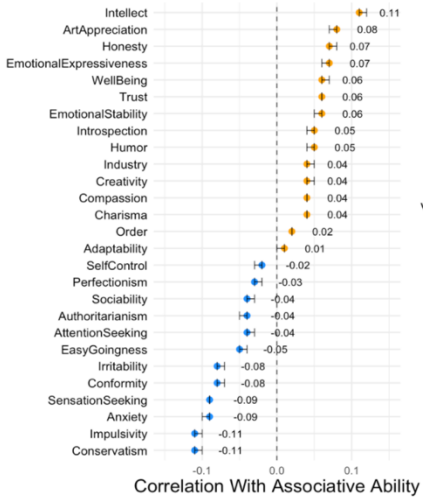
Occupations

Occupation	Ability and Percentile: Associative	General
Writer	0.94	0.71
Physicist	0.93	0.99
Veterinarian	0.93	0.86
Editor	0.92	0.83
Education Administrator - Postsecondary	0.92	0.92
Author	0.91	0.53
Postsecondary Teacher - Mathematical Science	0.91	0.95
Postsecondary Teacher - English Language and/or Literature	0.90	0.51
Clergy	0.90	0.75
Political Scientist	0.89	0.85

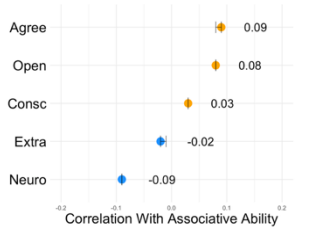
SAPA sample

Personality traits and cognitive abilities

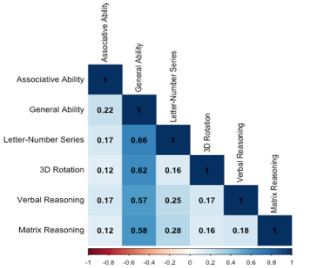
SAPA Personality Inventory



Big Five



Cognitive Abilities



SAPA sample

Conclusions and future directions

CRA items that use a multiple-choice response mode show good psychometric properties and hold potential for broader use given the ease with which they can be administered.

Future directions

- Use of multiple-choice items in neuroimaging studies of insight
- Assessing variability in responding at different timescales