Identi-Fi: Development and Validation of a Visual Organization Test

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Objectives

- Measures of visual organization are critical to accurately assess neuropsychological integrity.
- The Identi-Fi was designed to improve on existing measures by:
  - reducing the need for motor responses by requiring pointing or one-word answers only
  - providing updated illustrations with full-color stimuli, making it inclusive to multiple populations with differing levels of visual stimulation thresholds
  - including normative data based on a nationally representative sample collected in 2017-2018
- The Identi-Fi can be used to assess individuals with traumatic brain injury (TBI), central nervous system (CNS) compromise, reading disorders, and visual/processing skill deficits (see Table 1).

Table 1.
Identi-Fi Subtests and Index

Visual Recognition (VR)	Examinees are presented with a picture of a cut-up illustration of a common object, animal, or body part and must identify the picture solely from the visual presentation, absent physical manipulation of the pieces displayed. Results are presented as *T* scores (*M* = 50, *SD* = 10).
Visual Matching (VM)	Examinees are presented with the same cut-up illustrations from the Visual Recognition subtest, in the same order, and must match the cut-up pieces to the illustration that has been completely assembled. Results are presented as *T* scores (*M* = 50, *SD* = 10).
Visual Organization Index (VOI)	Provides a summary estimate of visual organization skills as represented in cumulative performance on the two tasks of visual organization included in the Identi-Fi, Visual Recognition and Visual Matching. Results are presented as standard scores (*M* = 100, *SD* = 15).

Method

- The Identi-Fi was standardized using a nationally representative sample of 901 participants ages 5 to 79 years (see Table 2).
- Standardization data were collected from July 2017 to April 2018.
- Reliability was studied through examining internal consistency, test–retest reliability, and inter-scorer reliability.
- Validity was studied by examining subtest intercorrelations, relationships to other measures, and performance of clinical groups including individuals with: dementia, intellectual and learning disabilities, TBI, and attention-deficit/hyperactivity disorder (ADHD).

The present study suggests that the Identi-Fi: A Test of Visual Organization and Recognition (Reynolds & McCaffrey, 2020) is a reliable and valid measure of visual organization. It improves on existing measures by providing updated normative data and visual stimuli and reducing the need for motor responses.

identi-Fi
A Test of Visual Organization and Recognition™

Method (continued)

Table 2.
Demographic Characteristics of the Identi-Fi Standardization Sample

Characteristic	% of sample
Age (years)	
Range	5–79
M	29.62
SD	25.15
Gender (%)	
Male	49.6
Female	50.4
Ethnicity (%)	
Caucasian	56.5
African American	14.0
Hispanic	20.3
Other[a]	9.2
Education (%)	
< 12 years	16.3
12 years	27.4
13–15 years	26.1
16+ years	30.2
Region (%)	
Northeast	25.4
Midwest	21.1
South	36.6
West	16.9

Note. *N* = 901.
[a]Includes American Indians, Alaska Natives, Asian Americans, Pacific Islanders, multiracial participants, and all other groups not classified as Caucasian, African American, or Hispanic.
[b]For 5- to 22-year-olds, education level is based on parent education.

Results

Reliability

- Cronbach's alpha for the VR subtest was .83, for the VM subtest it was .86, and for the VOI it was .90, demonstrating strong internal consistency and reliability.
- Test–retest correlations for the VR subtest was .68, for the VM subtest it was .85, and for the VOI it was .81, indicating moderate-to-strong test score stability.
- Two staff members at PAR independently scored the VR subtest on 35 completed protocols.
- The intraclass correlation coefficient (ICC) was .99, providing convincing evidence of the reliability of scoring the Identi-Fi by trained examiners.

Validity

- Moderate correlations (*r* = .55–.58) between the VR and VM subtests indicate the two tasks are related, yet distinct enough that examining discrepancies in performance can be helpful.
- The VOI had a significant negative correlation (*r* = -.62; *p* < .01) with the Hooper Visual Organization Test (Hooper VOT, 1983). This makes sense given that higher *T* scores indicate worse performance on the Hooper VOT, while on the Identi-Fi, higher *T* scores and standard scores indicate better performance.
- The Reynolds Intellectual Screening Test, Second Edition (RIST-2; Reynolds & Kamphaus, 2015) Index was also significantly correlated with the Identi-Fi VOI (*r* = .41; *p* < .05) demonstrating correlations with intelligence.
- All clinical groups had significant mean differences in the VOI when compared to the control group (*p* < .01), with large effect sizes (*d* = 1.19 to 2.59; see Table 3).

Table 3.
Identi-Fi Scores for the Clinical Studies Samples

	Subtest/index											
	Visual Recognition				Visual Matching				Visual Organization Index			
Clinical group	*M*	*SD*	Mean Difference[a]	*d*	*M*	*SD*	Mean Difference[a]	*d*	*M*	*SD*	Mean Difference[a]	*d*
Dementia	31.48	15.51	-20.48**	1.58	26.92	16.28	-25.24**	1.83	66.88	22.07	-36.48**	1.88
ID	23.48	16.29	-28.97**	4.24	22.52	16.13	-29.66**	2.39	58.55	22.75	-45.21**	2.59
TBI	41.18	14.56	-13.91**	1.28	42.77	14.77	-11.73**	1.08	87.32	20.53	-20.59**	1.35
LD	47.85	7.22	-9.00**	1.49	44.04	10.55	-11.42**	1.42	93.23	11.73	-16.88**	1.80
ADHD	46.35	10.54	-8.58**	1.04	48.96	9.70	-6.65**	0.95	96.12	14.48	-12.54**	1.19

Note. ID = intellectual disability; TBI = traumatic brain injury; LD = learning disability; ADHD = attention-deficit/hyperactivity disorder.
[a]Difference in mean score from matched control group, controlling for age, gender, ethnicity, and education level.
**p < .01.

Conclusions

- The current study demonstrates that the Identi-Fi is a reliable and valid measure of visual organization.
- Independent research is needed to provide additional evidence of reliability and validity.