

*Reflection of the Current Practice in Psychological Diagnostics of
Language-Based Diagnostic Tools*

Lothar Filip Rudorfer, Charles University, Czech Republic

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Abstract

This Article contribution focuses on the language-based psychological test, batteries and diagnostic tools used worldwide and their psychometric standardisation. The author follows in his research from his diploma thesis Analytical Methods in Psycholinguistic Research of Perception (Rudorfer, 2019), in which the author addressed the psycholinguistic and statistical approach in language performance tests and provided a number of analytical tools due to their focus and work with specific subjects using language (Czech, English, Hungarian, Japanese and German), their perceptual, cognitive skills and language intelligence, which are key aspects of research study research. The proposed research study follows up on the dissertation and diploma thesis of the main researcher of the project. It expands it mainly with a specific focus on specific diagnostic tests and psychometric analysis options for proper revision and standardisation for use in professional practice. The dissertation will focus on analytical methods for psychological diagnostic methods with a focus on literacy and language performance tests and their standardization. The project also corresponds to the long tradition of the Department of Psychology, Faculty of Education, Charles University, whose area of interest is primarily issues of literacy, functional literacy and specific learning disabilities.

Keywords: Language-Based Testing, Language Performance, Standardization, Psychometric Standards, Comparative Study, Descriptive Statistics

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Introduction

It has been the goal of many psychological associations and recent regulations in the Czech Republic¹, EU and Worldwide to support the publishing of psychological tests, batteries and collections of diagnostic tools to be available to the majority of psychologist and educational professionals alike. The main issue is regulation, and review factors coinciding with the replication crisis in psychology that divides the psychological and educational experts alike. This project builds on the current research survey and Czech academic experience in the field (e.g. Urbánek et al, 2021), Cígler (2020) or Ježek (2021). A great advantage is cooperation with leading experts on this topic working in the Department of Psychology, Faculty of Education, Charles University (FoE CUNI). The acquired knowledge can be transferred in this way to the relevant subjects provided by the Department of Psychology, both in the field of educational psychology (especially in the follow-up master's programmes, in which future counselling experts in education are prepared), and in all teaching disciplines as well where teachers and education experts can use the outputs of this research project to their benefit.

The primary goal of the presented project is to map the awareness of the professional psychological public about psychometric standards as described by Harvill (1991) or Revelle (2015) and psychodiagnostic tools used, which have a component focused on language performance, as many Czech pedagogical and psychological methods do not contain all information about data processing, whether and how often they are reviewed, and the extent to which the diagnostic tool meets psychometric standards of validity and reliability. (APA, 2017). Two screening questionnaires in Czech and English (one for psychologists from practice, the other for researchers in the field of pedagogy and psychology) helped us to determine the level of awareness of the professional and academic community in the areas of the use of standardization procedures.

The project is currently in its data processing phase, during which we already have at our disposal a list of commonly used diagnostic tools worldwide. In addition to the list of used tests, we are conducting a questionnaire study² which should help us better understand what factors are dependent on the use of a particular language-based psychological diagnostic tool. Based on a specific theoretical framework we presume that language-based performance is a key indicator for the majority of achievement, personality and even cognitive skill psychological tests and batteries.

Psychologically speaking, language performance can be defined as the ability of an individual to use language effectively and appropriately in various contexts. This includes the ability to understand, process, and produce language in a manner that is consistent with the individual's age, education, and culture. Language performance can be measured by various standardized tests, such as those that assess vocabulary, grammar, comprehension, and

¹Core regulations in the Czech Republic are mainly vyhláška č. 72/2005 Sb. o poskytování poradenských služeb ve školách a školských poradenských zařízeních, ve znění vyhlášky č. 116/2011 Sb., vyhláška č. 27/2016, the EUs Mutual evaluation of regulated professions Overview of the regulatory framework in the health services sector – psychologists and related professions Ref. Ares(2016)2257345 - 13/05/2016. Similar regulations are being put forward worldwide in order to better regulate who can administer a particular psychological diagnostic/performance test under specific conditions. The internal regulations also imply that all used diagnostic tools should include verification or a test study supporting any psychometric validity and reliability of a particular psychological test or battery used.

² Questionnaire for psychologists and administrators of test is available at <https://sites.google.com/view/gauk316722>

fluency. In addition to these objective measures, language performance can also be evaluated subjectively based on the individual's ability to communicate effectively and appropriately in social interactions.

Factors that can affect language performance include cognitive abilities, such as memory, attention, and executive function, as well as social and emotional factors, such as motivation, self-esteem, and anxiety. Additionally, the cultural and linguistic background can also impact language performance, particularly in individuals who are bilingual or multilingual. Language-based diagnostic tools can be helpful in identifying language disorders or delays, such as developmental language disorders, specific language impairments, or language-based learning disabilities. They can also be useful in determining the appropriate treatment and intervention strategies for individuals with language difficulties.

It is important to note that language-based diagnostic tools should always be administered and interpreted by qualified professionals, such as speech-language pathologists or psychologists, who have expertise in language assessment and diagnosis.

The main research questions of the research project questionnaire screening are the following: *What are the main obstacles to the use of properly standardized diagnostic methods in professional practice? Who decides on the purchase and use of the tool, is there a comprehensive procedure, the effect of authority, custom or economic factors? Who performs and can perform psychodiagnostic/administration tools? Which institutions are responsible for the quality of the instrument? Is there a real demand for a controlling body that can recommend/review psychodiagnostic tools? How should such a body function and from what should it draw its authority? What are the most frequently used tools in pedagogical-psychological practice? What performance language tools are the most used in practice? Do frequently used tools meet psychometric standards? Is the proposed and frequently used diagnostic method sensitive enough to detect the problem?* Some of these questions have been answered already with the catalogue of psychological diagnostic tools since these are widely used in practice and therefore can be analysed further.

Another partial goal is to map and catalogue the most frequently used psychodiagnostic tools, which include items that are related to language performance and then process them into a single overview study, which this article contains.

Based on the collected data, a digital repository catalogue of diagnostic tools³ and methods has been created for the end user (psychologist, education psych major, teacher, special educator, etc.) for specific use. The monitored sample contains 74 psychological tests and the final number will be growing in the future (see the appendix of this article for the list of the included psychological diagnostic tests). The sample was filtered and processed via the

³ 46 のテスト機器とその専門記事、レビュー、専門マニュアル、いくつかのテストバッテリーを管理する国内外の組織の推奨文書 (APA、ミシガン大学、MSMT-13319/2019-1、PedF CUNI 診断機器アーカイブ、American Guidance Service, Inc., 京都大学、京都大学、UC Berkeley, FSS MUNI Test Forum, Universität München). カテゴリ: 名前、略語、タイプ、分類、標準化、標準化のサンプル、改訂、チェコ共和国で利用可能、チェコ共和国での標準化、発行国、グループ管理、価格、通貨、評価、サブテストの数、および年齢グループ。 A preview of the catalogue available at <https://docs.google.com/spreadsheets/d/1CrR7oSxh715pSctkh8rX18KJJv1tm69o/edit?usp=sharing&oid=109248543351033847896&rtpof=true&sd=true>. See also appendix of this article for the list of diagnostic tools included

PRISMA⁴ methodology standard. The following flowchart illustrates the overall inclusive criteria process.

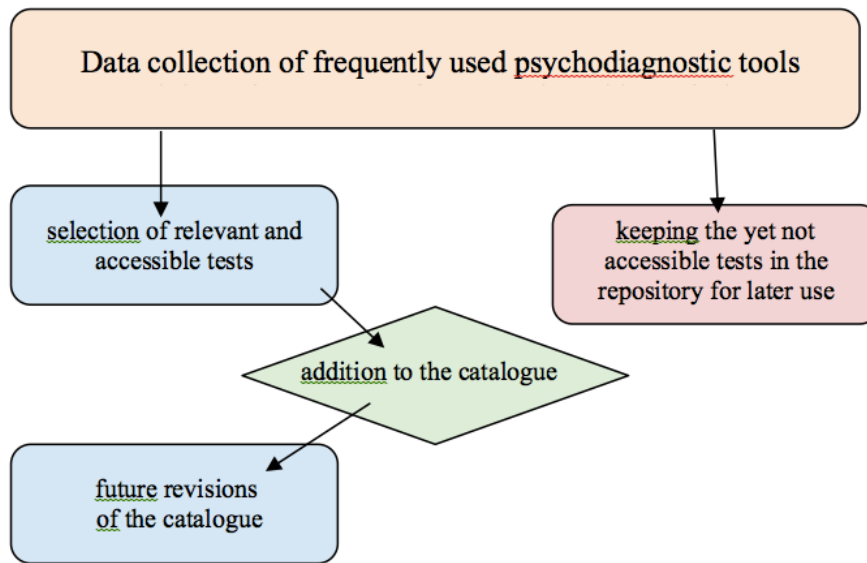


Figure 1: Flowchart of the psychological test catalogue according to the PRISMA methodology

Based on the flowchart structure we are able to create an online catalogue for psychologists containing categories such as: ID, name, acronym of the test, classification, type of test, year of standardisation, standardisation sample size, year of revision, price, number of subtests and evaluation. We want the catalogue to be able to filter based on these categories as well. Based on these parameters the following UML diagram can be applied:

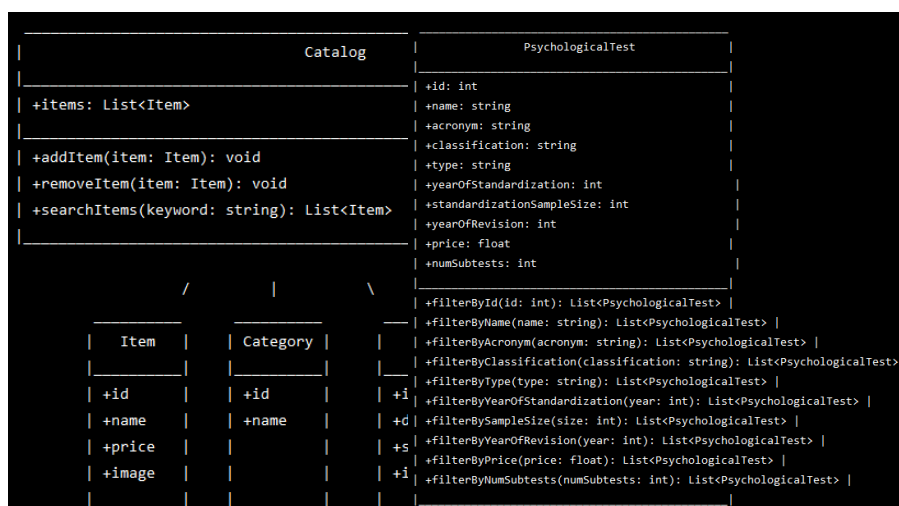


Figure 2: Sample UML for online catalogue

The catalogue then includes also an ad hoc categorisation of the results of reviews and validation studies conducted with these selected psychodiagnostic tools and a framework of 9-scale assessment categorisation has been added to the catalogue, see table 1 for examples.

⁴ The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology is a widely used approach for conducting systematic reviews and meta-analyses in various fields, including health sciences and social sciences. Published in the PLoS Medicine article titled "Preferred Reporting Items for Systematic Reviews by Moher et al., published in 2009. Accessible via: <http://www.prisma-statement.org/>

Evaluation/assessment criterion	Catalogue grade
Suitable for self-examination without supervision in the application area(s) defined by the distributor.	1
Suitable for supervised use in the area(s) defined by the distributor, by any user with general competence in test use and administration.	2
Only suitable for use by an expert user under controlled conditions or in very limited application areas	3
Suitable for use in the area(s) defined by the distributor by users who meet special qualification requirements.	4
poor ratings, inadequate, insufficient	5
Research tool only. Not for practical use.	6
It requires further development. Suitable for research use only.	7
Possible administration by a teacher/spec. teacher in the language field	8
Assessment/Validation study or review not yet conducted	9

Table 1: 9 point scale assessment categories of the included psychodiagnostic tests

As it is apparent from the scale, we counted in cases where the psychodiagnostic tests are suitable for open access and self-examination, as well as those which are only suitable for supervised use. Some frequently used diagnostic tools however are lacking a review study, or one has not yet been conducted. Such case has been found in 9 out of all tests and batteries (namely TEWL-2, TNL, TWS-5, Word test 2-E, Word test 2-A, DAR-TTS, ZAREKI, T-239, Czech DysTest). The vast majority (23 tests out of 74 total) scored evaluation 3, meaning such tests are suitable only for use by an expert user under controlled conditions or in very limited application areas, which was an expected outcome (see the appendix for details), especially for tests such as WAIS, CELF, MMPI, etc.

The catalogue has recently been added with aptitude tests such as MLAT, PLAB, LLAMA, CANAL-F, DLAB, VORD, Hi-LAB, MENYE (see the appendix table of catalogue tests for details) which all contain units or subtests that measure different aspects of language learning aptitude, including phonological memory, working memory, grammatical sensitivity, and language analytic ability. The subtests are administered in a fixed order, and there are scheduled breaks between some of the subtests. The test is typically administered in a computerised format, and participants are given detailed instructions and practice items before beginning each subtest. The majority of these unfortunately however are not for commercial use or use in psychological practice (yet) as they were mainly used as a research tool, thus receiving the evaluation grade 6 in the catalogue.

Conclusion

In conclusion, language performance is an important aspect of psychological assessment, as it provides insight into an individual's cognitive functioning, communication abilities, and overall mental health. There are several psychological diagnostic tools that focus on language performance, including language assessment tests, the MMPI (Butcher et al., 2016), the WAIS, the CELF, and the BDAE (Goodglass & Kaplan, 1983). These tests are essential for identifying cognitive deficits, diagnosing language-based learning disabilities and mental health issues, and developing appropriate treatment plans. The use of psychological diagnostic tools focused on language performance is essential in the assessment and

diagnosis of mental health issues. These tools provide valuable information about an individual's cognitive functioning, communication abilities, and overall mental health, which are critical in identifying cognitive deficits, language-based learning disabilities, and mental health issues such as depression, anxiety, and personality disorders.

The language assessment test, MMPI, WAIS, CELF (Wiig et al., 2013), and BDAE are some of the most commonly used psychological diagnostic tools that focus on language performance. Each of these tests has its own unique strengths and limitations, and their selection depends on the specific needs and goals of the assessment.

For instance, the language assessment test can help identify language-based learning disabilities, while the MMPI provides insight into an individual's personality traits and emotional functioning. The WAIS measures an individual's cognitive abilities, including language skills, while the CELF (Wiig et al., 2013) assesses an individual's language abilities across multiple domains. Finally, the BDAE (Goodglass & Kaplan, 1983) is specifically designed to assess language abilities in individuals with aphasia.

Overall, the use of these psychological diagnostic tools, in combination with other assessment methods, can provide a comprehensive understanding of an individual's mental health status. This information is critical in developing appropriate treatment plans and interventions to help individuals overcome their mental health challenges and achieve their full potential. It is, however, necessary to point out that the categorisation of frequently used tests for specific case use is an essential activity that can help psychologists and education researchers to pick the right test or psychodiagnostic battery with the knowledge of its psychometric properties, data sample used in review study and the standardisation processes.

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Appendix

List of diagnostic tools and batteries added to the digital repository catalogue reported to be in use at the time of publishing of this paper

Title of the psychodiagnostic tool containing language-based subtest/items	abbreviation	Year of publishing
Assessing Linguistic Behaviors Communicative Intentions Scale	ALB	1987
Clinical Evaluation of Language Fundamentals, Fifth Edition	CELF-5	1997
Clinical Evaluation of Language Fundamentals-Preschool, Second Edition	CELF-Preschool 2	1992
Comprehensive Assessment of Spoken Language	CASL	1999
Developmental Indicators for the Assessment of Learning	DIAL-3	1998
Comprehensive Test of Phonological Processing, Second Edition	CTOPP-2	2013
Expressive One-Word Picture Vocabulary Test, Fourth Edition	EOWPVT-4	2011
Expressive Vocabulary Test, Second Edition	EVT-2	1993
MacArthur Communicative Development Inventories-Words and Gestures	CDI	1993
Oral and Written Language Scales: Written Expression	OWLS Written Expression	1996
Peabody Picture Vocabulary Test, Fourth Edition	PPVT-4	2007
Preschool Language Scale, Fourth Edition	PLS-4	2002
Receptive-Expressive Emergent Language Test, Third Edition	REEL-3	2003
Receptive One-Word Picture Vocabulary Test	ROWPVT	2000
Test of Auditory Comprehension of Language, Third Edition	TACL-3	1999
Test of Auditory Processing Skills, 3rd Edition	TAPS-3	2005
Test of Early Written Language 2	TEWL-2	2001
Test of Narrative Language	TNL	2004
Test of Pragmatic Language	TOPL	1992
Test of Written Language, Fourth Edition	TOWL-4	2009
Test of Written Spelling, Fifth Edition	TWS-5	2013
The Word Test 2: Elementary	Word test 2-E	2004
The Word Test 2: Adolescent	Word test 2-A	2005
The Diagnostic Assessments of Reading with Trial Teach Strategies	DAR-TTS	1991
Gray Oral Reading Tests, Fifth Edition	GORT-5	2012

Gray Silent Reading Tests	GSRT	2000
The Nelson-Denny Reading Test of Vocabulary, Reading Comprehension, and Reading Rate	NDRT	1993
Qualitative Reading Inventory, Fifth Edition	QRI-5	1994
Test of Word Reading Efficiency, Second Edition	TOWRE 2	2012
Woodcock Reading Mastery Tests-Revised	WRMT-R	1998
Kaufman Test of Educational Achievement, Second Edition Comprehensive Form	KTEA-II	2004
Wechsler Individual Achievement Test, Second Edition	WIAT-II	2001
Woodcock-Johnson III Tests of Achievement	WJ III ACH	2001
Kaufman Assessment Battery for Children, Second Edition	KABC-II	2004
McCarthy Scales of Children's Abilities	MSCA	1972
Stanford-Binet Intelligence Scales for Early Childhood, Fifth Edition	Early SB5	2005
Wechsler Intelligence Scale for Children, Fourth Edition Integrated	WISC-IV Integrated	2004
Wechsler Preschool and Primary Scale of Intelligence, Third Edition	WPPSI-III	1991
Woodcock-Johnson III Tests of Cognitive Abilities	WJ III COG	2001
Arizona Articulation Proficiency Scale, Third Revision	Arizona-3	2000
Goldman-Fristoe Test of Articulation, Second Edition	GFTA-2	2000
Kaufman Speech Praxis for Children	KSPT	1995
Khan-Lewis Phonological Analysis	KLPA-2	1986
Photo Articulation Test—3rd Edition	PAT-3	1997
Ages and Stages Questionnaires: A Parent-Completed, Child-Monitoring System, Second Edition	ASQ	1980
Test of Problem Solving 3: Elementary	TOPS-3	2005
Vineland Adaptive Behavior Scales, Second Edition	Vineland-II	2005
The Beery-Buktenica Developmental Test of Visual-Motor Integration, 5th Edition	Beery VMI	2004
Bayley Scales of Infant and Toddler Development-Third Edition	Bayley-III	2006
Peabody Developmental Motor Scales, Second Edition	PDMS-2	2000
Snijders-Oomen nonverbalní intelligenční test	SON-R 2½ – 7	2006
Intelligenční a vývojová škála pro děti ve věku 5—10 let	IDS	2009
Test mapující připravenost pro školu	MaTeRS	2013

Diagnostika struktury matematických schopností	DISMAS	2013
Baterie testů fonologických schopností	BTFS	2013
Stanford-Binetova inteligenční škála IV. Revize (T-35)	S-B IV	1960
Test kognitivních schopností	T-22	1998
Neuropsychologická baterie testů ke zpracovávání čísel a počítání u dětí	ZAREKI	2006
Diagnostika specifických poruch učení	T-239	2002
Baterie testů pro diagnostiku specifických poruch učení u studentů vysokých škol a uchazečů o vysokoškolské studium	DysTest	2014
Hamburger Lesetest für 3. und 4. Klassen	HAMLET 3-4	1995
Knuspels Leseaufgaben	KNUSPEL-L	1995
Salzburger Lese- und Recht-schreibtest	SLRT	1997
Würzburger Leise Leseprobe	WLLP	1997
Hamburg-Wechsler-Intelligenztest für Kinder	HAWIK-III	1995
Japanese Dyslexia detection tool of kana characters かな文字の失読症検出ツール	DTVP	2014
Modern Language Aptitude Test	MLAT	1959
Pimsleur Language Aptitude Battery	PLAB	1966
Language Aptitude Tests	LLAMA	2005
Measurement of foreign language learning ability: The CANAL-F theory and test	CANAL-F	2000
Defense Language Aptitude Battery	DLAB	1976
Parry & Child aptitude test	VORD	1990
Doughty et al., Linck et al. aptitude test	Hi-LAB	2010
Magyar Egyetemes Nyelve'rze'kme'ro (Hungarian General Aptitude Test)	MENYE	1996

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Contact email: lotharfilip.rudorfer@pedf.cuni.cz