Assessment of Culturally and Linguistically Diverse Students:

Evidence-based Evaluation and Practice.

Ohio School Psychologists Association

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Cultural and Linguistic Issues in Early Testing

The newly transformed Binet Scales were thought to provide a psychometric tool that could precisely measure intelligence independent of other factors. To maintain this perspective required unquestioned belief that:

- *Intelligence was genetic, innate, static, immutable, and largely unalterable by experience, opportunity, or environment*
- *Whether or not you fully comprehended or spoke English did not significantly affect testing*
- *Familiarity with and knowledge of U.S. culture had no bearing on intelligence test performance*
- *Being raised in another culture or having different cultural experiences was irrelevant*

"Intelligence is what intelligence tests measures" (Boring, 1923), and that means that "you are what the test says you are."

- *Being bilingual was itself the problem because it resulted in a "mental handicap" measured accurately by poor performance on intelligence tests and thus substantiating its detrimental influence*

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Cultural and Linguistic Issues in Early Testing: A lasting legacy.

Much of the these original perspectives and ideas regarding the meaning of test results, particularly with respect to cultural and linguistic differences, remain embedded in various ways in present day tests:

Very Superior		Precocious
Superior		Superior
High Average	evolved from →	Normal
Average		Borderline
Low Average		Moron
Borderline		Imbecile
Deficient		Idiot

In 1974, the following question was asked on the WISC-R:
- *Who discovered America?*

In 1991, with "attention" to issues regarding cultural fairness, the same question on the WISC-III was "changed" to:
- *Who was Christopher Columbus?*

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The Testing of Bilinguals: Early influences and a lasting legacy.

H. H. Goddard and the menace of the feeble-minded

- *The testing of newly arrived immigrants at Ellis Island*

Lewis Terman and the Stanford-Binet

- *America gives birth to the IQ test of inherited intelligence*

Robert Yerkes and mass mental testing

- *Emergence of the bilingual-ethnic minority "handicap"*

Prepared under the auspices of the National Research Council

NATIONAL INTELLIGENCE TESTS

By M. E. Haggerty, L. M. Terman, E. L. Thorndike, G. M. Whipple, and R. M. Yerkes

THESE tests are the direct result of the application of the army rating methods to school needs. They were devised in order to supply group tests for the examination of school children that would embody the greater benefits derived from the Binet and similar tests.

The effectiveness of the army intelligence tests in problems of classification has been demonstrated in the case of thousands of men. It is considered the use of the National Intelligence Tests, which have been greatly improved in the light of army experiments.

The tests have been selected from a large group of tests after a try-out and a careful analysis by a statistical staff. The two equal proposed consist of five tests each (with practice exercises), and either may be administered in thirty minutes. They are simple in application, reliable, and immediately useful for classifying children in Grades 5 to 9 with respect to intellectual ability. Scoring is unusually simple.

Either scale may be used separately to advantage. The reliability of results is increased, however, by reexamination with the other scale after an interval of at least a day.

Scale A consists of an arithmetical reasoning, a sentence completion, a logical selection, a synonym-antonym, and a classification test. Scale B includes a completion, an information, a vocabulary, an analogies, and a comparison test.

Scale A: Form 1. 12 pages. Price per package of 20 [illegible]
Scale A: Form 2. Same description. Same price. [illegible]
Scale B: Form 1. 12 pages. Price per package of 20 [illegible]
Scale B: Form 2. Same description. Same price. [illegible]
Examiner Set. One copy of each Scale and Scoring Key and Manual of Directions. Price 50 cents postpaid.

Experimental work financed by the General Education Board by appropriation of $50,000

WORLD BOOK COMPANY
YONKERS-ON-HUDSON, NEW YORK
2126 PRAIRIE AVENUE, CHICAGO

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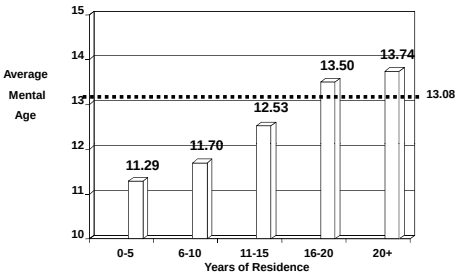
The Testing of Bilinguals: Early influences and a lasting legacy.

Mean Mental Age (MA) from Binet Scales in a non-native English speaking sample from Yerkes' data as analyzed by C.C. Brigham (1921)



Average score for native English speakers on Beta = 101.6 (Very Superior; Grade A)
Average score for non-native English speakers on Beta = 77.8 (Average; Grade C)

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Bilingualism and Testing

- *Interpretation: New immigrants are inferior*

Instead of considering that our curve indicates a growth of intelligence with increasing length of residence, we are forced to take the reverse of the picture and accept the hypothesis that the curve indicates a gradual deterioration in the class of immigrants examined in the army, who came to this country in each succeeding 5 year period since 1902…The average intelligence of succeeding waves of immigration has become progressively lower.

Brigham, 1923

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Stages of Language Acquisition

Comprehensible input is essential in order to progress through these stages

Pre-Production/Comprehension (*no BICS*)
Sometimes called the silent period, where the individual concentrates completely on figuring out what the new language means, without worrying about production skills. Children typically may delay speech in L2 from one to six weeks or longer.

- *listen, point, match, draw, move, choose, mime, act out*

Early Production (*early BICS*)
Speech begins to emerge naturally but the primary process continues to be the development of listening comprehension. Early speech will contain many errors. Typical examples of progression are:

- *yes/no questions, lists of words, one word answers, two word strings, short phrases*

Speech Emergence (*intermediate BICS*)
Given sufficient input, speech production will continue to improve. Sentences will become longer, more complex, with a wider vocabulary range. Numbers of errors will slowly decrease.

- *three words and short phrases, dialogue, longer phrases*
- *extended discourse, complete sentences where appropriate, narration*

Intermediate Fluency (*advanced BICS/emerging CALP*)
With continued exposure to ***adequate*** language models and opportunities to interact with fluent speakers of the second language, second language learners will develop excellent comprehension and their speech will contain even fewer grammatical errors. Opportunities to use the second language for varied purposes will broaden the individual's ability to use the language more fully.

- *give opinions, analyze, defend, create, debate, evaluate, justify, examine*

Source: Krashen, S.D. (l982). *Principles and Practice in second language acquisition.* New York: Pergamon Press.

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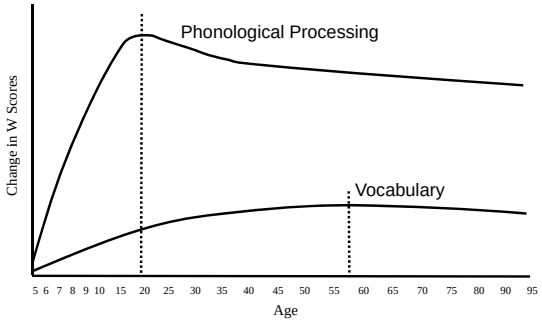
Language Proficiency vs. Language Development in ELLs



Source: McGrew, K. S. & Woodcock, R. W. (2001). *Woodcock-Johnson III technical manual*. Itasca, IL: Riverside Publishing.

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What is Developmental Language Proficiency?

- Example

	CALP Level	RPI	SS	PR	CALP
– Letter Word ID	-	100/90	128	97	-
– Dictation	-	94/90	104	59	-
– Picture Vocabulary	-	2/90	47	<.1	-
– Reading-Writing	v. advanced	100/90	123	94	6
– Writing	fluent	94/90	104	61	4
– Broad English Ability	fluent	94/90	104	59	4
– Oral Language	limited	27/90	65	1	3
– Verbal IQ	69				
– Perf. IQ	82				
– FSIQ-4	72				

verbal "thinking" skills continue to lag in development

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What is Developmental Language Proficiency?

- Example
  - Can read the following words:
    - Great, become, might, shown, explain, question, special, capture, swallow
  - Cannot name the following pictures:
    - Cat, sock, toothbrush, drum, flashlight, rocking chair
  - Can understand simple grammatical associations:
    - Him is to her, as ___ is to she
  - Cannot express abstract verbal similarities:
    - Red-Blue: "an apple"
    - Circle-Square: "it's a robot"
    - Plane-Bus: "the plane is white and the bus is orange"
    - Shirt-Jacket: "the shirt is for the people put and the jacket is for the people don't get cold"

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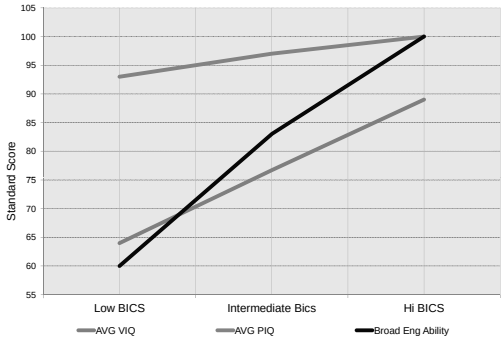
Developmental Language Proficiency and IQ in ELLs



Source: Dynda, A.M., Flanagan, D.P., Chaplin, W., & Pope, A. (2008), unpublished data..

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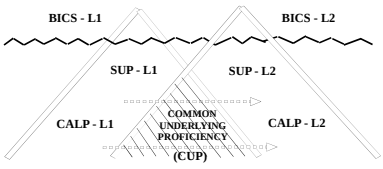
Understanding First and Second Language Acquisition

Basic Interpersonal Communication Skills (BICS)
- *ability to communicate basic needs and wants, and ability to carry on basic interpersonal conversations*
- *takes 1 - 3 years to develop and is insufficient to facilitate academic success*

Cognitive Academic Language Proficiency (CALP)
- *ability to communicate thoughts and ideas with clarity and efficiency*
- *ability to carry on advanced interpersonal conversations*
- *takes at least 5-7 years to develop, possibly longer and is required for academic success*

Cummins' Developmental Interdependence Hypothesis ("Iceberg Model")
- *BICS is the small visible, surface level of language, CALP is the larger, hidden, deeper structure of language*
- *each language has a unique and Separate Underlying Proficiency (SUP)*
- *proficiency in L1 is required to develop proficiency in L2,*
- *Common Underlying Proficiency (CUP) facilitates transfer of cognitive skills*



Source: Illustration adapted from Cummins (1984) *Bilingual And Special Education: Issues In Assessment and Pedagogy.*

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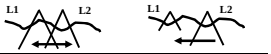
Developmental Implications of Second Language Acquisition

If a second language (L2) is introduced prior to the development of CALP in the native language (L1), and if the L2 effectively replaces the L1 and its role in fostering CALP, academic problems will result. However, the language of instruction, parental education, continued opportunities for L1 development, and the age at which the second language is introduced, are factors that can affect development of the second language and expectations of academic progress in a positive way.



	HIGH L1 (CALP)	LOW L1 (BICS)
HIGH L2 (CALP)	*Type 1.* Equal Proficiency "true bilingual"	*Type 3.* Atypical 2nd Language Learner "acceptable bilingual"
LOW L2 (BICS)	*Type 2.* Typical 2nd Language Learner "high potential"	*Type 4.* At-risk 2nd Language Learner "difference vs. disorder"

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Dimensions of Bilingualism and Relationship to Generations

Type	Stage	Language Use
		FIRST GENERATON – FOREIGN BORN
A	Newly Arrived	Understands little English. Learns a few words and phrases.
Ab	After several years of residence – Type 1	Understands enough English to take care of essential everyday needs. Speaks enough English to make self understood.
Ab	Type 2	Is able to function capably in the work domain where English is required. May still experience frustration in expressing self fully in English. Uses immigrant language in all other contexts where English is not needed.
		SECOND GENERATION – U.S. BORN
Ab	Preschool Age	Acquires immigrant language first. May be spoken to in English by relatives or friends. Will normally be exposed to English-language TV.
Ab	School Age	Acquires English. Uses it increasingly to talk to peers and siblings. Views English-language TV extensively. May be literate only in English if schooled exclusively in this language.
AB	Adulthood – Type 1	At work (in the community) uses language to suit proficiency of other speakers. Senses greater functional ease in his first language in spite of frequent use of second.
AB	Adulthood – Type 2	Uses English for most everyday activities. Uses immigrant language to interact with parents or others who do not speak English. Is aware of vocabulary gaps in his first language.
		THIRD GENERATION – U.S. BORN
AB	Preschool Age	Acquires both English and immigrant language simultaneously. Hears both in the home although English tends to predominate.
aB	School Age	Uses English almost exclusively. Is aware of limitation sin the immigrant language. Uses it only when forced to do so by circumstances. Is literate only in English.
aB	Adulthood	Uses English almost exclusively. Has few opportunities for speaking immigrant language. Retains good receptive competence in this language.
		FOURTH GENERATION – U.S. BORN
Ba	Preschool Age	Is spoken to only in English. May hear immigrant language spoken by grandparents and other relatives. Is not expected to understand immigrant language.
Ba	School Age	Uses English exclusively. May have picked up some of the immigrant language from peers. Has limited receptive competence in this language.
B	Adulthood	Is almost totally English monolingual. May retain some receptive competence in some domains.

Source: Adapted from Valdés, G. & Figueroa, R. A. (1994), *Bilingualism and Testing: A special case of bias* (p. 16).

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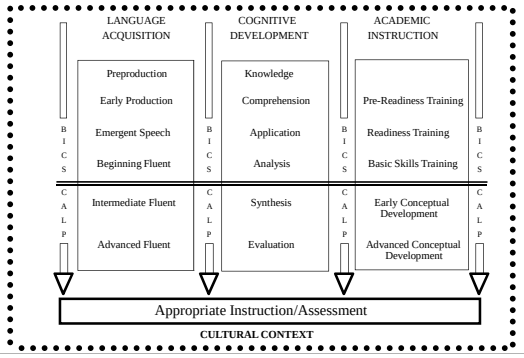
Parallel Processes in Development: Education follows Maturation



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Popular Misconceptions about Language Acquisition, Learning and Development

• Accent IS NOT an indicator of proficiency—*it is a marker regarding when an individual first began to hear/learn the language*

• Children DO NOT learn languages faster and better than adults do—*they only seem to because they have better pronunciation but CUP aids adult learners considerably*

• Language development CAN NOT be accelerated—*but having developed one language to a high degree (CALP) does help in learning a second language more easily*

• Learning two languages DOES NOT lead to a kind of linguistic confusion—*there is no evidence that learning two or more language simultaneously produces any interference*

• Learning two languages DOES NOT lead to poor academic performance—*on the contrary, students who learn two languages very well (CALP in both) tend to outperform their monolingual peers in school*

• Code-switching IS NOT an example of a language disorder and poor grammatical ability—*it is only an example of how bilinguals use whatever words may be necessary to communicate their thoughts as precisely as possible, irrespective of the language*

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Nondiscriminatory Assessment: Processes and Procedures

I. Assess for the purpose of intervention

II. Assess initially with authentic and alternative procedures

III. Assess and evaluate the learning ecology

IV. Assess and evaluate language proficiency

V. Assess and evaluate opportunity for learning

VI. Assess and evaluate relevant cultural and linguistic factors

VII. Evaluate, revise, and re-test hypotheses

VIII. Determine the need for and language(s) of formal assessment

IX. Reduce bias in traditional assessment practices

X. Support conclusions via data convergence and multiple indicators

Integration of RTI Within General Education Framework

Pre-referral procedures (I. - VIII.)
Post-referral procedures (IX. - X.)

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The Nature of Bias in Tests and Testing – It's not what you think.

NO BIAS

- ***Test items***
  (content, novelty)
- ***Test structure***
  (sequence, order, difficulty)
- ***Test reliability***
  (measurement error/accuracy)
- ***Factor structure***
  (theoretical structure, cluster or composite scores)
- ***Prediction***
  (academic success or achievement)

BIAS

- ***Test Validity***
  (specificity and validity of measured constructs)

- ***Test Selection***
  (matching examinee with test's dimensions of cultural loading or linguistic demand)
- ***Test Interpretation***
  (confidence in evaluative judgments and meaning assigned to derived scores)

"Intelligence tests are not tests of intelligence in some abstract, culture-free way. They are measures of the ability to function intellectually by virtue of knowledge and skills in the culture of which they are a sample" *Scarr, 1978, p. 339.*

"As long as tests do not at least sample in equal degree a state of saturation [assimilation of fundamental experiences and activities] that is equal for the 'norm children' and the particular bilingual child it cannot be assumed that the test is a valid one for the child." *Sanchez, 1934*

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What Factors Most Threaten the Validity of Test Performance?

Acculturative Knowledge Acquisition – Not Race or Ethnicity

> *"When a child's general background experiences differ from those of the children on whom a test was standardized, then the use of the norms of that test as an index for evaluating that child's current performance or for predicting future performances may be inappropriate."*
>
> *Salvia & Ysseldyke, 1991*

Developmental Language Proficiency – Not Language Dominance

> *"Most studies compare the performance of students from different ethnic groups…rather than ELL and non-ELL children within those ethnic groups….A major difficulty with all of these studies is that the category Hispanic includes students from diverse cultural backgrounds with markedly different English-language skills….This reinforces the need to separate the influences of ethnicity and ELL status on observed score differences."*
>
> *Lohman, Korb & Lakin, 2008, p. 276-278.*

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Nondiscriminatory Assessment: Processes and Procedures

IX. REDUCE BIAS IN TRADITIONAL TESTING PRACTICES

Exactly how is evidence-based, nondiscriminatory assessment conducted?

- **Modified Methods of Evaluation**
  - *Modified and altered testing*
- **Nonverbal Methods of Evaluation**
  - *Language reduced assessment*
- **Native Language Evaluation**
  - *Bilingual assessment*
- **English Language Evaluation**
  - *Assessment of bilinguals*

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Nondiscriminatory Assessment: Processes and Procedures

ISSUES IN MODIFIED METHODS OF EVALUATION

Modified and Altered Assessment:

- *"testing the limits:" alteration or modification of test items or content, mediating task concepts prior to administration, repeating instructions, accepting responses in either language, and eliminating or modifying time constraints may all help the examinee perform better, but violates standardization*
- *"translator/interpreter:" use of a translator/interpreter for administration helps overcome the language barrier but also undermines score validity, even when the interpreter is highly trained and experienced; tests are not usually normed in this manner*
- *alterations or modifications are perhaps most useful in deriving qualitative information—observing behavior, evaluating learning propensity, evaluating developmental capabilities, analyzing errors, etc.*
- *a recommended procedure would be to administer tests in a standardized manner first, which will potentially allow for later interpretation, and then consider any modifications or alterations that will further inform the referral questions*

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Nondiscriminatory Assessment: Processes and Procedures

ISSUES IN NONVERBAL METHODS OF EVALUATION

Language Reduced Assessment:

- *"nonverbal testing:" use of language-reduced (or 'nonverbal') tests are helpful in overcoming the language obstacle, however:*
- *it is impossible to administer a test without some type of communication occurring between examinee and examiner, this is the purpose of gestures/pantomime*
- *some tests remain very culturally embedded—they do not become culture-free simply because language is not required for responding*
- *construct underrepresentation is common, especially on tests that measure fluid reasoning (Gf), and when viewed within the context of CHC theory, some batteries measure a narrower range of broad cognitive abilities/processes, particularly those related to verbal academic skills such as reading and writing (e.g., Ga and Gc) and mathematics (Gq)*
- *all nonverbal tests are subject to the same problems with norms and cultural content as verbal tests—that is, they do not control for differences in acculturation and language proficiency which may still affect performance, albeit less than with verbal tests*
- *Language reduced tests are helpful in evaluation of diverse individuals and may provide better estimates of true functioning in certain areas, but they are not a whole or completely satisfactory solution with respect to fairness and provide no information about dysfunction in the most common areas of referral (i.e., reading and writing) or in mathematics*

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Nondiscriminatory Assessment: Processes and Procedures

ISSUES IN NATIVE LANGUAGE EVALUATION

Bilingual Assessment:

- *refers to the assessment of bilinguals in a bilingual manner by a bilingual psychologist*
- *the bilingual psychologist is in a position to conduct assessment activities in a manner (i.e. bilingually) that is not available to the monolingual psychologist even with the aid of interpreter*
- *bilingual assessment is a relatively new research tradition with little empirical support to guide appropriate activities or upon which to base standards of practice*
- *there are no truly "bilingual" tests or assessment protocols and not much is yet known about the performance of bilinguals on monolingual tests administered in the primary language*
- *the relative lack of competent, trained, and qualified bilingual psychologists limits the chances that students will be evaluated in this way, especially in languages other than Spanish*

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Nondiscriminatory Assessment: Processes and Procedures

ISSUES IN ENGLISH LANGUAGE EVALUATION

Assessment of Bilinguals:

- *refers to the assessment of bilinguals in a monolingual manner by a monolingual psychologist*
- *extensive research exists regarding performance of bilinguals on tests given in English*
- *goal is to reduce bias to maximum extent possible even through the use of tests given in English*
- *testing in English allows for the use of systematic methods based on established literature and research for collecting and interpreting data in a nondiscriminatory manner (e.g., CHC Culture-Language Interpretive Matrix)*
- *does not require that the evaluator speak the language of the child but does require competency, training and knowledge, in nondiscriminatory assessment including the manner in which cultural and linguistic factors affect test performance*

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Nondiscriminatory Assessment: Evaluation Methods and Evidence-based Practice

Evaluation Method	Norm sample representative of bilingual development	Measures full range of ability constructs	Does not require bilingual evaluator	Adheres to the test's standardized protocol	Substantial research base on bilingual performance
Modified or Altered Assessment	✘	✓	✓	✘	✘
Reduced-language Assessment	✘	✘	✓	✓	✘
Native-Language Assessment	✘	✓	✘	✓	✘
English-Language Assessment	✘	✓	✓	✓	✓

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A Recommended Best Practice Approach for Evaluating ELLs

Step 1. Assessment of Bilinguals – ruling out difference vs. disorder:

- *Select or create an appropriate battery that is comprehensive and responds to the needs of the referral concerns, irrespective of language differences*
- *Administer all tests in standardized manner in English only, no modifications*
- *Score tests and plot them for analysis via the C-LIM*
- *If analysis indicates expected range and pattern of decline, evaluation ends, no disability is likely*
- *If analysis does not indicate expected range or pattern of decline, apply XBA (or other) interpretive methods to determine specific areas of weakness and difficulty and continue to Step 2*

Step 2. Bilingual Assessment – validation of disorder in other language:

- *Review prior results and create a select set of tests related to the areas where the suspected weaknesses or difficulties were noted*
- *Select tests that are as parallel as possible to the original tests using one of 3 methods:*
- *Native language test administered in the native language (e.g., WJ III/Bateria III or WISC-IV/WISC-IV Spanish)*
- *Native language test administered via assistance of a trained interpreter*
- *Informally translated test administered via assistance of a trained interpreter*
- *Administer all tests in any manner necessary to ensure full comprehension including use of modifications and alterations*
- *Observe and document approach to tasks, errors in responding, and behavior during testing*
- *Analyze data both quantitatively and qualitatively to evaluate areas of weakness or difficulty*
- *If areas of weakness do not match areas of weakness from Step 1 analyses, disability NOT likely*
- *If areas of weakness match areas of weakness from Step 1 analyses, disability is likely*

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Acquisition of Language and Cultural Knowledge are Developmental Processes Embedded in Tests

- **Tests require age/grade related acquisition of culture (knowledge):**
  - the majority of tests used by psychologists were developed and normed in U.S. and inherently reflect native anthropological content as well as the culturally bound conceptualizations of the test developers themselves. Many tests require specific prior knowledge of, experience with, and even fluency regarding mainstream U.S. culture
- **Tests require age/grade related acquisition of language (communication):**
  - linguistic factors affect administration, comprehension, responses, and performance on virtually all tests. Even nonverbal tests that reduce oral language requirements continue to rely on effective communication between examiner and examinee in order to measure optimal performance
- **Tests vary on both dimensions:**
  - Tests vary significantly with respect to the degree that they are culturally loaded as well as the degree of language required

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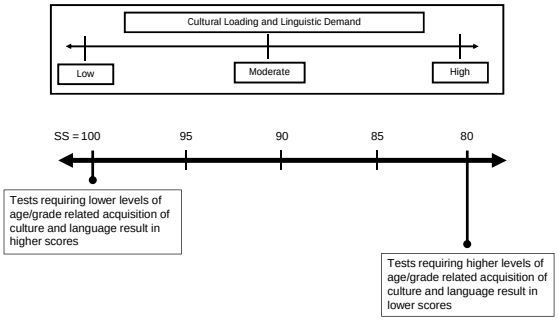
Test Performance is Mediated Proportionally by Differences in Developmental Experiences



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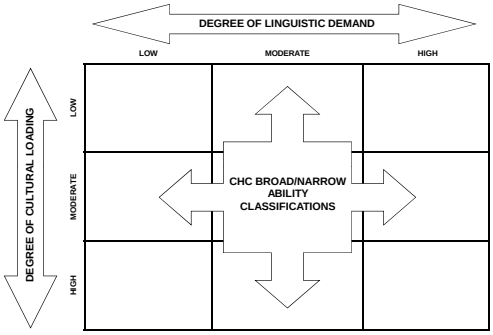
Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation



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Culture-Language Test Classifications (C-LTC): WISC-IV

DEGREE OF CULTURAL LOADING	LOW	MODERATE	HIGH
LOW	**MATRIX REASONING** (*Gf-RG*) Cancellation (*Gs-P,R9*)	**BLOCK DESIGN** (*Gv-SR, Vz*) **SYMBOL SEARCH** (*Gs-P,R9*) **DIGIT SPAN** (*Gsm-MS, MW*) **CODING** (*Gs-R9*)	**LETTER-NUMBER SEQUENCING** (*Gsm-MW*)
MODERATE		**ARITHMETIC** (*Gq-A3*) Picture Concepts (*Gc-K0, Gf-I*)*	
HIGH	Picture Completion (*Gc-K0, Gv-CF*)*		**INFORMATION** (*Gc-K0*) **SIMILARITIES** (*Gc-LD,VL*) **VOCABULARY** (*Gc-VL,LD*) **COMPREHENSION** (*Gc-K0, LS*) Word Reasoning (*Gc-VL, Gf-I*)*

**These tests demonstrate mixed loadings on the two separate factors indicated.*

Note: Some of the ability and culture-language classifications listed above are preliminary, based primarily on expert consensus procedures and judgment, and thus subject to change in accordance with future research findings. They are not intended for diagnostic purposes but rather to guide decisions regarding the relative influence of acculturation and English-language proficiency on test results.

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Culture-Language Test Classifications (C-LTC): WJ-III

DEGREE OF LINGUISTIC DEMAND

DEGREE OF CULTURAL LOADING	LOW	MODERATE	HIGH
LOW	**SPATIAL RELATIONS** *(Gv-VZ,SR)*	**VISUAL MATCHING** *(Gs-P,R9)* **NUMBERS REVERSED** *(Gsm-MW)*	**CONCEPT FORMATION** *(Gf-I)* **ANALYSIS SYNTHESIS** *(Gf-RG)* **AUDITORY WORKING MEMORY** *(Gsm-MW)*
MODERATE	**Picture Recognition** *(Gv-MV)* **PLANNING** *(Gs-SS)* **PAIR CANCELLATION** *(Gs-R9)*	**VISUAL–AUDITORY LEARNING** *(Glr-MA)* **Delayed Recall – Visual Auditory Learning** *(Glr-MA)* **RETRIEVAL FLUENCY** *(Glr-FI)* **RAPID PICTURE NAMING** *(Glr-NA)*	**MEMORY FOR WORDS** *(Gsm-MS)* **INCOMPLETE WORDS** *(Ga-PC)* **SOUND BLENDING** *(Ga-PC)* **AUDITORY ATTENTION** *(Ga-US/U3)* **DECISION SPEED** *(Gs-R4)*
HIGH			**VERBAL COMPREHENSION** *(Gc-VL,LD)* **GENERAL KNOWLEDGE** *(Gc-K0)*

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Culture-Language Test Classifications (C-LTC): KABC-II

DEGREE OF LINGUISTIC DEMAND

DEGREE OF CULTURAL LOADING	LOW	MODERATE	HIGH
LOW	**TRIANGLES** *(Gv-SR,Vz)* Hand Movements *(Gsm-MS; Gv-MV)** Pattern Reasoning *(Gf-I, Gv-Vz)** Face Recognition *(Gv-MV)* Atlantis *(Glr-MA, L1)* Atlantis Delayed *(Glr-MA, L1)*	**NUMBER RECALL** *(Gsm-MS)* Block Counting *(Gv-Vz)* Rebus *(Glr-MA)* Rebus Delayed *(Glr-MA, L1)*	
MODERATE		Conceptual Thinking *(Gv-Vz; Gf-I)** Rover *(Gv-SS; Gf-RG)** **WORD ORDER** *(Gsm-MS, WM)*	
HIGH	**Gestalt Closure** *(Gv-CS)*	Story Completion *(Gf-I, RG; Gc-K0, Gv-Vz)**	Expressive Vocabulary *(Gc-VL)* Riddles *(Gc-VL, LD; Gf-RG)** Verbal Knowledge *(Gc-VL, K0)*

**These tests demonstrate mixed loadings on the two separate factors indicated.*
Note: Some of the ability and culture-language classifications listed above are preliminary, based primarily on expert consensus procedures and judgment, and thus subject to change in accordance with future research findings. They are not intended for diagnostic purposes but rather to guide decisions regarding the relative influence of acculturation and English-language proficiency on test results.

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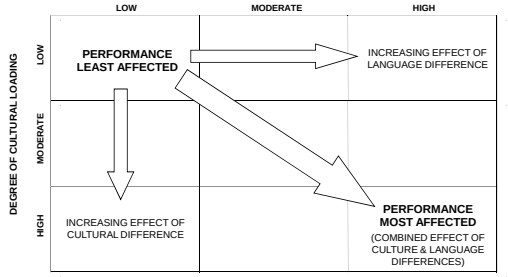
Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

PATTERN OF EXPECTED PERFORMANCE OF CULTURALLY AND LINGUISTICALLY DIVERSE CHILDREN

DEGREE OF LINGUISTIC DEMAND



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Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

Which model fits monolinguals and bilinguals best?

Predicted Best Fit: Monolingual

100	100	100
100	100	100
100	100	100

Predicted Best Fit: Neither

85	85	85
85	85	85
85	85	85

Predicted Best Fit: Bilingual

98	95	92
95	92	89
92	89	85

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Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

Summary of Total Mean Squared Difference Scores for Specified Models

Difference Scores	Monolingual		Bilingual	
	M	SD	M	SD
100 Model	13.43	3.52	14.18	3.75
85 Model	19.63	6.36	14.41	4.89
C-LTC Model	17.17	5.25	12.16	3.59

Source: Nieves, B., Ortiz, S.O., Flanagan, D.P., Chaplin, W. (2006), unpublished data..

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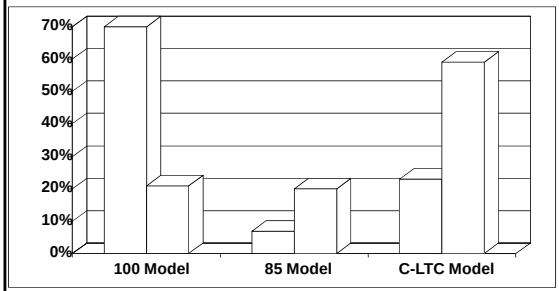
Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

Individual "Best Fit" Model for Monolingual and Bilingual Groups



Source: Nieves, B., Ortiz, S.O., Flanagan, D.P., Chaplin, W. (2006), unpublished data..

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Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

Pattern of Scores on the Wechsler Subtests

Subtest	Monolingual	Bilingual	Difference
VOC	103.75	87.67	-16.08
INF	99.57	86.30	-13.27
SIM	103.68	91.12	-12.56
COM	100.66	89.88	-10.78
ARI	98.11	89.35	-8.76
CD	105.57	98.21	-7.36
PC	99.91	97.92	-1.99
PA	97.36	96.14	-1.22
OA	96.89	96.70	-0.19
BD	97.08	97.29	0.21

Source: Nieves, B., Ortiz, S.O., Flanagan, D.P., Chaplin, W. (2006), unpublished data..

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Acculturative Knowledge and Language Proficiency

Comparison of mean WISC-R/WISC-III subtest scores

Subtest Name	Hispanic Group (Mercer) (1972) Mean SS	Hispanic Group (Vukovich & Figueroa) (1982) Mean SS	ESL Group (Cummins) (1982) Mean SS	Bilingual Group (Nieves-Brull) (2006) Mean SS
Information	7.5	7.8	5.1	7.2
Vocabulary	8.0	8.3	6.1	7.5
Similarities	7.6	8.8	6.4	8.2
Comprehension	7.8	9.0	6.7	8.0
Digit Span	8.3	8.5	7.3	*
Arithmetic	8.7	9.4	7.4	7.8
Picture Arrangement	9.0	10.3	8.0	9.2
Block Design	9.5	10.8	8.0	9.4
Object Assembly	9.6	10.7	8.4	9.3
Picture Completion	9.7	9.9	8.7	9.5
Coding	9.6	10.9	8.9	9.6

**Data for this subtest were not reported in the study.*

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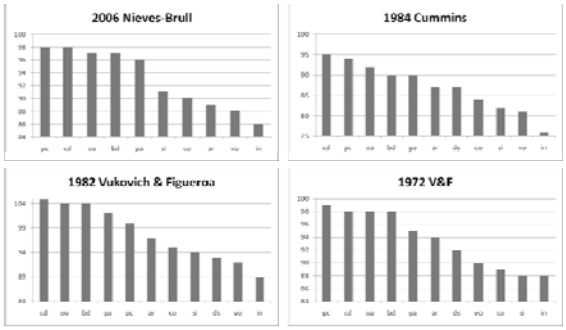
Acculturative Knowledge and Language Proficiency

Comparison of mean WISC-R/WISC-III subtest scores from four investigations with Hispanic, ELL, and bilingual populations.



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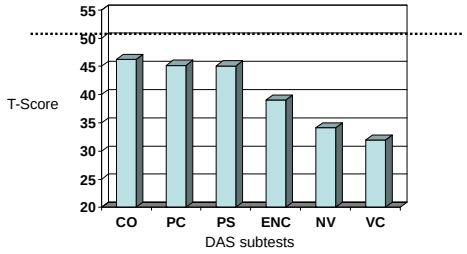
Acculturation and Language Proficiency

Mean subtest scores across six Differential Ability Scale (DAS) subtests in a pre-school sample of English Language Learners



Source: Aguerra, F., Terjesen, M., Flanagan, D. P., & Ortiz, S. O. (2007). unpublished data.

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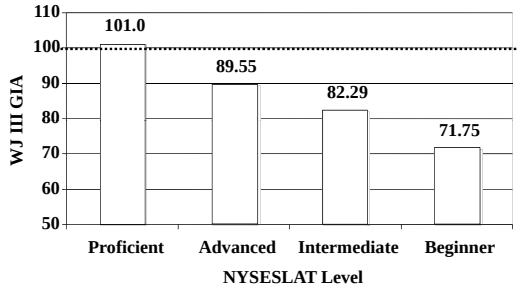
Acculturation and English Language Proficiency

Mean WJ III GIA across the four levels of language proficiency on the New York State ESL Achievement Test



Source: Sotelo-Dynega, M., Ortiz, S.O., Flanagan, D.P., Chaplin, W. (2007), unpublished data..

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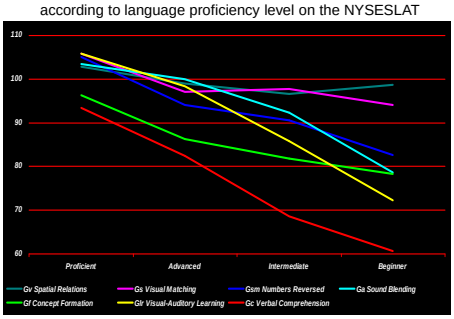
Acculturative Knowledge and English Language Acquisition: Relationship to Specific Cognitive Abilities

Mean subtest scores across the seven WJ III subtests according to language proficiency level on the NYSESLAT



Source: Sotelo-Dynega, M., Ortiz, S.O., Flanagan, D.P., Chaplin, W. (2007), unpublished data..

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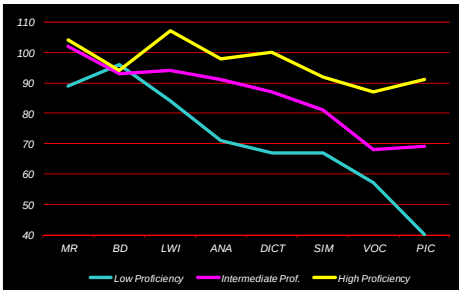
Acculturative Knowledge and English Language Acquisition: Relationship to Specific Cognitive Abilities

Mean subtest scores across the four WASI subtests and four WMLS-R subtests according to language proficiency level



Source: Dynda, A.M., Flanagan, D.P., Chaplin, W., & Pope, A. (2008), unpublished data..

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Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

PATTERN OF EXPECTED PERFORMANCE OF CULTURALLY AND LINGUISTICALLY DIVERSE CHILDREN

DEGREE OF CULTURAL LOADING \ DEGREE OF LINGUISTIC DEMAND	LOW	MODERATE	HIGH
LOW	1	2	3
MODERATE	2	3	4
HIGH	3	4	5

Cell 1 = highest expected scores, Cell 5 = lowest expected scores

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Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

PATTERN OF EXPECTED PERFORMANCE OF CULTURALLY AND LINGUISTICALLY DIVERSE CHILDREN

DEGREE OF CULTURAL LOADING \ DEGREE OF LINGUISTIC DEMAND	LOW	MODERATE	HIGH
LOW	1	2	3
MODERATE	2	3	4
HIGH	3	4	5

Cell 1 = highest expected scores, Cell 5 = lowest expected scores

=

Cell 1 = Low/Low = Highest expected scores

1. Low/Low
2. Low/Mod, Mod/Low
3. High/Low, Mod/Mod, Low/High
4. High/Mod, Mod/High
5. High/High

Cell 5 = High/High = Lowest expected scores

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Acculturation and English Language Proficiency

Comparison of Order of Means for WJ III Classifications

	C-LTC Classifications	Kranzler et al., 2010*
Level 1	Gv - Spatial Relations	Gv - Spatial Relations
Level 2	Gsm - Numbers Reversed	Gsm - Numbers Reversed
	Gs - Visual Matching	Gs - Visual Matching
Level 3	Gf - Concept Formation	Gf - Concept Formation
Level 4	Glr - Visual Auditory Learning	Ga - Sound Blending
	Ga - Sound Blending	Glr - Visual Auditory Learning
Level 5	Gc - Verbal Comprehension	Gc - Verbal Comprehension

**Source: Kranzler, J., Flores, C., & Coady, M. (2010). Examination of the Cross-Battery Approach for the Cognitive Assessment of Children and Youth From Diverse Linguistic and Cultural Backgrounds. School Psychology Review, 2010, 39(3), 431-446.*

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The Culture-Language Interpretive Matrix (C-LIM): An automated worksheet.

The C-LIM is an automated Excel® program that provides all culture-language test classifications, CHC classifications, and automates conversion and interpretation via the addition of a graphical representation of test scores.

C-LIM v. 1.0

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Culture-Language Interpretive Matrix (C-LIM): Case Study 1 - Elizabeth

Woodcock-Johnson III: Tests of Cognitive Ability (English Administration)

	SS	PR		SS	PR		SS	PR
Verbal Comprehension	76	5	General Information	79	8	Auditory Working Memory	89	23
Visual Matching	92	29	Pair Cancellation	99	48	Planning	90	25
Sound Blending	90	25	Auditory Attention	77	6	Delayed Recall:Vis.-Aud. Learning	86	17
Visual-Aud. Learning	96	40	Retrieval Fluency	83	13	Rapid Picture Naming	88	21
Numbers Reversed	95	38	Memory for Words	79	8	Decision Speed	85	16
Concept Formation	87	19	Analysis-Synthesis	91	27	Incomplete Words	91	27
Spatial Relations	105	65	Picture Recognition	91	27			

Wechsler Intelligence Scale for Children, Fourth Edition (English Administration)

	Scaled Score	PR	Standard Score		Scaled Score	PR	Standard Score
Information	6	9	80	Block Design	9	38	95
Similarities	4	2	70	Cancellation	11	65	105
Vocabulary	4	2	70	Symbol Search	10	50	100
Comprehension	7	16	85	Coding	8	25	90
Arithmetic	9	38	95	Mazes	9	38	95
Digit Span	9	38	95	Letter-Number Seq.	8	25	90
Word Reasoning	5	5	75	Matrix Reasoning	10	50	100
Picture Concepts	8	25	90	Picture Completion	6	9	80

Leiter International Performance Scale - Revised (Nonverbal Administration

	Standard Score	Percentile Rank
Design Analogies	96	40
Repeated Patterns	94	35
Associated Pairs	91	27
Delayed Pairs	89	24

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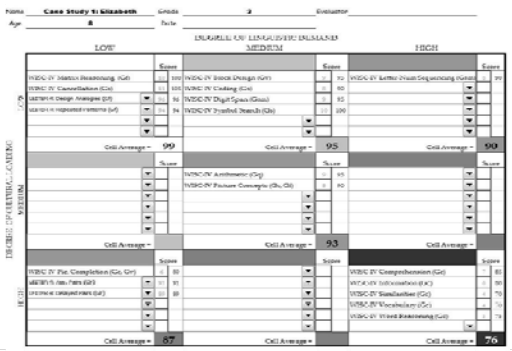
Culture-Language Interpretive Matrix: Case Study 1

WISC IV & LEITER-R DATA FOR ELIZABETH (ENGLISH)



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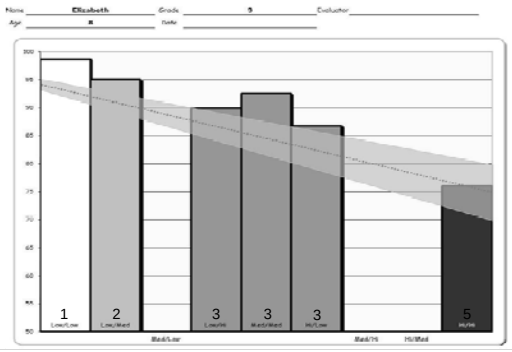
Culture-Language Interpretive Matrix: Case Study 1

WISC IV & LEITER-R DATA FOR ELIZABETH (ENGLISH)



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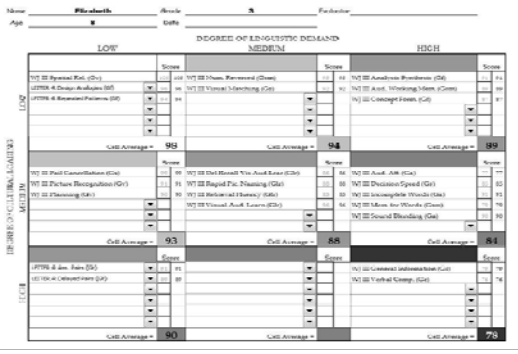
Culture-Language Interpretive Matrix: Case Study 1

WJ III & LEITER-R DATA FOR ELIZABETH (ENGLISH)



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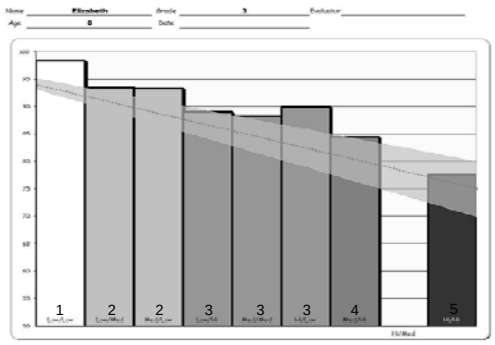
Culture-Language Interpretive Matrix: Case Study 1

WJ III & LEITER-R DATA FOR ELIZABETH (ENGLISH)



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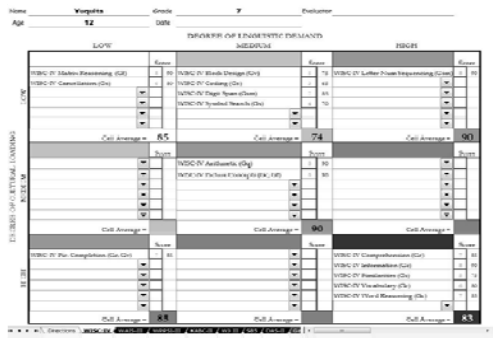
Culture-Language Interpretive Matrix: Case Study 2

WISC IV ONLY DATA FOR YUQUITA (ENGLISH)



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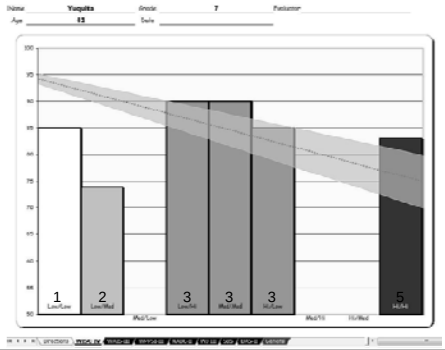
Culture-Language Interpretive Matrix: Case Study 2

WISC IV ONLY DATA FOR YUQUITA (ENGLISH)



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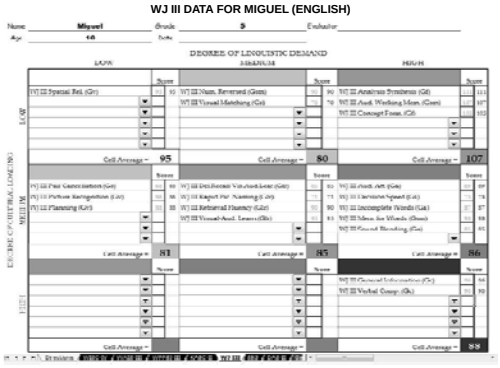
Culture-Language Interpretive Matrix: Case Study 3

WJ III DATA FOR MIGUEL (ENGLISH)



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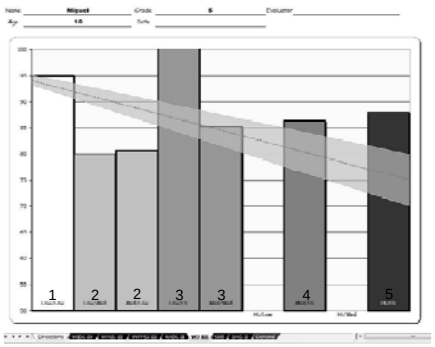
Culture-Language Interpretive Matrix: Case Study 3

WJ III DATA FOR MIGUEL (ENGLISH)



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Culture-Language Interpretive Matrix: Case Study 4

WISC-IV DATA FOR BELISA (ENGLISH)

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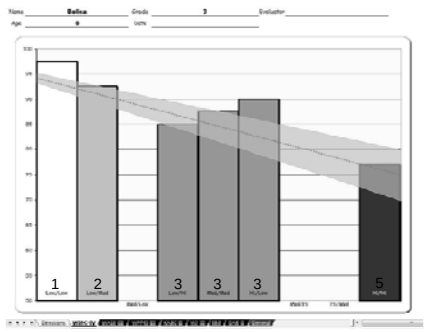
Culture-Language Interpretive Matrix: Case Study 4

WISC-IV DATA FOR BELISA (ENGLISH)



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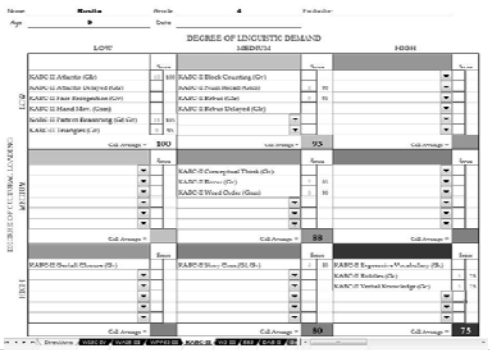
Culture-Language Interpretive Matrix: Case Study 5

KABC II DATA FOR ROSITA (ENGLISH)



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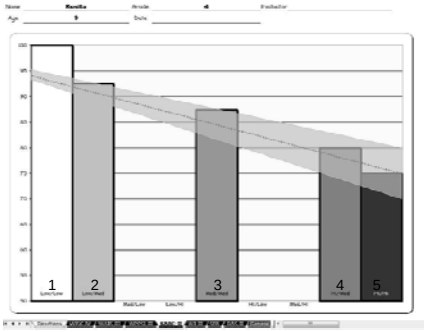
Culture-Language Interpretive Matrix: Case Study 5

KABC II DATA FOR ROSITA (ENGLISH)



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Culture-Language Interpretive Matrix: Case Study 6

WISC-IV DATA FOR SAITO (ENGLISH)

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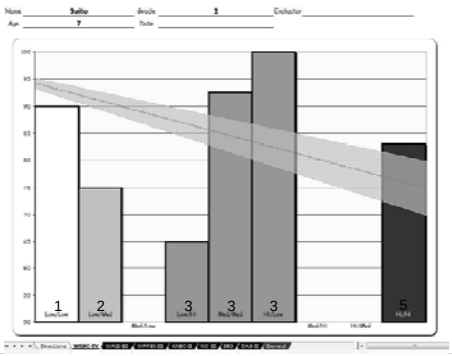
Culture-Language Interpretive Matrix: Case Study 6

WISC-IV DATA FOR SAITO (ENGLISH)



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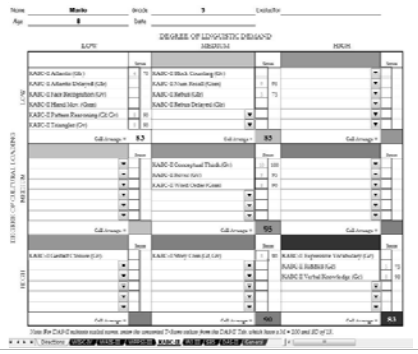
Culture-Language Interpretive Matrix: Case Study 7

KABC-II DATA FOR MARIO (ENGLISH)



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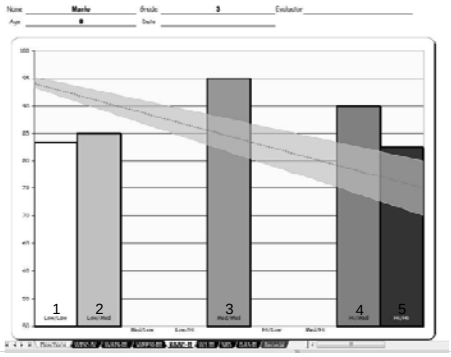
Culture-Language Interpretive Matrix: Case Study 7

KABC-II DATA FOR MARIO (ENGLISH)



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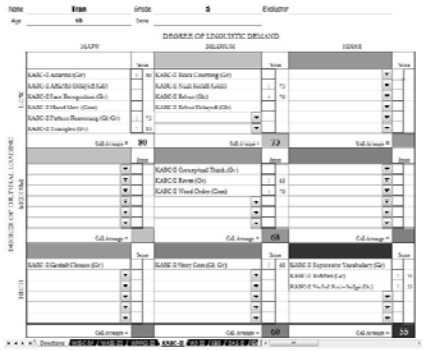
Culture-Language Interpretive Matrix: Case Study 8

KABC-II DATA FOR TRAN (ENGLISH)



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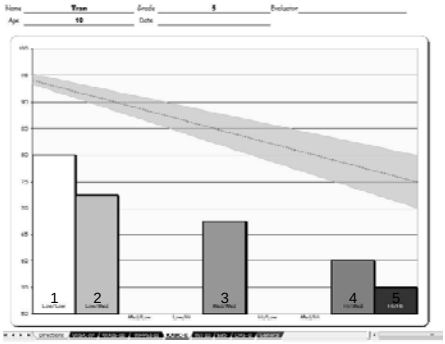
Culture-Language Interpretive Matrix: Case Study 8

KABC-II DATA FOR TRAN (ENGLISH)



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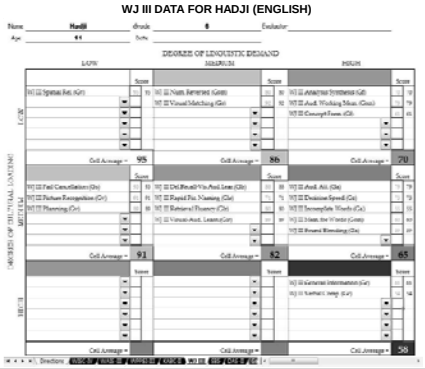
Culture-Language Interpretive Matrix: Case Study 9

WJ III DATA FOR HADJI (ENGLISH)



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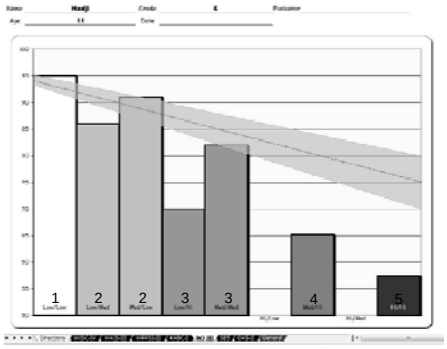
Culture-Language Interpretive Matrix: Case Study 9

WJ III DATA FOR HADJI (ENGLISH)



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Cultural and Linguistic Classification of Tests Addressing Validity in Diagnosis and Interpretation

PATTERN OF EXPECTED PERFORMANCE OF CULTURALLY AND LINGUISTICALLY DIVERSE CHILDREN

DEGREE OF LINGUISTIC DEMAND

DEGREE OF CULTURAL LOADING	LOW	MODERATE	HIGH
LOW	1	2	3
MODERATE	2	3	4
HIGH	3	4	5

Cell 1 = highest expected scores, Cell 5 = lowest expected scores

=

Cell 1 = Low/Low = Highest expected scores

1. Low/Low
2. Low/Mod, Mod/Low
3. High/Low, Mod/Mod, Low/High
4. High/Mod, Mod/High
5. High/High

Cell 5 = High/High = Lowest expected scores

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Acculturation and English Language Proficiency

Comparison of Order of Means for WJ III Classifications

	C-LTC Classifications	Kranzler et al., 2010*
Level 1	Gv - Spatial Relations	Gv - Spatial Relations
Level 2	Gsm - Numbers Reversed	Gsm - Numbers Reversed
	Gs - Visual Matching	Gs - Visual Matching
Level 3	Gf - Concept Formation	Gf - Concept Formation
Level 4	Glr - Visual Auditory Learning	Ga - Sound Blending
	Ga - Sound Blending	Glr - Visual Auditory Learning
Level 5	Gc - Verbal Comprehension	Gc - Verbal Comprehension

**Source: Kranzler, J., Flores, C., & Coady, M. (2010). Examination of the Cross-Battery Approach for the Cognitive Assessment of Children and Youth From Diverse Linguistic and Cultural Backgrounds. School Psychology Review, 2010, 39(3), 431-446.*

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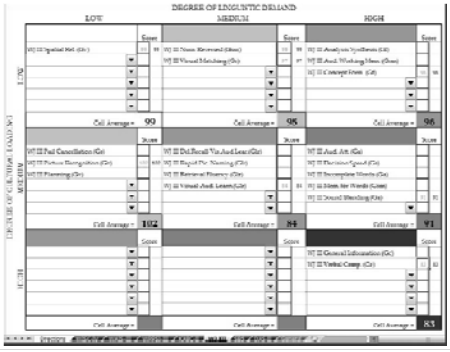
Culture-Language Interpretive Matrix: Kranzler et al. Study

WJ III DATA FOR PARTICIPANTS IN STUDY (ENGLISH)



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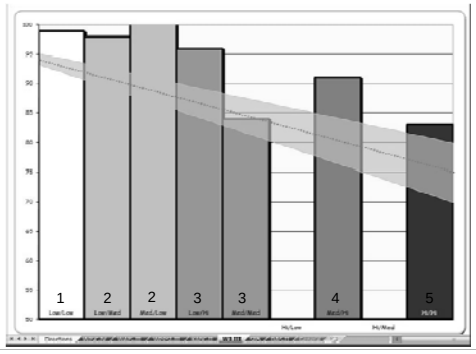
Culture-Language Interpretive Matrix: Kranzler et al. Study

WJ III DATA FOR PARTICIPANTS IN STUDY (ENGLISH)



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Evaluation of the Kranzler et al. Study on Use of WJ III and C-LIM on English Language Learners

Results of the Kranzler et al. study indicate that the data are not only consistent with the expected pattern of performance of English learners, but also demonstrate that application of C-LIM would have suggested that the individuals were of average ability and did not likely have a disability—the very characteristics of the study's sample.

Classifications are definitely subject to change. But factors other than just language and culture also affect test performance including degree of prior schooling or education, length and language of instruction, parental SES, and age at evaluation.

Evaluation of whether the C-LIM has clinical utility in assisting diagnostic decisions cannot be reduced to research questions that focus solely on mean score differences. Not only does the Kranzler et al. (2010) study point out the futility of seeking "statistically significant" differences between scores in one cell vs. another, it also points out how misplaced attention to such issues may cause professionals to miss or ignore the information that is right there in front of them.

The bottom line—Kranzler et al. concluded that:

"a statistically significant (decreasing) trend was observed for the effect of linguistic demand and cultural loading combined."

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General Guidelines for Expected Patterns of Test Performance for Diverse Individuals

DEGREE OF CULTURAL LOADING	DEGREE OF LINGUISTIC DEMAND: Low	Moderate	High
LOW	Slightly Different: 3-5 points Moderately Different: 5-7 points Markedly Different: 7-10 points	Slightly Different: 5-7 points Moderately Different: 7-10 points Markedly Different: 10-15 points	Slightly Different: 7-10 points Moderately Different: 10-15 points Markedly Different: 15-20 points
MOD	Slightly Different: 5-7 points Moderately Different: 7-10 points Markedly Different: 10-15 points	Slightly Different: 7-10 points Moderately Different: 10-15 points Markedly Different: 15-20 points	Slightly Different: 10-15 points Moderately Different: 15-20 points Markedly Different: 20-25 points
HIGH	Slightly Different: 7-10 points Moderately Different: 15-20 points Markedly Different: 20-25 points	Slightly Different: 10-15 points Moderately Different: 15-20 points Markedly Different: 20-25 points	Slightly Different: 15-20 points Moderately Different: 20-30 points Markedly Different: 30-40 points

Different: *Includes individuals with very high levels of English language proficiency (e.g., advanced BICS/emerging CALP) and high acculturation but are not actually fully acculturated, e.g., third generation. Speaks English very well and has limited bilingual/bicultural experience.*

Very Different: *Includes individuals with moderate levels of English language proficiency (e.g., intermediate to advanced BICS) and moderate levels of acculturation, e.g., second generation. Speaks English well, appears well acculturated but has significant bicultural/bilingual experience..*

Markedly Different: *Includes individuals with low to very low levels of English language proficiency (e.g., early BICS) and low or very low levels of acculturation, e.g., first generation. Does not speak English well yet, relatively new to the U.S., significant native culture and language experience.*

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The Culture-Language Test Classifications and Interpretive Matrix: Caveats and Conclusions

Used in conjunction with other information relevant to appropriate bilingual, cross-cultural, nondiscriminatory assessment including...

- level of acculturation
- language proficiency
- socio-economic status
- academic history
- familial history
- developmental data
- work samples
- curriculum based data
- intervention results, etc.

...the C-LTC and C-LIM can be of practical value in helping establish credible and defensible validity for test data, thereby decreasing the potential for biased and discriminatory interpretation. Taken together with other assessment data, the C-LTC and C-LIM assist practitioners in answering the most basic question in assessment:

"Are the student's observed learning problems due primarily to cultural or linguistic differences or disorder?"

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Nondiscriminatory Assessment and Standardized Testing

"Probably no test can be created that will entirely eliminate the influence of learning and cultural experiences. The test content and materials, the language in which the questions are phrased, the test directions, the categories for classifying the responses, the scoring criteria, and the validity criteria are all culture bound."

Jerome M. Sattler, 1992

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Nondiscriminatory Assessment and Standardized Testing

IT'S NOT ABOUT THE TESTS

Reliable and valid testing of culturally and linguistically diverse children requires specialized training and knowledge in the application of systematic, theoretically-based, and empirically grounded procedures in all aspects of the evaluation process, especially in testing.

Being able to communicate in an individual's native language is valuable, but secondary consideration. Simple language matching does not ensure fair or equitable assessment. Consider that:

- a competent and qualified bilingual evaluator, trained in nondiscriminatory assessment and with knowledge of the manner in which language and culture affect test performance, and who is proficient in the same language and from the same culture as the student is THE BEST option in assessment of bilinguals.

- a monolingual evaluator properly trained in nondiscriminatory assessment and competent in cultural and linguistic issues is the SECOND BEST option for assessment of bilinguals

- an untrained evaluator, whether monolingual or bilingual, who possesses no training in nondiscriminatory assessment or cultural and linguistic knowledge regarding test performance of bilinguals is the THIRD BEST option for assessment of bilinguals

Knowledge of the psychometric properties of tests, cultural influences on test performance, language proficiency and development, instructional methodology for English learners, and competency in being able to integrate these factors within sound, theoretically-guided and empirically supported practices in a systematic way, is fundamental to equitable assessment.

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Nondiscriminatory Assessment: Processes and Procedures

X. SUPPORT CONCLUSIONS VIA DATA CONVERGENCE AND MULTIPLE INDICATORS

Once an assessment is completed, it is imperative that knowledge of both the individual's cultural and linguistic experiences be used to frame the patterns seen in the data. Frequently, in bilingual assessment, only linguistic considerations are made and cultural considerations are all but ignored. Remember, linguistically appropriate assessment is only a small part of the equation. Cultural knowledge on the other hand forms the necessary context for understanding performance. With respect to standardized testing:

- *Evaluate cultural and linguistic differences (large differences = more adverse effect on performance)*
- *Evaluate inhibiting factors (many inhibiting factors = more adverse effect on performance)*
- *Evaluate non-discriminatory data (is child capable of learning normally if given the chance?)*
- *Evaluate opportunity for learning (less opportunity = lower probability of disability)*
- *Look for data and multiple indicators that converge to provide solid evidence for any conclusions or inferences that are drawn from the assessment*
- *Stick with the null hypothesis that functioning is normal until and unless the data clearly demonstrate otherwise*
- *Base decisions on the preponderance of the available data*

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Nondiscriminatory Assessment: Summary Guidelines for Equitable Decision-Making

Although language learning follows a specific sequence, its various components are not totally dependent upon each other. Test performance will depend on the interaction between the individual's linguistic and educational experiences.

– the better educated an individual is in their native language, the better they are able to utilize and express that education through a second language.

– individuals can learn to speak a language without learning how to read or write just as they can learn to read and write it without learning how to speak it.

–the ability to think and reason in a second language does not presume the presence of age-appropriate oral language proficiency or equivalent levels of exposure or experience.

– the ability to speak in a second language does not presume the existence of early foundational language skills, phonological processes, or developmental structure.

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Nondiscriminatory Assessment: Summary Guidelines for Equitable Decision-Making

Performance on any given test is based upon the degree to which an individual possesses age-appropriate levels of language development and acculturation that include:

– amount of formal instruction in the symbolic and structural aspects of the language of the test (e.g., reading, writing, grammatical rules).

– amount of formal instruction or informal experience in the general use of the language of the test (e.g., speech, pragmatics, semantics, syntax).

– amount of exposure during the critical period to the language of the test (e.g., fluency, pronunciation, automaticity, intuitive grammar, idioms, etc.).

Second language learners rarely, if ever, develop age-appropriate levels of language development as compared to monolingual English speaking peers.

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Nondiscriminatory Assessment: Summary Guidelines for Equitable Decision-Making

In the end, it will be a judgment call but evaluation of the most salient and relevant factors in a case can assist in creating a defensible position regarding whether documentation and data support difference or disability. Keys to making good decisions:

– try not to underestimate the impact of even small amounts of cultural or linguistic differences and exposure

– develop an "expectation" about the degree of impact the cultural and linguistic factors should have on test performance and compare available results accordingly

– look for patterns in the data that show consistency, for example, lower scores on tests that require more language and higher scores on tests that require less language

– final decisions should be based on the preponderance of the data, convergence of indicators, and the principle that the simplest explanation for the data is often the right one

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Nondiscriminatory Assessment and Cross-Battery Resources

BOOKS:

Rhodes, R., Ochoa, S. H. & Ortiz, S. O. (2005). Comprehensive Assessment of Culturally and Linguistically Diverse Students: A practical approach. New York: Guilford.

Flanagan, D. P. & Ortiz, S.O. (2007). Essentials of Cross-Battery Assessment, Second Edition. New York: Wiley.

Flanagan, D.P., Ortiz, S.O., Alfonso, V., & Mascolo, J. (2006). The Achievement Test Desk Reference (ATDR): A guide to Learning Disability Assessment, 2nd Edition. New York: Wiley.

Flanagan, D.P., McGrew, K.S., & Ortiz, S.O. (2000). The Wechsler Intelligence Scales and Gf-Gc Theory: A Contemporary Approach to Interpretation. Boston: Allyn & Bacon.

ONLINE:

CHC Cross-Battery Online
http://www.crossbattery.com/

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