Riverside Insights

Cognitively SPEAKING

CogAT®

Getting Value and Equity from Your Universal Screening Process

The Importance of Using the Right Measures for Universal Screening
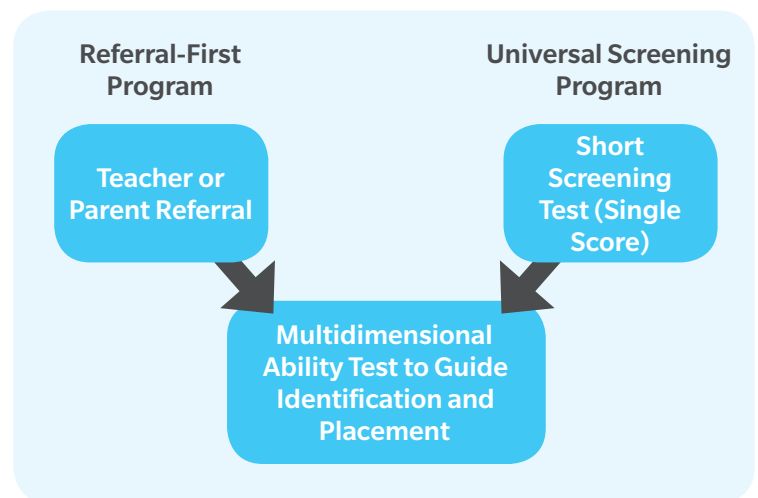
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Evidence suggests that universal screening is the most fair and unbiased method to identify low income and underrepresented minority students for gifted programming. Universal screening is a process where all students in a given grade are administered a common measure (or set of measures) of abilities and characteristics that indicate a need for specialized services not offered within the regular classroom. Often the universal screener is a brief measure of general ability used to identify a subset of students who are then administered a larger battery of assessments to further inform the identification decision. Research has consistently shown that universal screening improves the representation of minority students and girls in gifted and talented services by relying on an objective test rather than subjective parent and teacher referrals. The goal of this issue of *Cognitively Speaking* is to discuss some of the common processes and missteps in this type of universal screening.

Note: In the Winter 2007 issue of *Cognitively Speaking*, Dr. David F. Lohman addressed identification practices and diversity. In this issue of *Cognitively Speaking*, we revisit some of his writings as related to the important topic of universal screening. We hope you find this updated and expanded perspective on the subject helpful.

Value of Universal Screening

Researchers and practitioners have long been concerned with increasing the diversity and representativeness of gifted and talented programs. **Universal screening** is one practice with a substantiated effect on diversity.

Universal screening is an identification practice where all students in a targeted grade are administered an initial screening instrument. Scoring at or above a predetermined cut-score on the screener leads to further consideration for placement and/or services in a gifted and talented or accelerated learning program, usually involving at least one additional **placement** or **confirmation** assessment. The alternative to universal screening is often a referral process where parents or teachers recommend students for screening (or testing) for gifted services. Some research has suggested that this process introduces bias into the identification process and may lead to less representative gifted programs.

Referral-First Program

Teacher or Parent Referral

Universal Screening Program

Short Screening Test (Single Score)

Multidimensional Ability Test to Guide Identification and Placement

Not All Screeners Are Created Equal

Once universal screening is adopted, the choice of screening tools is critical. There is still widespread hope among educators that there will be some kind of "silver bullet" assessment that will see through the inequity and disparities of our society and educational opportunity (Callahan, 2009). The search for a culture-fair assessment that will identify *equal proportions* of students from all demographic groups continues. This explains the well-intentioned —but ultimately problematic—practice of using a "nonverbal" figural matrices assessment as the universal screening instrument.

One of the most pervasive misunderstandings about ability testing is the belief that all measures of general ability are more or less interchangeable, such that the scores from the *Wechsler* multidimensional full battery IQ test would be nearly identical to the score from the *Raven's Progressive Matrices*. This is not the case. Even though figural reasoning tests such as the *Progressive Matrices* (Raven, Court, & Raven, 1983) are good measures of general ability, they are not interchangeable with selection tests that use verbal and quantitative content. **Note that we are using the term *figural reasoning* to describe these measures rather than the more common label of nonverbal. *Nonverbal* is a more general term that refers to the administration conditions and does not describe the tasks themselves or the abilities they measure.**

Example of a Figural Matrices Item
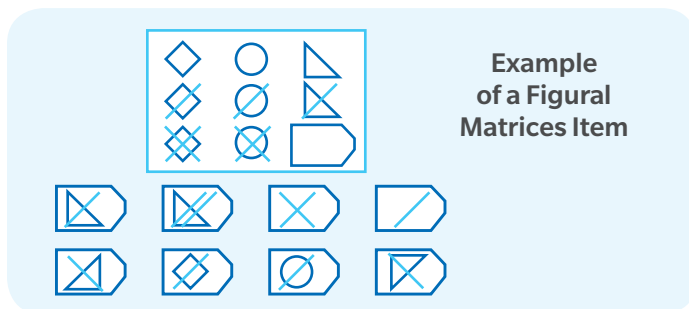
Any single test item format (including figural matrices) is just one type of task and does not assess the wide variety of reasoning tasks on which a highly able student can demonstrate aptitude. The field of human abilities widely accepts that to measure general ability *well* requires averaging performance across a number of test tasks. This is what a multidimensional test, like **CogAT**®, does by measuring students' verbal, quantitative, and figural reasoning abilities. Measuring ability with just a single format magnifies the influence of the narrow skills needed to solve a particular type of reasoning puzzle. By assessing across various types of tasks that require different types of skills and creating composite scores, we get a strong measure of general ability that is a good predictor of academic outcomes. Further, not only are scores on a single figural task influenced heavily by specific skills, but unlike verbal and quantitative tasks, these specific skills have little relevance to success in school. We will explore this issue next.

When General Ability Is Reduced to a Single Item Format

Despite some pervasive beliefs, research has repeatedly shown that the predictors of academic excellence are generally the same for minority and majority students. In academic fields, the best predictors are (1) **prior achievement** in the area of study; (2) the **ability to reason** in the symbol systems (language, numbers, music notation, etc.) used to communicate knowledge; (3) **interest** in the subject area; and (4) the ability to **persist** in a given instructional context. Note that each of these factors depends on the context of what is being learned. The more abstract and remote the measure of potential, the less relevance it has to success.

Paradoxically, selecting students based on figural reasoning tests eliminates the majority of academically high-achieving students in all ethnic groups. Compared to verbal reasoning ability, figural reasoning is a relatively *poor* predictor of success in academic learning for *all* ethnic groups. The **CogAT** Verbal Battery is a much *better* predictor of success in reading than the Nonverbal (figural) Battery, even for English learner students (Lakin, 2012). In the general population, fewer than one-third of students who obtain scores above the 97th percentile on the Nonverbal Battery obtain similarly high scores on achievement tests in reading, math, science, or other academic domains.

Importantly, figural (e.g., "nonverbal") test results show a negative relationship with success in school once we control for general ability. For example, students who score significantly higher on the **CogAT** Nonverbal Battery than on its Verbal and Quantitative batteries actually do less well in school than students who show a relative weakness on the Nonverbal Battery. The pattern of relatively higher Verbal and Quantitative scores with a relatively lower Nonverbal score is particularly common among African American students (Lohman, 2005). **This means that screening students based on high figural (nonverbal) scores will eliminate many of the most academically capable African American students.** On the flip side, serving students with strengths in figural reasoning and relative weaknesses in language (or verbal reasoning) requires drastically reducing the language use in the classroom and other unusual modifications to instruction.

Clearly, we never recommend using any single-format figural reasoning test to screen all students. When used alone, **figural reasoning tests actually increase bias by failing to identify the most academically talented students in all ethnic groups[1].** When are figural tests useful? They are most helpful when administered with quantitative reasoning tests and used to predict success in mathematics, physical sciences, or technical domains such as computer programming. In other words, figural reasoning is a good *supplemental* measure of ability, but it is not interchangeable with comprehensive measures of general ability.

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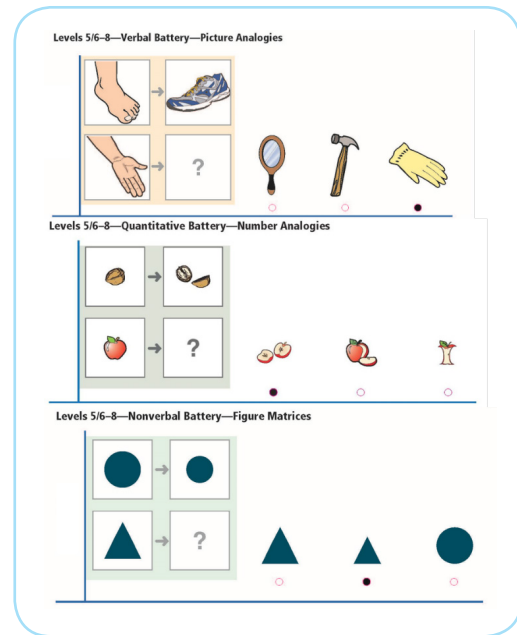## *CogAT* Screening Form with Multiple Formats

Following Dr. Lohman's work on nonverbal tests as part of an identification procedure, the author team has introduced an important new feature with the introduction of Forms 7 and 8: **The *CogAT* Screening Form**. The *CogAT* Screening Form takes 30 to 45 minutes to administer and provides a reliable estimate of general ability. It does this by averaging student performance across three analogies formats using verbal, quantitative, and figural symbol systems. Importantly, we designed the Screening Form for Grades K–2 (Levels 5/6 to 8) with multiple item formats to measure general ability using completely *nonverbal* item formats[2]. In other words, we have developed methods to assess verbal and quantitative reasoning without requiring students to understand a specific language from the teacher. In this way, the Screening Form offers a nonverbal testing environment without limiting itself to the figural matrices format common to other brief group-administered tests. Analogies item types were selected to make the assessment as intuitive as possible for young students.

The Screening Form is efficient and reliable as a brief universal screener to identify students for further consideration. However, the full value of *CogAT* administration is only realized when the entire battery is administered, so that Battery level scores can be calculated, relative strengths and weaknesses compared, and the **CogAT Ability Profile** reported. When the three-subtest Screening Form is administered as an initial step, the remaining six subtests can be administered to those selected in the universal screening step to provide full *CogAT* scores. See our past webinars and newsletters about differentiating instruction using the *CogAT* Ability Profiles, which contrast students' ability in verbal, quantitative, and nonverbal domains to provide useful information to classroom teachers on how to differentiate instruction for students.

Following Up Universal Screeners

Universal screening is never the end of the story in planning differentiated instruction for identified students. Although assessing general reasoning abilities is commonly a first step in identifying students in need of specialized instruction, it rarely provides all of the information needed about students' instructional needs. Therefore, another important consideration in planning any identification policy is to ensure that the complete identification process aligns with the services that will actually be provided to students.

Schools should continuously evaluate and improve their assessment and educational practices. Introducing universal screening for gifted and talented programs is a meaningful and positive step to take. The next step is to use the screening information to improve instruction for all students and to give students the opportunity to develop the skills measured by ability tests prior to testing (via practice and early enrichment experiences).

Levels 5/6–8—Verbal Battery—Picture Analogies

Levels 5/6–8—Quantitative Battery—Number Analogies

Levels 5/6–8—Nonverbal Battery—Figure Matrices

Conclusion

For many years now, Dr. Lohman and I have argued for an evidence-based approach to identification that promotes equity and proportional representation for gifted programs. We have an extensive research base showing how narrowly focused measures of ability, such as single-format, nonverbal, figural matrices assessments, can actually harm efforts to promote equity and diversity. See the Additional Resources section for links. The modifications and improvements of *CogAT* Forms 7 and 8 reflect this work and provide enhanced resources for teachers. To wrap up, here are a few recommendations:

- Use universal screening rather than referral to initiate consideration for gifted programming. If you must use referral, cast a broad net and provide professional development to teachers on implicit bias and evidence-based definitions of gifted characteristics.

- Use a well-developed, multidimensional ability test for identification and consider allowing students to qualify for services on the basis of any one Battery score, rather than only considering the composite (VQN) score.

- Use the free *CogAT* practice activities in the classroom to provide all students with a chance to familiarize themselves with the tasks before testing.

- Be sure that your identification process is aligned with the program characteristics. For example, if the focus of a program is mathematics, then the QN composite rather than VQN is most appropriate. See my upcoming article in *Teaching for High Potential* for more on this topic.

- Refer to the free **CogAT Guide to Differentiating Instruction** to better understand how student performance on *CogAT* relates to their instructional needs.

Literature Cited

Callahan, C. M. (2009). Myth 3: A family of identification myths: Your sample must be the same as the population. There is a "silver bullet" in identification. There must be "winners" and "losers" in identification and programming. *Gifted Child Quarterly, 53,* 239–241.

Lakin, J. M. (2012). Assessing the cognitive abilities of culturally and linguistically diverse students: Predictive validity of verbal, quantitative, and nonverbal tests. *Psychology in the Schools, 49*(8), 756–768. Retrieve from http://auburn.edu/~jml0035/index_files/PredVerbal_ELL.pdf

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Raven, J. C., Court, J. H., & Raven, J. (1983). Manual for Raven's Progressive Matrices and vocabulary scales, section 4: Advanced Progressive Matrices, sets I and II. London, UK: H. K. Lewis.

Additional Resources

Lakin, J. M. (accepted). Service-Identification Alignment: Why the services you offer must drive identification decisions. To appear in *Teaching for High Potential.*

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Lohman, D. F., & Lakin, J. (2007). Nonverbal test scores as one component of an identification system: Integrating ability, achievement, and teacher ratings. In J. VanTassel-Baska (Ed.). *Alternative assessments for identifying gifted and talented students.* Austin, TX: Prufrock Press. Retrieve from http://faculty.education.uiowa.edu/docs/dlohman/Lohman-Lakin-Identification-System.pdf

Lohman, D. F., Korb, K., & Lakin, J. (2008). Identifying academically gifted English-language learners using nonverbal tests: A comparison of the Raven, NNAT, and CogAT. *Gifted Child Quarterly, 52,* 275–296. (Research Paper of the Year Award from the National Association of Gifted Children.) Retrieve from http://faculty.education.uiowa.edu/docs/dlohman/comparing-raven-nnat-cogat-.pdf?sfvrsn=2

[1]It is critical that school personnel not confuse higher nonverbal scores of minority students with a fair assessment of their academic aptitudes. This may in fact reflect normative issues and other problems with the assessments (Lohman, 2005).

[2]Levels 9 and above also have a nonverbal screener option where the Verbal Analogies section is omitted. The full screener should be used for most students at these levels. Exceptions would include English learner students.

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Check out previous issues of *Cognitively Speaking* and view webinars on how to use *CogAT* results on **CogAT.com**.

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