

# Cognitively SPEAKING



**CogAT<sup>®</sup>**

## Program Diversity and the Alternative Verbal Scale of CogAT Form 7

The Verbal Battery represents a substantial modification from Form 6 for students in Grades K–2 (ages 5–8). Form 7 includes three subtests at each primary level which parallels the formats used in the higher grade levels. Another important new feature is the option to report students’ scores on an “Alternative Verbal” (Alt-Verbal or Alt-V) scale. This scale calculates the verbal reasoning score from performance on two subtests—Picture Analogies and Picture Classification—rather than the three subtests used in the full Verbal Battery score at Levels 5/6, 7, and 8. The Alt-Verbal excludes the score from the Sentence Completion subtest from the Verbal Battery score, which is the only subtest at the primary levels (5/6–8) requiring receptive language from examinees, although all three tests are available in both English and Spanish at these levels. Schools have the option of receiving either the full Verbal or the Alt-Verbal Battery score for each student.

**The questions we explore here are: for which students is the Alt-Verbal score preferable? And, is it a good idea to use the Alt-Verbal scale for all students to increase program diversity?**

In this issue of *Cognitively Speaking*, we will examine some of the evidence to address these questions and make suggestions about the practice of using the Alt-Verbal score for different groups of students.

### Can I Use the Alternative Verbal Scale for All Students?

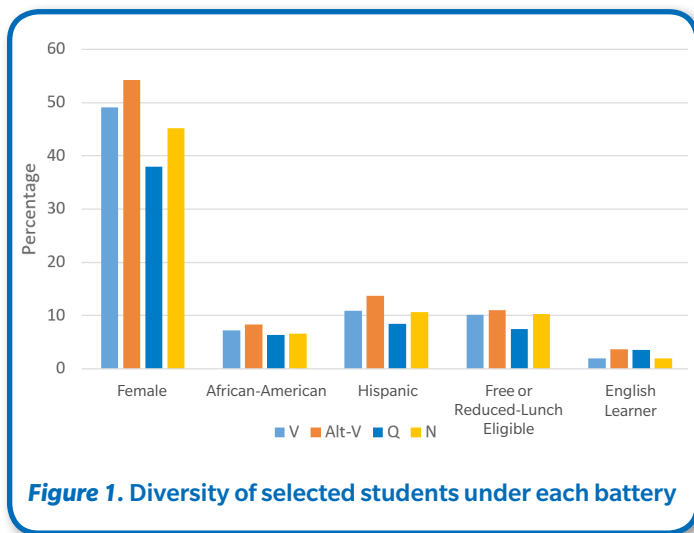
Usually schools and teachers ask this question because they are interested in increasing the diversity of the students selected for their gifted and talented program. Many educators are concerned about whether the Verbal Battery identifies a proportional number of students from certain groups, such as English Learners (for whom the Alternative Verbal Battery was designed) and racial and ethnic minority students (not originally an intended use for Alt-Verbal). To respond to these queries, we looked at the **CogAT** Form 7 normative data to see what effect schools might see if they use the Alt-Verbal scale for identification for all students in Grades K–2 with levels 5/6 through 8 rather than using the traditional full Verbal Battery score.

To look at the impact, we compared the demographic information of students who would be identified by each of the four batteries (Verbal, Alt-Verbal, Quantitative, and Nonverbal) in Grades K–2. This would be similar to a school using an “OR” cut score strategy (i.e., that a high score on any one battery qualifies the student for services). We used a cut score of 90% for our identification (that is, the identified student had a national age percentile rank of 90 or higher on at least one of the batteries).



Table 1 and Figure 1 show what we found. We were somewhat surprised to see that Alt-Verbal was effective at increasing the diversity of the group identified even for student subgroups beyond English Learners. When looking at each demographic category, Alt-Verbal identified the highest number of underrepresented minority students (URM; including African-American and Hispanic students), students eligible for free or reduced lunch (FRL; small differences), and English Learner (EL) students—about the same as the Quantitative Battery in this case. We also noted that Quantitative and Nonverbal result in selecting the largest numbers of students identified overall, which would affect program size and resource demands.

When compared to the proportion of each group found in the full sample group, Alt-Verbal and other batteries identified proportional numbers of girls, Hispanic students, and EL students. We found that none of the batteries resulted in proportional representation of African-American students (which is probably why the numbers for all underrepresented minority groups were also not proportional). Past research has shown this is the case with several widely used ability tests (Lohman, Korb, & Lakin, 2008). Alt-Verbal came the closest to parity identifying a group that was 26% URM, compared to almost 40% representation in the full sample. The same was true for students eligible for FRL, where Alt-Verbal identified 11% of this group which represents 21% of the sample overall. While the use of Alt-Verbal increases program diversity and representation by identifying higher numbers of students in these groups, they remain underrepresented in comparison to the full sample.



**Figure 1. Diversity of selected students under each battery**

**Table 1. Diversity of selected samples (90th PR) compared to norm sample.**

	V	Alt-V	Q	N	Demographics of Norm Sample
<b>Total Selected:</b>	<b>800</b>	<b>935</b>	<b>1042</b>	<b>989</b>	<b>N = 18,107</b>
<b>Proportion by demographic subgroup:</b>					
<b>Female</b>	49.1	54.2	38.0	48.2	49.1
<b>URM</b>	21.3	26.4	19.5	21.5	39.9
<b>African-American</b>	7.2	8.3	6.3	6.6	15.8
<b>Hispanic</b>	10.9	13.7	8.5	10.6	19.4
<b>FRL</b>	10.1	11.0	7.4	10.3	21.3
<b>EL</b>	2.0	3.7	3.6	1.9	4.2

**Notes.** Bold values indicate a proportion similar to full sample proportion for subgroup. Yellow highlight indicates the highest percentage across batteries. URM = Under-represented Minority students (all non-White and non-Asian students). FRL = Free or Reduced lunch-eligible. EL = English Learner.

In addition to the effect of using Alt-Verbal for the full sample, we looked at which batteries identified the most diverse samples among the group of students who are eligible for FRL. In other words, we imagined a case where the school serves low socioeconomic students who are all eligible for FRL and wants to apply similar identification practices to those described above. We found that Alt-Verbal again led to the most representative identification when comparing selected students to the full FRL sample demographics. For example, as shown in Table 2, URM made up 61% of students identified by Alt-Verbal and 62% of the original, full FRL-eligible sample. The one exception was African-American students, who were not proportionately represented in the group identified by any battery. Intriguingly, we noted that the best predictor for FRL-eligible African-American students was the standard Verbal Battery, which runs contrary to many claims in the literature. The least effective battery for increasing the representation of African-American students among students who qualify for FRL was Nonverbal, which also goes against the claims of many nonverbal assessment proponents.

**Table 2. Diversity results for top 10% among students eligible for FRL.**

	V	Alt-V	Q	N	Full FRL Norm Sample
<b>Total Selected:</b>	<b>81</b>	<b>103</b>	<b>77</b>	<b>102</b>	<b>N = 3,858</b>
<b>Proportion by demographic subgroup:</b>					
<b>Female</b>	<b>54.3</b>	44.7	35.1	41.2	49.0
<b>URM</b>	45.7	<b>61.2</b>	40.3	44.1	62.1
<b>African-American</b>	<b>13.6</b>	11.7	11.7	10.8	20.3
<b>Hispanic</b>	<b>32.1</b>	<b>47.6</b>	24.7	30.4	39.2
<b>EL</b>	<b>12.3</b>	<b>18.4</b>	9.1	5.9	9.8

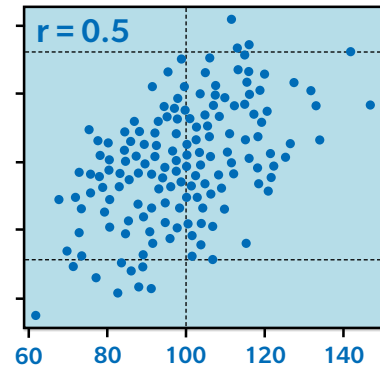
**Notes.** Bold values similar to full sample proportion. Yellow highlight for the highest percentage for each battery. URM = Under-represented Minority students (all non-White and non-Asian students). FRL = Free or Reduced lunch-eligible. EL = English Learner.

## Prediction of Later Achievement

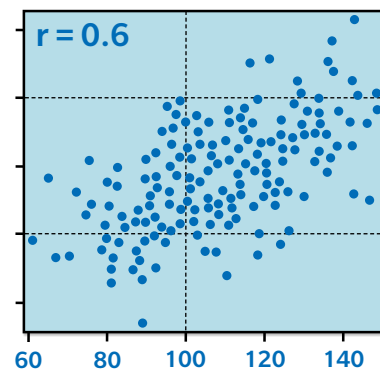
These findings must be interpreted with one big caveat. Although Alt-Verbal does appear to increase program diversity, gifted and talented identification is usually not the goal in itself. Rather, appropriate fit of student skills to program opportunities and development of student abilities are the ultimate goals. So, just because using Alt-Verbal increases the diversity of the selected sample does not mean that these are the most capable students or the most likely to do well in verbally demanding environments, like most classrooms. Further, some evidence indicates that Sentence Completion is the best measure of verbal reasoning on the primary levels of **CogAT**. As a result, the students selected using the Alt-Verbal scale may be less likely to actually excel in verbal domains than if you had selected using the standard Verbal Battery.

Fortunately, the **CogAT** Form 7 Research and Development Guide provides evidence on the correlations between **CogAT** batteries and the **Iowa Assessments™**, including measures of reading and language skills. We can see in Table 3 that Alt-Verbal predicts Reading (total) achievement better than the Nonverbal Battery, but not quite as well as the Verbal Battery across all grades. For Language (total) achievement, Alt-Verbal predicts about as well as Nonverbal and just a bit worse than the Verbal Battery.

It's hard to know when a difference in correlations becomes important. Here is a comparison of a correlation of 0.5 and 0.6.



Above is a plot of a correlation of .5 from simulated data (using R). With this level of correlation, if we compared students who scored in the top 10% on two different tests, we'd expect 32% of students who scored at the top of one test to also be in the top 10% of the other test.



Here is a plot of a correlation of .6 (simulated data). With this increase in correlation, we'd expect 39% of students who scored at the top of one test to also score at the top of the other test. The horizontal lines on each graph indicate the spread of scores on the y axis for students who scored around 100. The spread is much narrower for the correlation of .6—an appreciable increase in accuracy compared to the .5 correlation.

This suggests that when testing at Level 8, the difference in predictive accuracy of Verbal and Alt-Verbal starts to be meaningful. This may mean that by Grade 2, a more careful choice between the Verbal and Alt-Verbal scores is needed.

**Table 3. Relationship between CogAT 7 Batteries and Iowa Assessments Scores**

	Reading			Language		
	5/6	7	8	5/6	7	8
<b>Verbal</b>	0.54	0.52	0.59	0.53	0.59	0.59
<b>Alt-Verbal</b>	0.50	0.45	0.51	0.45	0.49	0.51
<b>Nonverbal</b>	0.44	0.42	0.46	0.46	0.50	0.50

## Acting on These Results

Based on these results, our initial evaluation is that it may be useful to have a policy to use the Alt-Verbal Battery score more broadly in the early grades (especially at levels 5/6 and 7). It does seem to increase the representativeness of identified students. This was surprising for demographic subgroups beyond English Learners, for whom the Alt-Verbal was designed.

The use of multiple measures is highly recommended for gifted and talented identification procedures (NAGC, n.d.). Using more than one **CogAT** battery for identification (whether Alt-Verbal or other combinations) is consistent with this best practice. Readers who are interested in how combination rules for multiple measures impact identification results should consult McBee, Peters, and Waterman (2014), who consider this issue in depth. Lohman (2012) also considers the impact of combination rules on identification outcomes and makes evidence-based recommendations for best practices.

In this study, we assumed the school would use an “OR” procedure, where a high score on any **CogAT** battery would qualify a student for services. This is consistent with best practices where researchers recommend using the “OR” rule or to consider *Ability Profiles™* to allow students with exceptional abilities in any one area to receive services that are appropriate to their cognitive strengths. Even using the traditional three **CogAT** batteries, program diversity (as well as program size) will increase when the “OR” rule is used. Other options include the “AND” rule, where a student must exceed the cutoff score on all three batteries to be identified, or the “AVERAGE” rule, where the student’s composite score (or average across batteries) must be above a given cutoff. Before any major changes are made to selection procedures, we recommend conducting local research on the impact of different policies for selection. The **CogAT** research team is often able to collaborate with districts to provide the necessary data for current **CogAT** users to conduct local research. We also invite you to get in touch and let us know how Alt-Verbal is working for your school or district.

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