Insights from AGS Publishing Development
Articulation and Phonology Are Not Normally Distributed-Who cares? You do!

May 2002 Clinical Café by Tina Radichel, M.S., CCC-SLP

Periodically we see a trend in calls and e-mail questions from customers. Because you are a distinguished member of the SLPForum, we'd like to supply you with a bit of continuing education that may help you and your colleagues in your day-to-day clinical practice. We would also like to offer you a FREE gift in this e-mail, so read on!

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Our particular insight this issue relates to **the more accurate scores available from the GFTA-2 and KLPA-2 results**. Grab a cup of coffee and sit back for a two-minute read that will save you hours of thinking time later.

Since the publication of the GFTA-2, questions have been raised about the difference between scores on the 1986 edition of GFTA and the GFTA-2. The 1986 GFTA norms were percentiles extrapolated from two different databases: the National Speech and Hearing Survey (Hull, Mielke, Willeford, & Timmons, 1976) and the Khan and Lewis work of 1986. The use of two unrelated databases collected at two different points in time is part of the reason for score differences. However, the key reason for the difference in scores lies in **how the normative scores were developed**.

The psychometrician who worked on the original GFTA norms applied the methods of normative score development based on a "normal" distribution of data. This method did not result in scores that appropriately represented the extremes of the distributions of articulation errors for each age. For example, according to the 1986 norms, a female who was aged 6 years 6 months and made no errors would have a percentile rank of 99. This would mean that only 1 percent of girls that age made no errors. Of course, this is not true. According to the GFTA-2 norms, the percentile rank for girls at 6-6 making no errors is appropriately listed at >65. This means that, at this age, 65 percent make one or more errors and 35 percent make no errors. Speech-language pathologists know, and research on normal articulation development tells us, that this is a more accurate representation.

As stated in the GFTA-2 manual, articulation ability is not normally distributed in the general population in the same way as many other abilities. The expectation that children master all sound production by age 8 makes **the "normal curve" for articulation inherently skewed**. Many state/district's qualification criteria for special services are based on a system of using percentiles derived from forcing articulation data into a normalized distribution scale. Forcing data in this manner is not appropriate based on articulation development.

Here's another example: If a boy who is 4-6 has a percentile rank of 2 on the 1986 GFTA or on another articulation test with scores developed by forcing the data into a normalized distribution, this would equate to a standard score of 70. This score is two standard deviations (SDs) below the mean and represents a significant difference or distance from average. Alternatively, if this same boy gets a standard score of 70 on the GFTA-2, he would have a percentile rank of 6. This rank of 6 is equivalent to the percentile rank of 2 on a "normalized" distribution or on a test developed by those means. In either case, this child's articulation is significantly different from normal or average and is in need of remediation.

So you are now saying, "Help! Now what?"

If you need to incorporate GFTA-2 non-normalized distribution results into a qualification system that is based on a normalized distribution system, here's what you do:

- Determine the cut-off percentile for services in your state/district.

  Example:
  the 10th percentile.

- Look at the "Percentile Rank to Standard Score Table" in the norms section of one of your favorite tests that is based on the bell curve.

  Examples:
  PPVT-III Norms Booklet - Page 44
  EVT Manual - Page 172
  CASL Norms Book - Page 121
  OWLS LC/OE Manual - Page 183

- According to this table based on a normalized distribution, determine the Standard Score that equates to your district/state cut-off.

  Example:
  10th Percentile = Standard Score of 81.

- Use this Standard Score as your qualification criteria instead of the percentile rank on the GFTA-2.

  Example:
  In a system based on normalized distribution criteria, any child who receives a Standard Score of 81 or below on the GFTA-2 would qualify for services.

Voila!

As stated in this example, if your school district/state uses a specific percentile (10th), this is equivalent to a standard score of 81 in a normal distribution. The standard score of 81 represents a specific variance from average (regardless of the distribution). Because articulation is not normally distributed, using the standard score of 81 allows you to keep the same reference point (as different from average). The percentiles vary depending on the age of the child, but his or her reference to average does not. Keeping the metric of 81 as your cut-off means that you are serving the children who are similarly discrepant from average regardless of age.

Compare your test results using this FREE booklet!

Call AGS Publishing Customer Service at 1-800-328-2560 or submit the online contact form to get your complimentary GFTA-2 **Supplemental/Developmental Norms Booklet (Ask for item number 11754)**. Using the information presented in this booklet, you can check, for example, that a male child aged 4-6 should have mastered the articulation of 29 of the 77 sounds possible on the GFTA-2 (using 90% as the acquisition level cut-off). Compare the GFTA-2 test results to the developmental normative data to determine which sounds are developmentally appropriate and which are not. Then you can base your therapy strategy on this information.

Here's something else . . .

AGS Publishing recently published Khan Lewis Phonological Analysis - Second Edition (KLPA-2). The KLPA-2 (item number 11820) is a norm-referenced, in-depth analysis of overall phonological process usage. It is a companion tool for the GFTA-2 articulation test. The KLPA-2 was designed to provide further diagnostic information on the 53 target words elicited by the GFTA-2 Sounds-in-Words. This tool will help you **deepen your analysis** of speech sound patterns.

In closing, we'd like to thank you for your ongoing service to people with communication needs and we at AGS Publishing are here to support you with that effort. Assessment analysis and interpretation is an important topic for our field; if you'd like to discuss this topic further, please feel free to use the SLPForum Discussion Center as the vehicle for an ongoing discussion with your colleagues.

http://www.slpforum.com/forum/cgi-bin/Ultimate.cgi

Should you have questions regarding these or other AGS Publishing Speech and Language products, we welcome your phone calls at 1-800-328-2560 8-5 CST or submit the online contact form.

Enjoy the spring!