

**Miriam Cherkes-Julkowski, Ph.D.**  
**www.educational-advisor.com**  
**cherkes-julkowski@educational-advisor.com**

**59 Philip Drive/Storrs, CT 06268 860 429-4894**  
**30 Seaview Ave./Ocean Grove, NJ 07756 732 988-8432**  
**1920 S. Plaza Dr. #43/Apache Junction, Arizona 480 209-1968**

Educational Evaluation

**Name: X**  
**CA: 10-11**  
**GR: 5**

**BACKGROUND:**

There have been concerns about X's reading since kindergarten. Kindergarten concerns about letter sounds evolved into below average reading performance in school and on the CMT, continuing up to now. X received reading recovery services in grades 1 and 2 which did not resolve the problem. In fact, teachers have been concerned since that time that X guesses at words, i.e., his fourth grade teacher commented that, rather than guessing, X, "needs to use his reading strategies when comes to a word that he does not know." However, guessing is a "reading strategy" that is taught in Reading Recovery.

In response to a parental request, X was evaluated in grade 2 but was found to be ineligible for special education. In grade 3, parents were notified (3/03) that X had failed the DRA standard for grade, urging the parents active involvement in their child's reading program. Neuropsychological evaluation (Dr. Y, 7/06) found X to have a learning disability characterized by reading disorder, deficits in executive functions (planning and sequencing) and working memory and anxiety about his academic performance. Reading evaluation was conducted by the school 9/06. X was identified as having a learning disability (10/06) with concerns specifically for phonological processing, fluency, accuracy, rapid naming, auditory processing and working memory. Z University performed an educational evaluation under the supervision of Dr. A (11/06). This evaluation further delineated reading disability. Reading scores across these testing periods are tabulated below:

	grade 2	7/06	9/06	11/06	2/07
<u>word reading</u>					
WIAT	97	86			
WJ (letter word)	101			86	

<u>pseudoword reading</u>			
WJ - word attack	99		78
<u>fluency</u>			
WJ reading fluency	99		
TOWRE sight words			91
TOWRE phonemic decoding			83
QRI - words per minute (WPM)			failed GL 4** 81 WPM/Gr 5
			failed GL 5** 85 WPM/Gr 5
<u>spelling</u>			
WIAT		96	
WJ	99		
<u>phoneme awareness</u>			
WJ spelling sounds	79		
NEPSY phon. proc		75	
CTOPP elision			75
<u>reading comprehension</u>			
WIAT reading comp	90		
WJ passage comp	93		95
QRI			failed GL 4** 88%***
Gray			
rate		4	5
accuracy		2	2
comprehension		8	7

DRP/DRA                      DRA 20\*                                      DRP 38\*

\*DRA, 24-28 expected for grade level; DRP 51-57 expected for grade

\*\*failed criterion for independent reading at grade level; failed criterion for WPM for grade level.

\*\*\* failed independent level but at instructional level.

As can be seen in the table above, no phonological processing test was given at the 9/06 evaluation. Reading errors were characterized in the narrative of the report as “visual errors”. This is despite the well below average grade 2 phonological processing score of 79 for spelling sounds. The 9/06 test observations further noted insertion of words and omission of endings, typical phonological errors. Slosson Oral Reading was noted to be at the 3.7 grade level.

The Gallistel Ellis Test of Coding Skills was administered at the 9/06 testing and again at the 11/06 and 2/07 test periods. The findings below indicate a general drop in performance over the two month period from 9/06 to 11/06 with no syllable type mastered in November. Only a sampling of scores is reported at the February testing with soft consonants reaching mastery only.

	9/06	11/06	2/07
cvc	88	76	
ccvcc	80	55	
silent e	80	67	
soft consonants	67	60	87
vowel teams	80	72	
vowel-r	80	67	
easy ending	56	60	84
common suffixes	50	64	72
multisyllable words	16	40	56

CMT's have documented reading deficits as well. X failed the grade 4 reading CMT. He failed all of the objectives on the grade level 3 CMT.

Report cards have noted reading/writing and auditory processing/phonological problems, including the most current report card which identifies X's inability to work independently, his need for remediation in writing explanations and poor reading comprehension. Nearly all report cards since grade 1 express concern about following directions and listening skills, X's struggle to do independent work, his below grade level reading.

Concerns about reading are expressed in the context of teacher's assessments that X is sweet, enthusiastic and has a positive attitude toward school. He has been seen as working hard to complete work independently even if in the end he cannot (grade 1, reading recovery).

After the early elementary grades and continued reading failure, behavior and emotional issues begin to surface in the school record. For the first time in grade 3, the teacher began worrying about X's pride in his work as well as his ability to take responsibility for assignments and his self control. These worries persisted through grade 4 with continued concern about poor reading which was noted at that time to be affecting X's ability to function with math word problems.

The culmination of X's school frustrations has been school avoidance and episodes of passing out that have been described as psychogenic "pseudoseizures" (grade 4), the treatment for which would be therapy. Neuropsychological evaluation in grade 5 continued to express concern about X's sensitivity to his poor school achievement, his tendency to avoid and deflect criticism and to somatize.

Grade 2 and grade 5 neuropsychological testing document very strong abilities. The most current testing (7/06) reports verbal (107) and performance (125) IQ's but both must be considered both unreliable and underestimates due to significant scatter among the individual test scores which are reported below:

information	12	picture completion	15
similarities	12	coding	10
arithmetic	7	picture arrangement	12
vocabulary	11	block design	18
comprehension	14	object assembly	13
digit span	(10)	symbol search	(10)

Nor can full scale IQ be reported for the additional reason that there is a significant discrepancy between performance and verbal IQ's. Grade 2 testing represented a similar profile with a strong score for block design (14) and exceptionally high score for symbol search, 19. The Woodcock-Johnson cognitive abilities testing also found a superior scores for retrieval fluency 123 and sound blending. Incomplete words was 117.

Diagnosis of executive dysfunction (neuropsychological evaluation, 7/06) is supported by a well below average ROCF immediate recall score at the 3rd percentile, Wisconsin Card Sorting that was "significantly below average" and NEPSY Towers at the 5th percentile. There appears to be some implicit learning beyond what X can access explicitly since his ROCF recognition score was solidly average, 58th percentile.

Attention has been questioned, tested and found not to be a problem.

Math and writing have been areas of concern as well. Work samples as well as test results across time suggest that X has a very good command of narrative structure (story construction 12, 11/06) but is limited by his spelling difficulties. There are phoneme discrimination errors (d/t: desited/decided; nasalized vs nonnasalized n: foned/found), distortions of phonological structure (firends/friends, caiter/character) and grammatical errors based in inadequate phonology, "a audition". There are orthographic errors as well: gess/guess, agian. In response to the grade 2 spelling for sounds test, phonological errors were similarly present (grachsiss for grunches, jag for jing). The writing CMT in grade 4 was at the upper most limit of basic but still below both goal and proficiency. He failed both objectives and had the lowest possible passing score for the holistically scored writing sample.

This fall, 9/06, X was graded on his expository writing according to that rubric. The teacher reported that X can organize his writing around a topic but that "he has little to no detail for each paragraph. His mechanics may not confuse the reader but too many mistakes to make it a four (sic). No varying of sentence structure..." In fact, there is inadequate sentence structure in that sample of X's writing as can be seen in the paragraph scanned in below:

Now we will play ground  
and tell jokes and about  
other people and we will  
laugh and tell - keep on telling  
jokes, and have a great time

Despite strong math aptitude (grade 2: calculations 111, applied problems 121), X's last report card shows him declining to the lowest possible scores for number sense, data/communication. His teacher has stated that he needs remediation in math. As might be predicted given his working memory deficit, math facts are poorly memorized. The grade 4 math CMT found X only in the proficient range (average for state) and below goal. Place value, estimation and fractions criteria were not met.

A review of X's current math work suggests that math fact problems are undermining his ability to reduce fractions since he does not easily recognize how each number can be factored. His problems with multiplication facts have been a particular concern. There were consistent errors in borrowing from zero as well. He makes occasional errors in ordering fractions from smallest to largest, i.e.,  $3/4$ ,  $5/6$ ,  $2/3$ .

Upon identification in the fall of this school year, there was one goal for X, to develop word recognition and vocabulary skills that support comprehension. He was to use mixed phonetic, structural and syntactic cues to figure out words; increase accuracy and fluency and meaning of words and phrases. He was to have this instruction in a team taught, small group, resource and special education settings for 2.5 hours a week.

The Z university consultation determined that the single goal on X's IEP did not properly address a systematic, explicit, scientifically based scope and sequence of instruction. The IEP was changed to have two goals. Goal 1 now addresses strategies in the general curriculum (counseling, coping strategies such as deep breaths, attempting problems). Goal 2 implements strategies for word recognition to increase comprehension. The same objectives remain for the mixed cues as well as accuracy/fluency as above. Added objectives are: generate and respond to questions when given specialized instruction, monitor comprehension/apply strategies for comprehension, and fluency. Time has been extended the 3.75 hours/week for literacy intervention in the resource room, 1 hour in the regular and resource rooms and 1.5 for support in the resource room. Books on tape are to be provided as well as preteaching of science content. These modifications seem to be an attempt to respond to the concern expressed by Dr. A that X did not have reading skill sufficient to maintaining himself in the fifth grade curriculum.

This change in the IEP does not specify the scope and sequence required for specific reading instruction.

Recently, there has been concern that X needs to have material read to him and books on

tape are not available to him through the school. Parents explain that the school has their books on tape, that X's reading class reads along with the tape part of the time; but that other students have used up their supply of tapes and there are no copies available for X to use at home..

**TESTS ADMINISTERED:**

- Woodcock-Johnson - III
- Test of Word Reading Efficiency (TOWRE)
- Gray Oral Reading Test - 4
- Raven Test of Progressive Matrices
- Test of Written Language - 2,3 (TOWL)
- Rey Osterrieth Complex Figure (ROCF)
- California Verbal Learning Test - Children (CVLT-C)
- Wilson Assessment of Decoding and Encoding (WADE)
- Gallistel Ellis Test of Coding Skills (GE)
- Rime-Onset Instruction
- Lindamood Auditory Conceptual Test (LAC, LAC-III)
- Qualitative Reading Inventory (QRI-IV)

**TEST OBSERVATIONS:**

X seems discouraged about school work and frequently expresses his defeat ("I can't"). When encouraged to work with me to figure out an approach, X then seemed ashamed, saying he knows he's supposed to try harder. At this testing, when he decided that it was up to him to try on his own, he did not have an effective strategy. The end result was more energy, more anxiety, more discouragement. With anxiety came a fairly contained but constant fidgeting with pencils, markers, etc. However, when he was asked to work with me to deconstruct the problem so that he could manage some more meaningful and accessible segment of the information, X actively engaged in accessing the material. Once he had a way to get at a manageable amount, he quickly understood.

It seems that he simply has not had the opportunity to adapt to more complex information, a skill that comes largely from gradually adapting to small increments in the complexity of text level language. Since he has not been able to decode and still cannot (see results), he has been locked out of many if not the vast majority of experiences that promote these kinds of executive functions (see also Y report).

X said that he would like this evaluation to find a way to help him read better. He has little confidence that he will read better and seems confused about why it is so hard for him. Although he has a winning smile, it rarely surfaced at this testing, even when he confronted and met challenges. As his teachers have indicated, X shows little pride in having figured out difficult problems (especially on the Raven) and did not seem to dare to invest in the praise that he had earned and duly received.

He does not always grasp what is said to him the first time. There were several requests for

repetition of directions or of an orally given stimulus.

There were many phonological errors made when reading. Mainly there are phonological simplifications that tend to reduce diadochokinetic<sup>1</sup> demands. There are errors in confusing similarly articulated phonemes, examples of which are: r/l, m/n, b/p, d/t, s/z, sh/ch, f/th. He is not clear about the presence or absence of nasalized n as can be seen in his omission of it in words where it is indicated (mansion spelled as machine) and insertion of it where it is not (reading slunk for sluke). Pauli mumbles through the production of many words, says that he gets tongue tied and that his mouth gets tired when he speaks for awhile.

Pauli reported that he was left handed originally but then switched to being right handed after breaking his arm at about age 3.

He likes playing, “aventure” (his pronunciation) video games and sports.

### TEST RESULTS:

Woodcock-Johnson

	standard score*	percentile
word attack	92	29
letter-word identification	89	24
spelling	94	35
passage comprehension		
unprompted	97	43
prompted	104	60
calculations	91	27
math fluency	85	16
applied problems		
unprompted	99	49
prompted	106	65
incomplete words	96	39
spatial relations	117	88
verbal comprehension		
standard scoring	103	57
credit for semantic awareness	114	83

\*Standard Scores have a mean of 100, standard deviation of 15

X’s efforts at sounding out the pseudowords on the word attack test were seriously impaired by phonological problems including distortion of vowel sounds (nan pronounced more like nah-in, mibgus read as mibgis, the vowel-r in snirk pronounced as air, irk read as airk). Nasalized n is a particular issue. Sluke was read as slunk. Eventually X could be brought to realize that he had introduced a sound, and that is was the sound /n/. Still, he

<sup>1</sup> diadochokinesis is the rapid shifting among motor patterns, in this case oral motor productions.

could not actually remove the phoneme as he tried to re-articulate the word. Even with the two printed words in front of him, he failed after many tries, to isolate and delete the n-sound.

There are disruptions of phonological order as well (shrink for snirk, no-nick for knoink, krantic for quantric, manferetsun for mafreatsun). The latter alterations are phonological simplifications that serve the function of reducing diadochokinetic demands.

There are orthographic confusions as well: foh for foy, no-nick for knoink, sah-ist for saist. As these examples demonstrate, most of these errors involve determining the vowel sound. Vowels are always variant sounds and can only be determined within the context of the rime.<sup>2</sup>

Even when he ultimately achieved a correct reading, pseudowords were attacked extremely slowly and dysfluently.

There were words through grade level 3.4 that X recognized fluently on the test of real, high frequency words (letter-word identification). Beyond that he stumbled with an overly literal attempt at decoding (i.e., letter-by-letter without reference to integrated orthographic units, mainly the rime) which was then further undermined by phonological errors: ancient read as an-seend, moustache read as monstake, sufficient read as surfissee-int.

His letter by letter approach diverts X from an intuitive awareness of syllable breaks. For example, he read the word tremendous as *tempcherindous* (note the phonological assimilation in producing the two consecutive bilabial articulations for /m/ and /p/. The *mp* combination then seems to have triggered the phonological sequence as in temperature (*tempcher...*). When asked to circle what he thought would be the syllables in the word tremendous, X did so correctly. He could then read each syllable accurately and produce the entire word fluently. We tried this with two other multisyllable words that were originally read incorrectly. Although they were not syllabicated completely correctly, the support in finding patterns within what otherwise is a rush of many individual letters was very effective (dom-est-icated, read correctly; sys-tem-atic, read correctly).

Spelling errors are frequently in the vowel: plan for plain, coff/cough, sasur/saucer, guradge/garage. Errors indicate that X sometimes tries to remember the order of sounds without reference to phonological structure (sence for scene). Sounds are omitted (machine for mansion). X did not seem to realize the need for a vowel in spelling crystal as cristl. His spelling suggests that he gives the sound *ul* to the letter L and therefore sees no need to further designate a vowel, i.e., he is unaware of the vowel-consonant coarticulation.

The passage comprehension test consists of short passages of one, two, or three sentences in length. X was to supply the missing word. Since X chose to read aloud it was possible to observe decoding errors in function words<sup>3</sup> (from/for, insertion of the) as well as phonological simplifications (motitate for motivate). Even when he decodes correctly, text analysis can be challenging for X. Below is an example, certainly not the only one, of X's difficulty in exploiting the transitive relationship carried in the language of the passage to determine the missing word. He answered *blind* to the following passage:

<sup>2</sup> The rime is the vowel through the end of the syllable (AG in rag, AGE in rage).

<sup>3</sup> Function words are high in syntactic, low in semantic value including conjunctions, articles, demonstrative, auxiliary verbs. They are unstressed in speech and therefore acoustically less salient.

What if you were \_\_\_\_\_? If someone stood right in front of you and looked right at you, they still would not be able to see you.

He was asked to draw a picture of what the above passage was saying and could only draw the two stick figures seen in his picture below. I had to walk him through each phrase in the passage and ask how that information would be shown in the picture: which one is you (see P for X in picture below), who else is mentioned in the passage (S for someone), which would that be, who is doing the looking. Most of these probes were met with, “not sure”. As I helped him to deconstruct the passage into more manageable linguistic units, X could respond with an appropriate addition to his drawing. But, he never understood that the missing word would be meant to describe the recipient of the action, insisting until the end that the only word he could think of was *blind*.



X's difficulty in using metalinguistic skills to get through dense and complicated language was consistent through the comprehension test, even when I read the passages to him. When I read the material to him two or three times (prompted condition), it allowed him to overcome decoding errors and have a chance to capture the text through multiple passes. However, listening to long, dense passages several times to capture enough information was very labor intensive for X. He soon retreated to more associative responses.

X is making errors with very basic number facts and operations. He is confused about borrowing as can be seen in the two examples below. In the first, it appears that X subtracted the top from the bottom number and counted incorrectly in so doing. He did subtract the lesser top digit from the greater bottom one in the second example.

11.

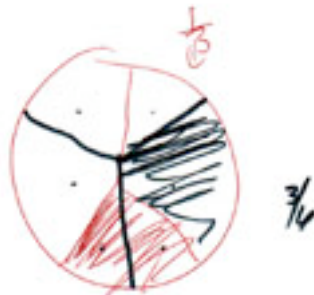
$$\begin{array}{r} 06 \\ 17 \\ - 9 \\ \hline 3 \end{array}$$

18.

$$\begin{array}{r} 48 \\ - 19 \\ \hline 31 \end{array}$$

There was a counting error when adding. X can do simple addition, knows how to carry but made number fact errors; can do simple division; and can carry in multiplication. He does not borrow correctly and does not do long division.

He is unsure of fractions operations, even with common denominators. Although he subtracted  $2/3 - 1/3$  correctly, he answered  $7/8 - 2/8$  as  $5/16$ , i.e., subtracting the numerators and adding the denominators. He similarly added unlike denominators:  $3/4 + 1/8 = 4/12$ . Given his ability to draw in  $1/3$  and then use that third to make the picture show  $3/6$  (see below), X appears to have important insight that remains disconnected from his computational procedures.



X's below average score for math fluency reflects a lack of understanding of what computational symbols represent. As with the calculation errors illustrated above, X fails to appreciate either that subtraction is not a reversible operation; or that the notation system symbols specifies which number is to be subtracted from which; or both. This lapse in learning what symbols precisely stand for is consistent with other of X's errors that show undeveloped ability to benefit from mediated<sup>4</sup> information.

As X's 4th grade teacher suggested, getting through the language of math word problems is a challenge that X does not always meet. He cannot easily decode the problems on his own, as he was apparently not able to do in grade 4 either. The problems were read to him but this required that he allocate resources to working memory simply to hold onto the terms of the problem. The result was errors including: losing track of what question he was supposed to answer, confusing the terms such that the number of weeks got confused with the number of miles. If he could be helped through the language (prompted condition), X did well with understanding the mathematical relationships.

X failed to tell what time it would be six and a half hours later, using an analog clock. He was not able to divide by a mixed number or find fractional units of a foot.

The incomplete words test consists of the partial, spoken representation of words. The full word must be inferred, i.e., le-er for letter. No print is involved. Although X struggled with this task throughout, he did not even attempt an answer when the cues were fragments of multisyllable words. His one failed attempt (vs simply a don't-know response) omitted the medial syllable.

The spatial relations task is to determine which component pieces would go together to form a designated shape. X worked easily through these problems, answering very difficult

<sup>4</sup> not perceived or experienced directly

items with nonchalance. It is noteworthy that he detached himself from any apparent pleasure or satisfaction in his considerable success. His very few errors still captured the correct form but in a disallowed, flipped position. X's errors suggest that he is drawn by the properties he can detect via direct, immediate perception and unaccustomed to the mediated (via working memory) quality of mental rotations. This fits the general pattern of X's arrested development when it comes to those aspects of cognitive control and executive functions that are responsive to symbol learning and text-driven early curriculum.

The verbal comprehension test consists of measures of picture labeling, synonyms, antonyms and analogies. X has a sense of semantic awareness, much of which he picks up via direct visual perception (a vise is called a "squeezer", a stethoscope is called a "heart hearer", he does not know what a tourniquet is but knows the stick is "to hold it"). He does not always have the words for his awareness (prompted score v unprompted score). His vocabulary can be limited to narrow application of a word (rule, as in sports jargon, as a synonym for devour).

Test of Word Reading Efficiency

	<b>standard score*</b>
sight word efficiency	88
phonemic decoding efficiency	86

\*standard scores have a mean of 100, standard deviation of 15

Given a standard error of measurement of 4, these scores are virtually the same, not reliably different from the 11/06 scores. Errors in reading the real, high frequency, "sight" words are whole word approximations (monkey for money).

X's approach to the pseudowords on the phonemic decoding test was to drone through all words. He did not articulate individual sounds in many of the words, produced what might be described as vocalic sounds until he would come to a word he could try. Once he tried a word, not always correctly (i.e., bav for bave), that word became the source of additional errors as he carried over its phonological properties to the next word, i.e., phonological assimilation.

**GALLISTEL-ELLIS TEST OF CODING SKILLS**

	<b>percent correct first try</b>	<b>pseudowords self-correction</b>
consonant-vowel-consonant (CVC)	60	80
ccvcc	60	80
vce		80
soft c,g,s,tch,dge		100
vowel combinations		40

vowel-r	60
words with easy endings	40
common suffixes	40
multisyllable words	0

Gallistel-Ellis findings considered over time and considered in conjunction with the WADE below, indicate that no syllable type can be taken as reliably mastered. The variable scores since the fall on this test alone indicate that his ability to command the principles of each syllable type is in question. Furthermore, the higher scores X achieved today were accomplished only after a great deal of self correction. Prompts which helped him control phonological confusions by attacking the word as first rime and then onset supported improved performance.

Errors were mainly phonological and mainly took the form of effecting phonological simplifications: viv for ziv, grim for glim, plut for pute, cart for cruit, gum for grum. There are phonological assimilations in which the sounds of a previous word or an earlier part of the same word are carried over into the target word, i.e., gar read as grain and the next word pire read as prin; gar corrected and then pire read as par. These errors could be corrected when X was asked to read the rime first and then add the onset. (im-glim).

There are fewer orthographic errors (dropped for droped). Mainly, X becomes overwhelmed in the face of long words. His lack of rime awareness, i.e., intuition about integrated orthography that defines the integrity of a syllable, creates an overload of information for him (see example of reading the word tremendous above). This results in a jumble of phonologically confused sounds that has very little to do with the printed word: disbanding for dipsaping, tumsistic for tumsiptic, sasperder for satpauder.

#### Wilson Assessment of Decoding and Encoding (WADE)

		percent correct	
	pseudoword reading	WPS	CWPS
List 1 (cvc/consonant digraphs closed syllables)	80	.50	.40
List 2 (ccvc,cvcc)	40*	.83*	.40*
List 3 (two closed syllables)	40	.41	.16
List 4 (vce, one and two syllables)	0	.41	.0
List 5 (vowels)	40	.62	.25
List 6 (suffixes)	40	.45	.18

\*List 2 was readministered as a check on reliability, X read 60% correctly, .5 WPS, .3 CWPS. With an increase in time, he marginally improved his accuracy.

This test was given in addition to the Gallistel-Ellis since X is currently being taught in the

Wilson program. Unless he remains at the first Wilson step instructionally, instruction is proceeding too quickly for him since he is still below efficiency criterion even for List 1 (2 words/second) as set by Wilson.

Errors are consistent with X's usual phonological errors: short vowel confusions (endrope for indrope), disruptions of phonological structure (pubt for plube, scent for scrent, krintergs for quintregs, felmom for flomma), confusion about nasalized sounds (zag for zang) along with phonological assimilations (vantemp for vantep), and confusion of similarly articulated sounds (zip for swips).

### Rime-Onset Instruction

Before beginning rime-onset instruction, X was asked to give the short vowel sounds. He gave the correct sounds for each with the exception of short a, given the short u sound. He could read the word bat correctly and then isolate the correct short a sound.

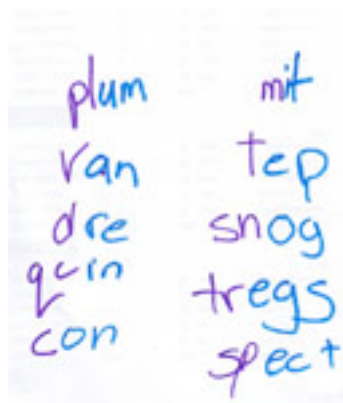
Words were taken from those errors made in reading the Wilson words above. The rime of each word was written in one color, the onset in another. In the first four one syllable words below, this met with complete and fluent success:

zang swips yolt flink scrent

In reading the word scrent, Pauli had to be helped to practice the rime, add one aspect of the onset at a time (ent, rent, crent, scrent). With each new component of the onset, the rime began to get confused. Practicing the rime several times stabilized the articulatory gestures needed to maintain the phonological structure of the rime.

As the second component of this, Pauli was asked to take those two syllable words from the WADE lists on which he had erred and to write them in syllables using blue for the rime of each syllable, purple for the onset. At one point he lost track of which color he was to be using for which component of the syllable. Rather than simply refer to the work he had done thus far, he draw to a halt and said he had become confused. Without giving him any information, X was asked to look back to remind himself of the pattern. With this simple request, he immediately understood and proceeded. The implication here is that X is not accustomed to being helped to appreciate the dynamics in an information field as a source for his thinking and responding. Instead, he expects to be given a procedure for advancing without any particular understanding of what it reflects or why it would be the appropriate thing to do.

Below is X's syllabication of each word. His incorrect syllabication of dresnog is not independent of his confusion about the rime (d-re----sn-og vs dr-es...n-og). X did recognize the integrated qu unit (quin-tregs). Until he was supported in mastering the rime unit first, X made several phonological errors in attempting the words below: quintregs read as quintergs, conspect read as consept, dresnog as dersong. After much support in stabilizing the motor patterns of the rime, X could finally add the onset and then the first syllable while still maintaining the correct phonological structure.



Comprehensive Test of Phonological Processing (CTOPP)

	<b>standard score*</b>
elision <sup>5</sup>	6
memory for digits	8
nonword repetition	12

\*standard scores have a mean of 10, standard deviation 3

X continues to be well below average in the ability to isolate and delete a phoneme level sound (elision). His increase of 1 point (from 5 to 6) since 11/06 is not clearly reliable due to measurement error. In any case, his instruction since 11/06 has not been sufficient to support those phonological processes that are essential to learning to read.

X could delete an initial and final consonant but not a medial consonant. He could not delete a consonant sound from a consonant combination (snail, say it without /n/: ail).

Beyond 5-digit strings, X was attentive, heard and repeated correct digits. However, he did not have the phonological facility to mediate the list through rehearsal and thus there were multiple order errors.

Except for occasional vowel distortions, X managed repeating the novel, pseudowords well within age expectancy, i.e., high average performance.

**Lindamood Auditory Conceptualization Test (LAC-III)**

**88**

Standard Score (mean = 100, standard deviation 15)

**Lindamood Auditory Conceptualization Test (LAC)**

<sup>5</sup> selected due to its exceptionally strong correlation with reading skill, i.e., stronger than the composite phonological awareness score (.73 with WRMT-R word identification; .74 WRMT-R word analysis; .68 TOWRE decoding efficiency); also strong correlation with rapid naming (r=.46, .38). Use of the phonological awareness composite score would DILUTE the ability to predict reading success. Ref. CTOPP manual.

raw score 74  
criterion for **first half of grade 3**

The LAC-III requires the child first to listen to a sequence of isolated phonemes and to represent the number and order of sounds using colored blocks. Same sounds are represented with the same color. Category 2 of the test is to use the colored blocks to represent the number and order of sounds within a syllable, i.e., tracking phonemes. Category 3 requires counting syllables using felt squares to designate each syllable. Category 4 involves the tracking of syllables (with felt squares). Category 5 requires designating whole syllables as well as within syllable phoneme tracking (using blocks appropriately placed on felt). No print is involved. The LAC covers categories 1 and 2.

Pauli represented the pairs sh/ch and t/th as the same sounds. Phoneme segmentation broke down at the level of isolating a consonant sound from a consonant combination (see CTOPP, WADE and GE as well).

Syllabication is a problem (smeft as 3 syllables sm-i-ft) as is syllable tracking.

As the LAC score indicates, X has a level of phonological functioning that would support reading only at the beginning third grade level.

#### **QUALITATIVE READING INVENTORY - 4 (QRI)**

##### **Expository Passage, 3rd grade level**

words per minute (WPM)	93
correct WPM (WPM-errors)	74*
correct WPM (total words-errors/time)	86
miscues	19 instructional level
comprehension	75% correct (6/8) instructional level

##### **Expository Passage, 4th grade level**

words per minute (WPM)	69
correct WPM (WPM-errors)	33*
correct WPM (total words-errors/time)	60
miscues	36 frustration/failure level
comprehension	0% correct (0) frustration/failure level

\*As calculated by the test

The findings establish that, *at best*, X is working independently at the second grade level. His performance with grade 3 expository text is below independent criterion for accuracy and for fluency (mean for grade 3 is 107 WPM, 78 WPM is at the 25th percentile for spring). He is below independent level for comprehension as well.

In addition to the role of reading one, slow word at a time in undermining comprehension, X's decoding errors comprise a serious impediment to comprehension as well. Below is a section from the third grade passage he read and following it, his misreading of it:

Original Passage. House cats hunt in the same way that lions and tigers do. They hide and lie very still. When the animal they are hunting comes close, they jump on it and grab it....

X's Oral Reading. House cats hunt in the same way *as* lions and tigers do. They *their line* very still. When they animal *and the* are hunting comes close, *to* jump and grab it....

Misreadings of the above kind can only create a sense in X that text does not make sense and need not be analyzed since there is no way to do so. This is more extreme when reading fourth grade text:

Original Passage. Plants also need water. In cold climates, water is frozen in ice and snow for part of the year. Plants that live in these areas have adaptations to help them conserve water.

X's Oral Reading. Plants also need water *to the* cold climates, *in* frozen in ice and snow for part of the year. Plants that live in these areas have *adaption*s to help them *conceive* water.

X was read science passages at the level of 5th and 6th grade text to determine if he could comprehend without the problems introduced by decoding errors. As the tables below show, he is not independent at the 5th grade level but very close. The quality of the text was far too dense and complex for him at the 6th grade level. He does not have the required metalinguistic skills right now to engage in the text at all.

The contrast is evident in his behavior while listening. At the 5th grade level he was truly interested and sat with alert engagement as I read. At the 6th grade level, X was almost immediately overwhelmed, confused and withdrawn.

**Expository Passage, 5th grade level: LISTENING CONDITION**

comprehension

87% correct (7/8)

instructional level

**Expository Passage, 6th grade level: LISTENING CONDITION**

comprehension

0% correct (0/8)

frustration level

Raven <sup>6</sup>	<b>prompted</b>	<b>unprompted</b>
raw score	47	42
percentile (1986 norms)	92	70
standard score equivalent*	121	108

standard score equivalents have a mean of 100, standard deviation 15

The Raven is a test of abstract reasoning that uses pictured patterns. X neither understood the spoken directions nor figured them out on his own given the fairly obvious presentation of the problems. This appears to be one more sign both of his language processing problems and his difficulty in assuming cognitive control.

In fact, X's approach to this test revolves mainly around an at least superior strength (prompted score) in having direct insight into abstract patterns in conjunction with underdeveloped schooling in how to perform controlled, systematic analysis of more complex information fields. Errors reveal that X has not learned how to capitalize on his own very good insights to reduce complexity by looking for patterns (see also his confusion with rime onset instruction, above). He will start off performing a constructive analysis and then suddenly abandon it.

#### California Verbal Learning Test - C (CVLT-C)

The California Verbal Learning Test measures a number of memorial, verbal, organizational and attentional functions. There are 5 consecutive exposures to a list of words which fall into 3 categories. This is followed by the learning of a second list, also with 3 categories. One of the List B categories overlaps with one on List A although the items are different (i.e., pears on list B, peaches on list A). This trial is followed by a series of short-delay and long-delay recall trials concerning the list A items. Most scores are reported as z scores, measures of standard deviation.

As with much of his performance at this testing, X never achieved adequate cognitive control over the learning of this information. He began in the low average range for the learning phase and ended well into the below average range at the fifth learning trial. This represents inadequate improvement from a raw score of 5 at trial 1 to 8 at trial 5 and a large drop in standard score even with repeated exposures. The most distinctive aspect of his learning and recall performance is failure to grasp information from the middle region of the list ( $z=-2$ ). This pattern indicates a lack of phonologically driven rehearsal, i.e., control functions.

X is not only lacking the cognitive control that phonologically driven rehearsal affords, he

<sup>6</sup> considered the "best measure" of general intelligence, "*Whatever g (general intelligence) may be, at least we know how to measure it. The accepted best measure is a (usually untimed) test of visual reasoning called Raven's Progressive Matrices.*" (Neisser, <http://americanscientist.org/template/AssetDetail/assetid24612/page/2>)

also finds it difficult to manage intrusions ( $z=1$ ). Intrusions were nonlist items from those categories that were on the list (shoes as a clothing item but not one of the ones on the list). Although this shows an implicit grasp of the undisclosed categories, X did not make optimal use of the categories as a way to reorganize the list for himself (semantic cluster score,  $z=.5$ ).

There was little forgetting but all recall scores are below average since learning was insufficient in the first place. That X was attentive and had absorbed some of the information was apparent in his nearly perfect recognition memory of 14 of the 15 items ( $z=.5$ ). His ability to recognize but not voluntarily recall reflects a problem with explicitly controlled learning in the first place.

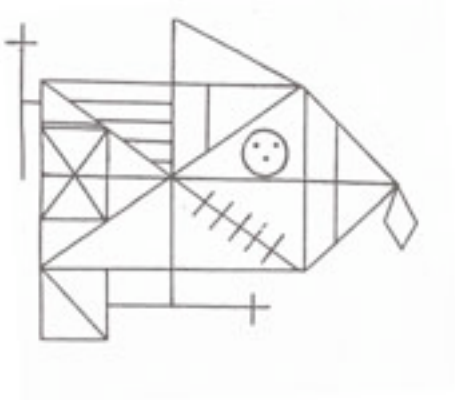
Rey Osterrieth Complex Figure Test (ROCF) (Taylor Scoring)

	standard deviation increase/decrease from average
copy	-3.77
immediate recall	-1.42

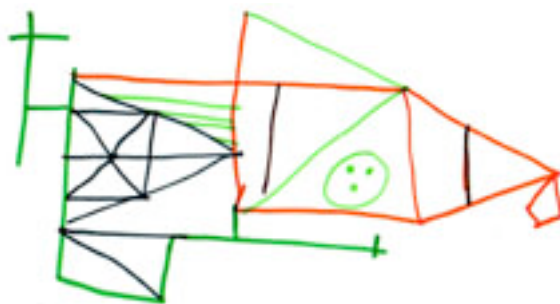
As can be seen in the colors he used (first green, then orange, brown, black, light green), X was not able to anchor his approach by drawing the main structures first (large rectangle, central diagonal and cross). Instead he worked back and forth attending to one element, then another. In the process he created distortions and displacements as well as lost track of some of the elements.

His recall drawing is actually better integrated with a more coherent central rectangle and a less distorted central form. However, his disorganization at intake left him with poor storage and then poor retrieval of detail at recall. The preservation of the main structures is an encouraging sign in that X's engagement with the copy drawing seems to have helped him realize the more critical properties of the information.

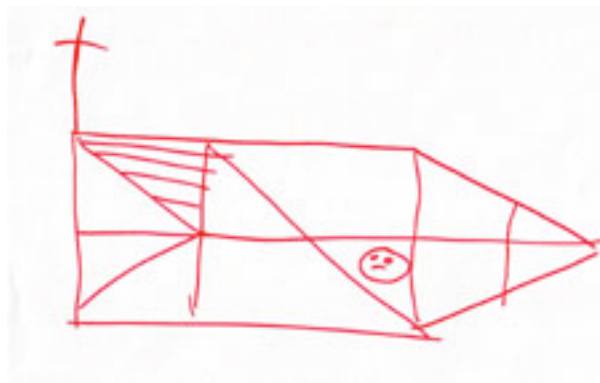
model



copy



recall



Typical copy and recall figures for age can be viewed at:  
<http://cogsci.ucsd.edu/DCNL/research.normal.htm>

	standard score*	percentile
thematic maturity	11	63
contextual vocabulary	8	25
syntactic maturity	9	37
contextual spelling	6	9
contextual style	6	9

### Test of Written Language - 3

contextual conventions	7	16
contextual language	10	50
story construction	13	84

standard scores have a mean of 10, standard deviation 3

The TOWL-2 scoring credits each instance of a correct response. Short passages are therefore penalized, longer passages may have inflated scores. The TOWL-3 is a more qualitative scoring system.

Despite poor spelling, fairly weak vocabulary and simple, repeated as well as run on sentence structure (see teacher comments of the same sort), X conveys a well conceptualized, rich and ethically charged message. Of greatest relief given his discouragement throughout the testing was X's personal investment in the content of this story, which is repeated in its entirety below:

In space one day one of my friends bob found a peice of gold wearth more then earth so he kept it for his house witch was now a machine. He did not know how to spend the other half of it so he desided to give it to charity all across amarica. It was a amazing day and everyone was very proud of him and so was I.

Spelling is consistently reflective of phonological confusions and in one case the same phonological confusion (missing sound for n in mansion vs machine, desided for decided).

Phonological deficits are deep enough so that X is not prepared to realize when the article *a* vs *an* would be appropriate, as in *a amazing day* (see also writing sample from school reviewed in the background section). It does appear that X tries to limit his vocabulary so that he uses words he has learned to spell or that have relatively manageable phonological structures: which/witch, worth/wearth, proud/prouwd.

## ANALYSIS

### Reading/Writing

X's phonological deficit and its impact on reading/print awareness have been documented at least since grade 2 (WJ spelling sounds 79). In fact, concerns began well before then as X failed to learn letter sounds adequately in kindergarten and was assigned to reading recovery in grade 1 where his teacher assessed that despite his efforts, X was not able to do the work. This in fact is most probably due to the phonological deficit which is not specifically supported in the reading recovery approach. Nevertheless, reading recovery was extended into the second grade.

In addition to having lost the opportunity for timely support in phonological processing, reading recovery fails to meet criterion for scientifically based intervention and encourages students to sample words and context as a basis for guessing at an unknown word, an approach that X is now chastised for by his teachers.<sup>7</sup> The outcome at this point in time is continued phonological deficits:

- CTOPP elision 6
- LAC - criterion for first half of third grade
- LAC-III 88
- reading, spelling and articulation errors

X's phonological deficits exist at several levels. He does not discriminate among similarly articulated sounds including short vowels as well as consonant pairs including at least: r/l, m/n, b/p, d/t, s/z, sh/ch, f/th. He does not maintain the phonological structure of words, simplifying them instead, when he reads (shrink for snirk, no-nike for knoink, krantic for quantric, manferetsun for mafreatsun), spells (machine/mansion) and speaks (aventure for adventure).

Without functional phonological processing, learning that reading/spelling is the printed code for speech sounds cannot take place. Phoneme awareness is the *insight* that the overlapping sounds of speech can be segmented out and divided into *subsyllabic sounds* called *phonemes* (like the /k/ in cat or /s/ in ox or long o in boat) which a letter or group of letters is meant to represent. It is always a challenge to segment the stream of speech into discrete phonemes that align themselves with letter representations since sounds in speech are necessarily (motorically) overlapped and not actually sequential.<sup>8</sup> It will be an impossible challenge to surmount for X until he is helped to manage his phonological deficits.

Because he did not have the needed phonological competence to benefit from reading

---

<sup>7</sup> Shaywitz among others, available at: <http://www.wrightslaw.com/info/read.rr.ltr.experts.htm>

<sup>8</sup> Carello, LeVasseur & Schmidt (2002), Movement in Sequencing and Phonological Fluency in (Putatively) Nonimpaired Readers. *Psychological Science*, 13(4), pp 375-379.

instruction in the early grades, X was also never able to map phoneme level sounds to the orthographic patterns used to represent them, thus his confused spelling and his tendency to misread words even though he tries to apply letter-by-letter knowledge (spelling *coff* for *cough*, *foh* for *foy*). In fact, his letter-by-letter approach is a problem for him in multisyllable word reading, one that is corrected when he orients to the rime as an integrated unit.

This has led to a continuous history of failure to achieve mastery of reading skills (placement in reading recovery, Gallistel-Ellis, Gray, QRI, DRA, DRP, CMT) over time. X is now reading below the third grade level for accuracy and fluency (QRI). How far below is not documented by this testing. Despite his instruction in the Wilson program now he is not mastering the material while nevertheless moving on in the program as can be seen in both his WADE and Gallistel-Ellis profiles. X is below mastery in all areas with some specific exceptions which themselves surface as measured with some variability. He is consistently well below even the most modest criterion for acceptable fluency.

A history of reading skill deficits since the beginning of school has interfered with reading comprehension in direct ways, with far more pervasive effects on X's development of metacognitive/executive function and metalinguistic skills as well as his self esteem. As the QRI makes clear, X cannot understand what he cannot decode. His errors are frequent and quite far off the mark, occurring in the most substantive words in the passage (i.e., *adaptation*, *conserve*). It is clear that he could not possibly extract the intended meaning if he cannot read the words in the passage. This becomes increasingly worse as advances in curriculum use reading as a way of learning ideas and vocabulary that X and his classmates do not already have as their background knowledge, i.e., reading to learn vs learning to read.

It is not just that X fails to learn the content of specific reading assignments. He is also failing to have the opportunity for systematic, hierarchic development of text analysis and metalinguistic skills. X has not learned how to deconstruct text level language since he has not been exposed to it, i.e., he does not read it accurately and it is not systematically read to him. There are significant examples from the testing (*invisible/blind* passage, confusion when expository text is read to him) as well as in teacher concerns about failing to grasp the language of word problems and reading comprehension problems.

Listening to text does help comprehension but since he has had little valid exposure to text level language as it actually is, X's metalinguistic skills for analyzing text are poorly developed. He was able to achieve *instructional* but not independent level when fifth grade level text was read to him. He was completely overwhelmed by the sixth grade level text he will soon be confronting. The implication is that X will need electronic reading with additional instructional supports as well as time to develop text comprehension skills in a gradual progression toward grade level.

The carry over of his lost opportunity to develop meta-awareness of complex materials can be seen in nonverbal areas as well (ROCF, Raven) despite very strong visuospatial abilities. His poor self esteem and belief that he cannot manage complexity well enough to master it carries over to nonverbal areas as well.

X has many ideas and a good command of narrative structure as a basis for writing. As with reading, he is undermined by poor awareness of the print code, inadequate phonological competence and lack of exposure to more advanced textual language (see also his teacher's

comment that sentence structure is too simple and too repetitive).

### **Math**

X's difficulty with math reflects his reliance on direct perception disproportionately over a more, schooled and developed ability to mediate his thinking via use of symbols and a notation system. His drop in scores from grade 2, of 111 for calculation, 121 for applied problems, to 91 and 95 today are again reflective of X's failure to develop from those math concepts that are intuitively accessible in the natural world (number concepts, observable number combinations, understanding of fractional amounts) to those that rely on how to mediate understanding through a symbol system (how the notation system indicates which number is to be subtracted from which, fraction notation, the obscure validity of the long division algorithm). His fourth grade teacher specified the fact that X's difficulty with reading was undermining his growth in math. Her observation has been validated in the drop from high average and superior math performance in grade 2 to below goal, at proficiency CMT performance in grade 4 and low average to below average (math fluency) math performance at today's test as well as the lowest possible math report card marks for number sense and data/communication. His current teacher has determined that X now needs math remediation.

X has failed to master a number of skills that have been covered by instruction (as judged by his current work samples):

- the meaning of subtraction notation (minuend v subtrahend)
- borrowing in general; borrowing from 0
- number facts beginning with addition but most pressingly right now, multiplication, due to its role in determining common denominators
- long division
- mapping fractions operations to pictures that represent them
- factoring
- the idea of equivalent fractions and how to demonstrate them graphically
- telling time on an analog clock
- basic linear measurement skills
- use of a number line for all computations, most especially fractions.
- use of a number line aligned with linear measurement

### **Cognition**

This testing confirms precisely the cognitive findings documented by Dr. Y and adds current manifestations of X's ever decreasing ability to adapt to grade level cognitive requirements of school. His superior intellectual abilities (grade 2 WISC, prompted Raven) have now degraded to significantly below average executive functions (ROCF, CVLT-C, unprompted Raven, Y report, poor text analysis and metalinguistic skills). X's specific difficulty with cognitive control and those metacognitive/executive as well as metalinguistic

functions that provide the oversight for mediated learning, are ordinarily schooled through the gradual, developmental exposure to symbol systems and textual, abstract information that is not understood through direct perception. The Raven results reflect X's differential development in that he continues to have intelligent insights but cannot control them well enough to perform the necessary analyses.

His competence with direct visual perception remains in the very superior, superior (7/06 WISC) and above average (WJ spatial reasoning) ranges. However, his capacity for mediated learning via meta-operations is significantly deficient. A large part of his inability to keep up with his intelligence can be explained by lack of adequate exposure to the analytic, metalinguistic requirements of text level language, the growth that he could have actualized in that context, its transfer to other meta-functions such as executive functions and the anxiously low self esteem X now has in relationship to his competence as a learner.

### **Curriculum Considerations**

At this time X's long standing reading skill and phonological deficits have placed him outside of the ordinary developmental process that takes place within the school curriculum. Because he has not had adequate access to print throughout his school years either by virtue of accurate and fluent reading or by virtue of assistive technology, X has lost the timely opportunity to adapt to increasingly complex text level challenges. Now, he has significant difficulty interpreting challenging text, even when it is read to him. His grade 4 teacher noted this in her report card comment that his poor reading was interfering with his ability to access word problems in math.

With the loss of more analytic thinking that comes with exposure to text, X has also lagged behind in those experiences that promote executive functions, i.e., the ability to orchestrate and track a systematic approach to a problem, toward a goal. Dr. Y documented that this is a deficit area for him now. This dynamic underlies his feelings that he "can't", "it's (too impossibly) hard" even to find a starting point when he confronts a complex information field. Of course, the emotional correlates of discouragement and helplessness are an outcome of this as well.

It is not now mainly his reading deficit that precludes access to the general curriculum at grade level. It is now that he is developmentally behind in his acquisition of cognitive control and analytic functions. These will need to be supported specifically, all day long and in a way that allows him to step back and gradually encounter developmentally appropriate levels of executive function/cognitive control challenges.

X's difficulty with curriculum is far more profound than his current goal for strategies to use in coping with the general curriculum. The curriculum itself needs to be modified to meet his needs and the strategies to support him have to address his metalinguistic and metacognitive/executive function deficits.

## RECOMMENDATIONS

1. Although X's core deficit is phonological, affecting reading and spelling directly, his learning deficits have gone far beyond their root source. X is lagging in the development of **metalinguistic and executive function** skills that are absolutely critical to middle school curriculum. He is lagging in them precisely because his unresolved and uncompensated (through electronic reading) reading deficit leaves him without the needed experience with text. His desire to achieve and his long standing frustrated attempts in doing so, his decreasing competence in school (see especially the drop in math from superior to below average) have undermined his self esteem. X needs an all encompassing intervention that has an immediately positive effect in: 1) returning his self confidence; 2) filling many accrued skill gaps in reading, writing, math and the ability to learn in the content areas; 3) supporting him in developing cognitive control (executive and metalinguistic) functions.

2. The model that addresses all of the above needs is the one at the Ben Bronz Academy. Parents and the district are urged to examine that program closely as either the program or the prototype of one for X. Since he needs this intervention to stop the rapid decline he is now in, strong consideration should be given to moving him to a preestablished, smoothly running program.

3. Reading skill instruction will need to include the following components:

- phonological supports for all phonologically based reading and spelling errors. These will need to be woven responsively into reading intervention. The approach would be to use the LIPS program as a guideline for showing X how to use articulation as a basis for phoneme awareness, discrimination and as a defense against phonological simplifications.
- again using articulation (via the LIPS program) as the basis for phoneme perception, X will need to have short vowel drills for approximately 5 minutes at the beginning and end of each reading session.
- There should be at least daily one-to-one reading sessions of at least 40 minutes in duration, focussing on reading/spelling skill and its phonological basis as described here.
- X needs a reading skill program that introduces the code in a systematic way, ensuring mastery and fluency of each rime pattern before moving on to the next. Below is a description of how fluency would be assessed.
- The Let's Read program is strongly urged. X is not yet ready for Wilson which begins with all short vowels at once. Nor can he continue to work in Wilson or any other program that allows him to move on before having fully mastered earlier skills (reading and spelling, with fluency). X will need to review Let's Read Books 1-3 to ensure that all cvc words and all short vowel sounds are solidly and fluently mastered. From that point on, X would begin instruction in ccvcc words as if it were for the first time.
- When reading any word that X does not immediately know, he needs to attack the word as first rime and then onset. His phonological deficits are severe enough that much practice is likely to be needed to stabilize any rime beyond a simple vowel-consonant construction. He will also need to stabilize the rime in order to resist

phonological simplifications introduced by onset complexities.

- Color coding the rime onset will optimize X's ability to use his strength in visual perception to support awareness of integrated units of orthography.
- Rime-onset and color coding will need to be extended into the reading of words of more than one syllable as demonstrated on page 14 of this report.
- All rime patterns must be spelled and read correctly, 90% correct, to be considered mastered.
- Fluency is measured by sentence dictation. If X can listen to a sentence using the orthographic principles he has been learning and then write it without further reminders, it would indicate that he is so fluent with the code that he can allocate all of his resources to the working memory function of holding the sentence in mind. If X forgets any part of the sentence, the indication is that he had to divert his efforts to figuring out the spelling of a word. Until such time as the spelling comes without such diversion of resources, that rime cannot be considered mastered.
- eliminate all strategies other than word attack, mainly rime-onset and the use of articulation to support phoneme awareness, from X's reading goal and objectives as they now are on his IEP.
- This reading program needs to be delivered by a teacher who has experience with all of the components: LIPS, articulation as a basis for phonological competence, Let's Read, rime-onset, reading and spelling as different aspects of the same issue.
- X needs to complete all 9 books of the Let's Read program. At that time, in-depth evaluation of phonological competence, reading accuracy and fluency would need to be conducted as the basis for multisyllable reading.

4. Reading/text comprehension is also a major issue at this point. X needs help in accessing text and then developing the appropriate cognitive and metalinguistic skills that arise out of text analysis. A necessary but not sufficient component of this will be electronic reading (see recommendation for assistive technology, AT, evaluation below). In addition to the AT which can provide basic access, there now has to be support for text analysis as well (see also also recommendation for speech and language evaluation below). For now, in addition to the prescribed e-reading and language interventions, the following would need to support reading comprehension:

- techniques for deconstructing text into meaningful subcomponents. This might consist of having X review the text electronically and then write headings to mark off each conceptually integrated segment.
- at the sentence level, X can be helped to parse sentences to show how phrases form as integrated, subunits.
- X would benefit greatly by being asked and helped to draw a picture or graphic of his "reading" (i.e., e-reading).
- Graphic organizers reflecting text structure. At first the number and hierarchy of frames can be identified for X and he would only fill in the content. Gradually he must learn to identify the frameworks and the way in which they related to each other for himself.

- dialoguing using what X has been able to say about the passage thus far as a basis to probe for further analysis
- hands on demonstrations, role playing, any nonlanguage activity to illustrate how the language in the passage aligns with meaning.
- vocabulary also taught as above, i.e., not with more language as a definition but with nonlanguage referents.
- any additional suggestions made by the speech and language clinician.

5. Metacognitive/executive function/cognitive control skills need to be developed throughout the school day, across all curricular areas; as X is helped take control of ways to manage complex material, in situ; as he learns in the content areas. This is precisely the model at Ben Bronz Academy. Among those instructional procedures that are critical for X are:

- the awareness that other students are struggling with similar issues and participation in students helping other students achieve cognitive controls of this kind.
- avoidance of providing instruction whole cloth; always insuring that X has to contribute an active stretch and analysis to access the meaning.
- supporting X in looking for patterns, using frameworks he has already to interpret related information (i.e., bridging).
- using visual/graphic material to anchor complex ideas

6. As is true across the curriculum,, X needs electronic reading and support for metacognitive and metalinguistic skills as he learns those skills he is missing and subsequent grade appropriate math. The above recommendations address those issues. Specific to math are the following gaps in the math curriculum:

- the meaning of subtraction notation (minuend v subtrahend)
- borrowing in general; borrowing from 0
- number facts beginning with addition but most pressingly right now, multiplication, due to its role in determining common denominators
- long division
- mapping fractions operations to pictures that represent them
- factoring
- the idea of equivalent fractions and how to demonstrate it graphically
- telling time on an analog clock
- basic linear measurement skills
- use of a number line for all computations, most especially fractions.
- use of a number line aligned with linear measurement

7. X requires an AT evaluation of the kind done by Shelley Lacey-Castelot. He will need to have an effective electronic reading device that supports graphics, that allows communication between graphic organizing and e-reading; supports for fluent written expression as well as whatever else is recommended by the AT evaluation itself.

8. X needs a very thorough speech and language evaluation that addresses: phonological simplifications, perception and articulation of multisyllable words, word finding, verbal fluency, higher level grammar, metalinguistic skills, text comprehension, vocabulary. Instruments such as Test of Language Competence, Test of Problem Solving, Comprehensive Assessment of Spoken Language would be used.
9. Central auditory processing disorder evaluation is indicated.
10. Individual therapy is indicated to address X's optimism that he can learn given the appropriate educational context
11. Writing will be addressed in the AT evaluation. Given X's ability to express himself and use narrative structure at this testing, it seems that the main goals of writing intervention should be to ensure X's growing sophistication with text (as above) while teaching him the principles of orthography/spelling (also as above).

Miriam Cherkes-Julkowski, Ph.D.