Project 3

Part 1: Data Entry

1. At the CP Main Menu, select PROPH, then select Create PROPH File. Name the PROPH file HARRY, then select Enter from Keyboard as the source of the sample.

2. In the PROPH Edit File module, enter the Gloss, Target, and Transcription forms in the file HARRY so that they represent the forms shown on the transcription data sheet. Be sure to observe the rules for entering deleted/added syllables and for marking phonetic juncture. Save the file.

3. Email me (steven.long@marquette.edu) your HARRY.PRO file. I will respond by email telling you what, if any errors, need correction. You should correct the errors, then email me your file again. Do not proceed to Part 2 until I have approved your PROPH data file.

Part 2: Profile Analysis

4. Tabulate your PROPH file HARRY. Examine the PROPH profile and the Sound Accuracy profile and use the Data Search module to investigate further any patterns you note in the data.

5. Write a brief (3-4 pages, double-spaced) analysis of the phonology sample, citing statistical information from the PROPH profile as needed. At a minimum, you should answer the following questions:

    - Is Syllable Structure Level a meaningful statistic for this sample? Why or why not?
    - How does HARRY compare in his phoneme mastery to other American boys his age (36 months)?
    - What, if anything, do the vowel and consonant inventories indicate about possible motor constraints operating on HARRY's phonology?
    - Is there any evidence of metrical constraints in the target analyses for word shapes and syllable stress?
    - Are the vowel errors in the sample significant? Do they represent lack of vowel mastery or are they attributable to something else?
    - How do you interpret the PCC analysis? Does it show a developmental pattern? Does it show particular strength or weakness in certain phonetic classes?
    - What do you make of the PMLU and PWP values? What does their size tell you about the sample and about HARRY's phonology?
    - What does the error breakdown say about HARRY's phonological development?
    - Summarize the results of the phonological process analysis. Which processes are clinically significant? Do these represent persisting normal processes, age-appropriate processes, or atypical processes? Is there evidence of process bleeding? Do you see evidence that HARRY is beginning to suppress certain processes?

Part 3: Target Selection & Intervention Tactics

6. Identify the potential targets for intervention. Your list should include all error patterns shown by HARRY, that is, substitutions, omissions, distortions, or additions. The substitution and omission error patterns may represent natural (typical) phonological processes or idiosyncratic (atypical) ones. Be sure not to overlook error patterns that are counted as "Other" substitutions, distortions, or deletions in the PROPH profile or are analyzed as syllable deletions or additions. Your description of each target error pattern should be as specific as possible. For example, "Early Stopping of initial and medial /s/ and /ʃ/", "lingual stop → lingual stop+nasal / V__", or "Dentalized distortion of /s/ and /z/".

7. Evaluate each of the potential targets in terms of the following factors:

    - Frequency of target sound(s) (see table)
    - Consistency of error (see PROPH profile)
    - Phonetic interdependence
    - Contribution to homonymy
    - Naturalness of error
    - Number of Positions Affected
    - Order of acquisition
    - Stimulability (**note: assume that the child is stimulable for any sound that appears in the phonetic inventory**
    - Ease of teaching
    - Morphological status of target sound(s)
    - Phonological knowledge evidenced by child (**note: assume that the child passes the Locke's SP-PT test for all error patterns except those involving liquids)**
    - Resources available (**note: assume that you have excellent materials for teaching retroflex /r/)**

Each factor should be rated as high or low for each process/error pattern.

Briefly discuss the order in which you would introduce each target into treatment, based on your analysis of the relevant factors. Use the Worksheet for Determining Targets for Phonological Intervention to indicate how the targets are rated for each factor. You can download the worksheet as a Word document from http://academic.mu.edu/sppa/slong/txgoals.pdf.

Attached is a brief model of how your project might look.

All parts of Project 3 should be completed no later than Wednesday, March 25. When completed they should be emailed to me (steven.long@marquette.edu).

Is Syllable Structure Level a meaningful statistic for this sample? Why or why not?
The key issue here is whether the child has reached a ceiling in his SSL score. If you look at the criteria for Levels 1-3 in the calculation of SSL (in the PROPH help file on "PROPH Profile"—this is what we went over in class) you'll recognize that some words (e.g., I, me, cow, cake, mom) are Level 1-2 even in their mature form. So the maximum SSL score is not 3 but something less than that. Nevertheless, most English words—when produced maturely—are Level 3. But they do not have to be produced maturely in order to reach the criterion for Level 3. For example, if a child says /kem/→/tem/ his production is still Level 3 even though in contains /k/→/t/. The question, then, is whether the child has reached a point in his phonological development where further maturation will not increase his SSL because of the way in which that statistic is calculated. If he has, then the statistic is not meaningful because it is insensitive to phonological changes the child might make.

How does HARRY compare in his phoneme mastery to other American boys his age (36 months)?
This is fairly straightforward. The Sound Accuracy profile automatically determines which phonemes in which positions would be expected for a child of a given gender and age. It also shows you which phonemes/positions the child has mastered and then shows you the difference between the two, i.e., those phonemes/positions that are expected but not yet mastered. Obviously, the more phonemes/positions that appear in this final list, the more the child lags his peers.

What, if anything, do the vowel and consonant inventories indicate about possible motor constraints operating on HARRY's phonology?
Remember that the vowel and consonant inventories are independent analyses, i.e., they are based solely on the forms produced by the child and not on the target forms. So, when you look at these, what you're looking for is evidence of which classes of phonemes the child is capable of producing, what he can get out of his vocal tract. You should look for gaps in the inventories because these potentially indicate a position or manner class that the child cannot produce. For example, you might find that there are no palatal consonants produced, which would suggest that the child has not learned to control the blade of his tongue or has not identified the posterior portion of the hard palate (where palatal sounds are made) as a place where lingual contact is made during speech. For vowels, you might find an absence of diphthongs, suggesting that the child has not learned to produce a rapid gliding movement from one vowel position to another, as diphthongs require.

Is there any evidence of metrical constraints in the target analyses for word shapes and syllable stress?
A "metrical constraint" means that the child has not yet learned how to produce a particular stress pattern(s). Most often, this is evidenced by syllable deletion: a child will delete syllables in order to reduce the stress pattern of a word to something he can handle. The word shape target analysis will show you in how many instances the child reduced (or rarely, added to) the syllable structure of a word. This information is repeated, in a slightly different form, in the stress pattern target analysis. For instance, the word shape target analysis would indicate 3 syllable→2 syllable; the stress pattern target analysis would indicate something like Sws→Ss. What you want to try to identify are patterns of difficulty. If a child reduces a stress pattern once but gets it right three times, then there is no pattern. But if he always reduces it, or does so the majority of times, then there's an indication of a metrical constraint.

Are the vowel errors in the sample significant? Do they represent lack of vowel mastery or are they attributable to something else?

Usually, kids don't have vowel errors. Yet you may find in the PROPH profile that there are vowel errors. The question is, are these really vowel errors or are they an artifact of something else? There are three main something elses to consider: (1) the vowel changed in conjunction with a consonant change, for example the vowel was lengthened or nasalized because the consonant following it was deleted; (2) there is a slight difference in the vowel used in the target form and the vowel entered in the transcription form, e.g., "care" can be /kaer/ or /kEr/. If the target form is /kEr/ but the transcription is /kae/, then the program will analyze /E/→/ae/; (3) the child produces a different vowel as an element of his dialect. In none of these three cases, is the vowel change really an error and you would not address it in treatment.

How do you interpret the PCC analysis? Does it show a developmental pattern? Does it show particular strength or weakness in certain phonetic classes?

There are three things to look at in the PCC analysis. First, the overall PCC, which serves as an index of severity (which is related to but not the same as intelligibility, as we talked about in class). Second, the PCC in different manner classes can give you a handle on which are the most problematic for the child. If you go to PROPH Data Search after you tabulate the file, you can get an even more detailed PCC breakdown (choose "pcc by feature and position" from the menu). Third, the program calculates PCC separately for the Early 8, Middle 8, and Late 8 consonant singletons. You should expect to see a developmental pattern, i.e., PCC Early 8 > PCC Middle 8 > PCC Late 8. If you don't, or if there isn't much separation among the three groups, it suggests that the child's phonological learning is following an atypical path.

What do you make of the PMLU and PWP values? What does their size tell you about the sample and about HARRY's phonology?

Remember how PMLU is calculated: you count ALL vowel and consonant segments and then add all CORRECT consonant segments. The size of PMLU is a function of both the target words in the sample and how they are produced. A sample with mostly monosyllabic words will yield a low PMLU value, even if all words are produced correctly.

To get PWP, you calculate PMLU on both the child's (transcription) forms and the target forms. PWP is the ratio of PMLU child forms:PMLU target forms. Say a child has a PMLU of 5. To get this, he would need productions such as "dog" /dôd/ (PMLU = 4), "smoke" /mok/ (PMLU = 5), "giraffe" /waes/ (PMLU = 3), "yoyo" /jojo/ (PMLU = 6), etc. In other words, he'd need a sample of mostly monosyllabic words or multisyllabic words reduced to monosyllables. You can look at the PWP to see how close the child is getting to the PMLU of the target forms. If PWP is .67 then he's getting 2/3 of the possible PMLU points, or he's losing 1/3. What you want to do is figure out how he's losing points, in this case, a third of them. The usual suspect is deletion errors: deletion of singletons, deletion or reduction of clusters, and deletion of syllables. Pervasive substitution patterns will also reduce the number of "correct consonant" points he accumulates.

What does the error breakdown say about HARRY's phonological development?

Children with speech delay have a linguistically based disorder. We expect them to be unintelligible due to numerous omission and substitution errors. Some children, but not most, also have distortion errors. Even when these distortions are extensive (e.g., a severe lateral lisp) they should make up a relatively small percentage of all errors just because the number of phonemes affected by that distortion is not great (for a lisp, /s, z, esh, and maybe the affricates). If a child has a high percentage of omissions, this says something

about the overall immaturity of his phonological system and the likelihood that he will be seriously unintelligible.

Summarize the results of the phonological process analysis. Which processes are clinically significant? Do these represent persisting normal processes, age-appropriate processes, or atypical processes? Is there evidence of process bleeding? Do you see evidence that HARRY is beginning to suppress certain processes?

There is no absolute standard for judging which phonological processes are clinically significant. Hodson has recommended 40% (though she adjusts that figure for certain processes) and that's probably not a bad standard to use. Most of the error patterns we call phonological processes are called that because they are developmentally common, or normal processes. The exceptions are patterns such as Glottal Insertion and Backing, which have had names given to them because they are often seen among children with speech delay. Process bleeding occurs when one process blocks another. The most common occurrence is that an omission process (Final Consonant Deletion, Weak Syllable Deletion, Cluster Reduction) blocks a substitution process, e.g., a child who omits velar consonants in final position can't front them. When this happens, the percentage usage for the substitution processes is decreased. So, a child might show 30% process usage for Velar Fronting but another 40% of the opportunities for VF were bled by FCD. The key thing to look at is the relationship of % Process Usage to % Correct. If the % Process Usage is low but the % Correct is also low, you should check for process bleeding. If the % Process Usage is low and the % Correct is high, then it suggests that the child has started to suppress that process.

Worksheet for Determining Targets for Phonological Intervention

Phonological Process/ Error Pattern	Early Stopping of initial and medial /s/ and /ʃ/ **ES**	lingual stop → lingual stop + homorganic nasal / V__ **LSHN**
Frequency of target sound(s) (see table)	high	high
Consistency of error (see PROPH profile)	high	high
Phonetic interdependence (dependence of one phonetic form unit on another)	low	low
Contribution to homonymy (impact on phonemic contrasts)	high	low
Naturalness of error (natural or idiosyncratic process, feature distance between error and target--see table)	low	high
Number of Positions Affected	high (2)	low (1)
Order of acquisition (see Sound Accuracy profile)	low	high
Stimulability	high	low
Ease of teaching (visibility, auditory salience, child's motivation)	high	low
Morphological status of target sound(s)	low	low
Phonological knowledge evidenced by child	low	low
Resources available (parents, materials, technology, etc.)	low	low
Order of treatment (consider sum of relevant factors)	1	2

Discussion

Both of these error patterns involve consistent sound changes applied to a restricted number of word positions. The LSHN pattern involves four phonemes that are statistically more frequent; however, this is offset by the fact that the sound change occurs in final position only. The comparison for feature distance is difficult. The ES process results in homorganic or near-homorganic sounds with no change in voicing. The LSHN pattern *adds* a homorganic sound and its nasality feature and thereby turns the singleton target into a cluster production. This is developmentally atypical and probably would be perceived as a bizarre feature of the child's speech. The determining factors in selecting ES as the primary focus of treatment are the child's stimulability for /s/, its occurrence in more than one position, and its effect on intelligibility through the creation of homonymous words.

SPPA 2220 Project 3 Transcription Data

1.	basket	'bæskɪt	'bædɪt
2.	black	blæk	bæt
3.	boats	bots	bot
4.	candle	'kændəl	'kɑʊət
5.	chair	ʧɛr	dɛoʊ
6.	clouds	klɑʊdz	dɑʊd
7.	cowboy hat	'kɑʊˌbɔɪ+'hæt	'kɑ'bɔɪ+'æt
8.	crayons	'kreˌɑnz	gɑts
9.	feather	'fɛðɚ	'bɛˌdu
10.	fish	fɪʃ	bɪts
11.	flower	'flɑʊwɚ	'bɛˌdɛ
12.	fork	fɔrk	bʌk
13.	glasses	'glæsɪz	'gædɪ
14.	glove	glʌv	gʌf
15.	green	grin	gi
16.	gum	gʌm	gʌm
17.	hanger	hæŋɚ	'ɛˌwe
18.	horse	hɔrs	ot
19.	ice cubes	'ɑɪs'kjubz	'ɑɪ'gub
20.	jumping	'ʤʌmpɪŋ	'dʌmpɪ
21.	leaf	lif	wip
22.	mask	mæsk	mɛt
23.	mouth	mɑʊθ	mɑʊt
24.	music box	'mjuzɪk'bɑks	'mju'bɑts
25.	nose	noz	not
26.	page	peʤ	p̥ɑɪʤ̊
27.	plane	plen	be
28.	queen	kwin	gi
29.	rock	rɑk	wɑk
30.	screwdriver	'skruˌdraɪvɚ	'guˌdaɪbə
31.	shoe	ʃu	du
32.	slide	slaɪd	jaɪ
33.	smoke	smok	mok
34.	snake	snek	nek
35.	soap	sop	dop
36.	spoon	spun	bu
37.	square	skwɛr	gɛə
38.	star	stɑr	dɑo
39.	string	strɪŋ	dɪp
40.	swimming	'swɪmɪŋ	'dɪmɪ
41.	television	'tɛləˌvɪʒən	'tɛˌdiˌdit
42.	three	θri	bi
43.	thumb	θʌm	tʌm
44.	toothbrush	'tuθ'brʌʃ	'du'bʌʧ
45.	truck	trʌk	dʌk
46.	vase	ves	bets
47.	watch	wɑʧ	wɑts
48.	yellow	'jɛˌlo	'jɛˌdo
49.	yoyo	'jo'jo	'o'ɔɪ
50.	zip	zɪp	dib