

# Criteria for error detection and repair in aphasia

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	Response categories							
Error	y = 1	n = 0	o (omission) = 2					
Error Type	s = 1 semantic	p = 2 Phonological	m = 3 mixed	uw = 4 unrelated word	un = 5 unrelated nw	f = 6 fragment	pp = 7 perseveration	pr = 8 predilection
Error Detection	y = 0	n = 1						
Repair Type	s = 1	p = 2	u = 3 (unclear)			n = 4 (no repair)	r = 5 (repetition)	
Target/ repair Alignment	a = 0 (aligned)	m = 1 (misaligned)	u = 2 (unclear)					
Number of Repair Attempts	<an integer>							
Success	y = 0	n = 1						

## Definition of the table's terms with examples

■ Error

### ★ What counts as an omission?

- 1- Silence
- 2- Responses marking that the patient doesn't know the answer (e.g. "I can't remember", "Jesus Christ!")
- 3- All descriptions that never arrive at a single-word response in the noun category.

Example (target = bike)

Response:

- I have one of those. (omission)
- I ride it. (omission)
- I ride that... motorcycle (semantic)

\*Verbs are always counted as omissions, even if there is a semantic relation to the target.

Example (target = cake)

*Response:*

-eat (omission)

## ■ Error type

### ★ Semantic (s)

-Complete noun responses that are semantically related to the target word.

Example (target = cat)

*Response:*

-dog (semantic)

-Fragments that are clearly semantically related to the target. Objective criterion: at least a CV or VC syllable indicating a semantically-related word.

Example (target = cat)

*Response:*

-do- (semantic)

\*Fragments that cannot be strongly interpreted as semantically related to the target should NOT be coded as semantic errors. See fragments below.

Example (target = cat)

*Response:*

-d- (fragment)

### ★ Phonological (p)

-Any complete word or nonword that is phonologically related to the target according to the Moss criteria for phonological similarity.

Example (target = cat)

*Response:*

-cap (phonological)

-cag (phonological)

-Fragments that are phonologically related to the target. This happens frequently for longer words.

Example (target = thermometer)

*Response:*

*-thero- (phonological)*

\* A single initial phoneme does NOT count as a phonologically-related error, and should be counted as a fragment.

Example (target = thermometer)

Response:

*-th- (fragment)*

\* Incomplete responses with the correct sequence of phonemes, should NOT be counted as phonological errors. If repetition is coded, they should be counted as repetitions. In the current scheme, we do not code repetitions, so these instances are ignored. Decide based on the next response.

Example (target = thermometer)

Response:

*-thermo- thermometer. (correct)*

*-thermo- thetro- (phonological)*

\* As a rule, be conservative in coding incomplete responses. Code as fragments, unless you are certain that there is a semantic or phonological similarity to the target word.

### ★ Mixed (m)

Any error that satisfies the criteria for both semantic and phonological errors.

Example (target = cat)

Response:

*-rat. (mixed)*

### ★ Unrelated words (uw)

Any words that are semantically or phonologically unrelated to the target, with the exclusion of perseverations from the previous trials or predilections (see below).

Example (target = cat)

Response:

*- pencil. (unrelated word)*

### ★ Unrelated nonwords (un)

Any nonwords that are semantically or phonologically unrelated to the target, with the exclusion of perseverations from the previous trials or predilections (see below).

Example (target = cat)

Response:

- furkle. (unrelated nonword)

### ★ Fragments (f)

Incomplete responses that do not satisfy the criteria for semantic or phonological similarity to the target.

Example (target = cat)

Response:

-d- (fragment)

-de- (fragment)

\*Discriminating between unrelated words/nonwords and fragments: whenever the transcription implies that the subject had cut off his speech in the middle of the word (this is usually marked by a dash), the response should be counted as a fragment, even if it has enough syllables to count as a complete word/nonword.

Example (target = thermometer)

Response:

-bat- (fragment)

-dio- (fragment)

### ★ Perseverations (pp)

If the patient repeats an unrelated word/nonword from a previous trial (anywhere in the experiment) it counts as a perseveration (perseveration takes priority over “unrelated word” or “unrelated nonword” coding).

\*One exception is if a persevered word happens to be semantically related to the target, in which case it should be coded as a semantic error.

Example

(target = cat)

Response:

- cat (correct)

(Next target = lamp)

Response :

-cat (perseverance)

(Next target = monkey)

Response:

-cat (semantic)

### ★ Predilection (pr)

If the patient keeps repeating an unrelated word/nonword throughout the naming task, it should be coded as predilection. This should NOT be a correct response made to a previous trial (in which case it would be coded as “perseveration”, see above), or a temporary copying of a wrong response to a recent trial (see the example below). The very first predilection should be coded as a semantic, phonological, unrelated word or nonword depending on which criterion it fulfills.

Example

(Target = cat)

Response:

-deodorant (unrelated word)

(Next target = lamp)

Response:

- deodorant (predilection)

(Next target = monkey)

Response:

- deodorant (predilection)

[Theoretically, perseverations and predilections reflect different processing deficits. Predilection shows a structurally-imposed tendency in responding (the way the weights are set in the system), while perseverations show how *changes* in weights as a result of a making a response will affect the response pattern.]

### ■ Error detection

Error detection is coded as a binary variable, disregarding the further attempts to repair. If there is any indication that the patient has rejected his/her response, error detection is present, even if it is not followed by a repair attempt (e.g., cat --> dog, uh, no...).

Example (target = cat)

Response:

-dog... cat (detection = yes)

-dog...cow (detection = yes)

-dog... no (detection = yes)

\*Pitfall: social awareness and strategy. Patients might refute a response not because they detected an error, but because of social feedback. In PNT testing, lack of positive feedback is probably

informative of the occurrence of an error. It is possible that some patients would pick up on that. Currently, I have no solution for this problem.

## ■ Repair type

Repair type is coded with regard to the ERROR (not the original target). The relationship between the repair and the target will be addressed in the “alignment” coding (see below).

### ★ Semantic repair (s)

The repair is semantically related to the error (use the semantic coding criteria discussed above for error coding).

Example (target = cat)

*Response:*

- dog... cat. (semantic repair)
- mat... rug. (semantic repair)

### ★ Phonological repair (p)

The repair is phonologically related to the error (use the phonological coding criteria discussed above for error coding).

Example (target = cat)

*Response:*

- dog... dod. (phonological repair)
- mat ... map. (phonological repair)

### ★ Unclear (u)

The repair is neither semantically, nor phonologically related to the error. Also, when the first response has been coded as a fragment, it is usually impossible to judge the relationship of the repair to the fragment. In these cases, use Unclear as well.

Example (target = cat)

*Response:*

- ball...stra- (unrelated)
- t...stra- (unrelated)

### ★ No repair (n)

Does NOT include trials with no error detection, but is reserved to error detection without an attempt for error correction.

Example (target = cat)

*Response:*

- dog... no. (detection = yes. repair = no repair)
- dog. (detection = no. Repair is not coded)

■ Target-repair alignment

This codes whether the repair that is made on the error is appropriate with regard to the target. If a semantic error is made to the target, an “aligned” repair would be semantic. Making a phonological repair to a semantic error is “misaligned” with the target. At this point, success or failure of the repair in arriving at the target does not matter. That issue will be addressed in “success” (see below).

Example (target = cat)

*Response:*

- dog... cow. (aligned)
- dog... dod. (misaligned)

\* When the repair type is unclear, alignment is judged directly on the basis of the similarity between the repair and the target. This also applies to perseverations as repairs.

Example (target = cat)

*Response:*

- Frif-, grapes. Error type: fragment, repair type: unclear, target/repair alignment: misaligned (no similarity)
- Frif- , cap. (given that cap has been previously uttered) Error type: fragment, repair type: unclear, target/repair alignment: aligned (phonological similarity)
- Frif- , dog. (given that cap has been previously uttered) Error type: fragment, repair type: unclear, target/repair alignment: aligned (semantic similarity)

\* If the repair is the target word, it is of course, coded as aligned.

Example (target = cat)

*Response:*

- Frif- , cat. Error type: fragment, repair type: unclear, target/repair alignment: aligned.

■ Number of the repair attempts

The number of times that the patient responds with a single-word utterance or a fragment. Repetitions do not count.

Example (target = cat)

Response:

- do- ...ca-...ca-...con-...cot. (repair attempts = 3)
- do-...uh, no. (error detection: yes, repair attempts = 0)

\* \* \*

### An exceptional case

- ★ Semantic and phonological errors to the same target. The following example, shows a case where the repair is aligned with the target, but is unexpected with regard to the error:

Example (target = cat)

Response:

- dog... cap.

Usually, if “dog” is the response to the target “cat”, an aligned repair would be a semantic ally-related response. Here, there is no apparent relationship between the error and the repair, while both are related to the target cat. There are occasionally cases of such responses in aphasic data. We code them as separate responses, and to each response we apply the rules discussed above.

For this example, the coding would be:

- 1) (coding dog): error = yes, error type = semantic, detection = yes, repair = yes, repair type = unclear. Alignment = aligned.
- 2) (coding cap): error = yes, error type = phonological, detection = no.

\* Do not confuse this with the case in which one of the responses is a fragment. This only applies to two subsequent errors, each of which is clearly related to the target in different respects, without there being any relationship between the errors themselves.

\* If the errors are both related to the target in one respect (e.g. semantic) but are not related to one another, do not code as two errors.

Example (target = fish)

Response:

- bird... tank.

The reason that this is not counted as two errors, but the previous example is, is because we are interested in the differential detection of various error types. If both errors are semantic, not much information is gained.