

The Fluency Assessment Battery: Purpose, Validity and Methods

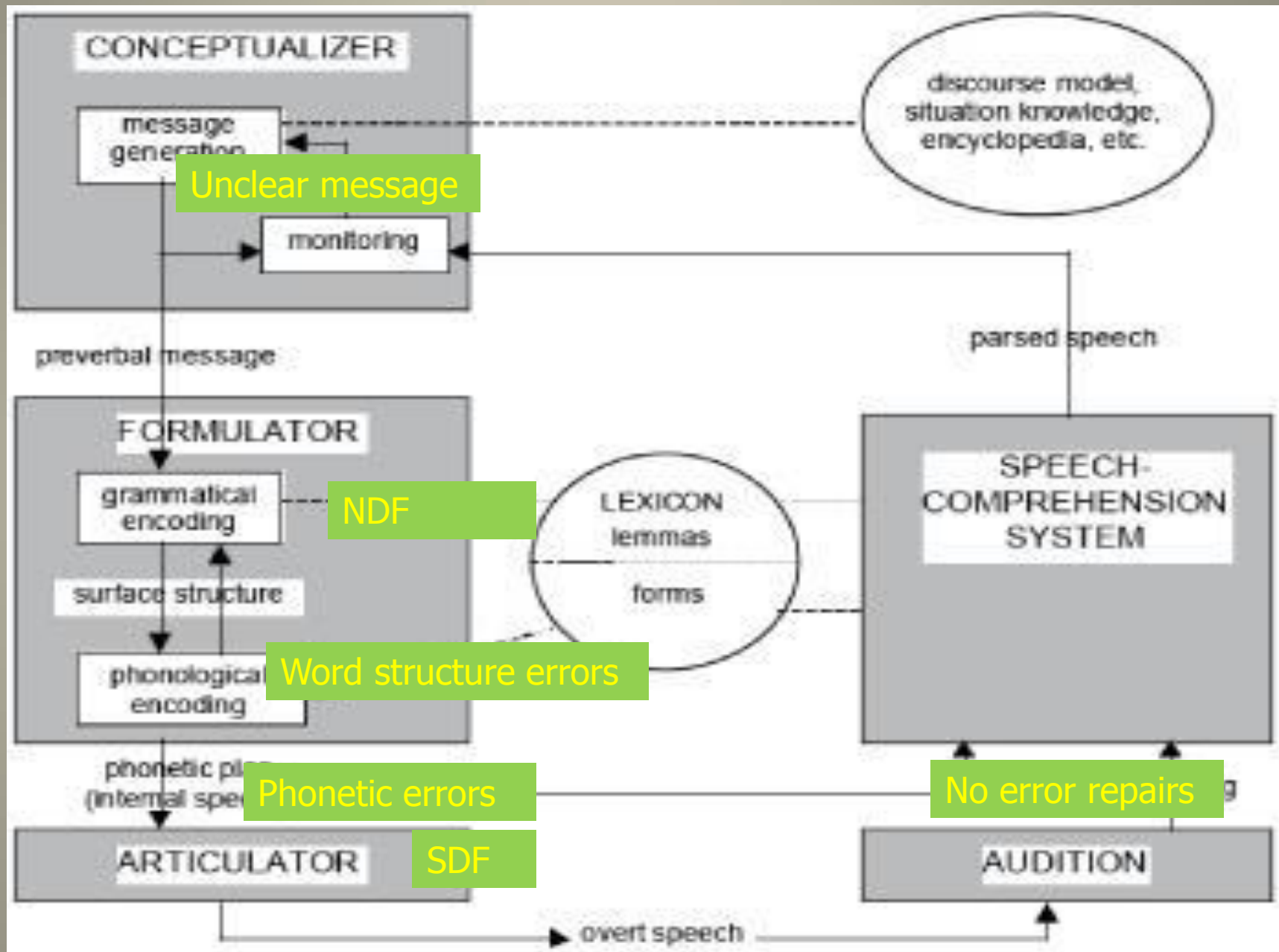
Yvonne Van Zaalen & Isabella Reichel

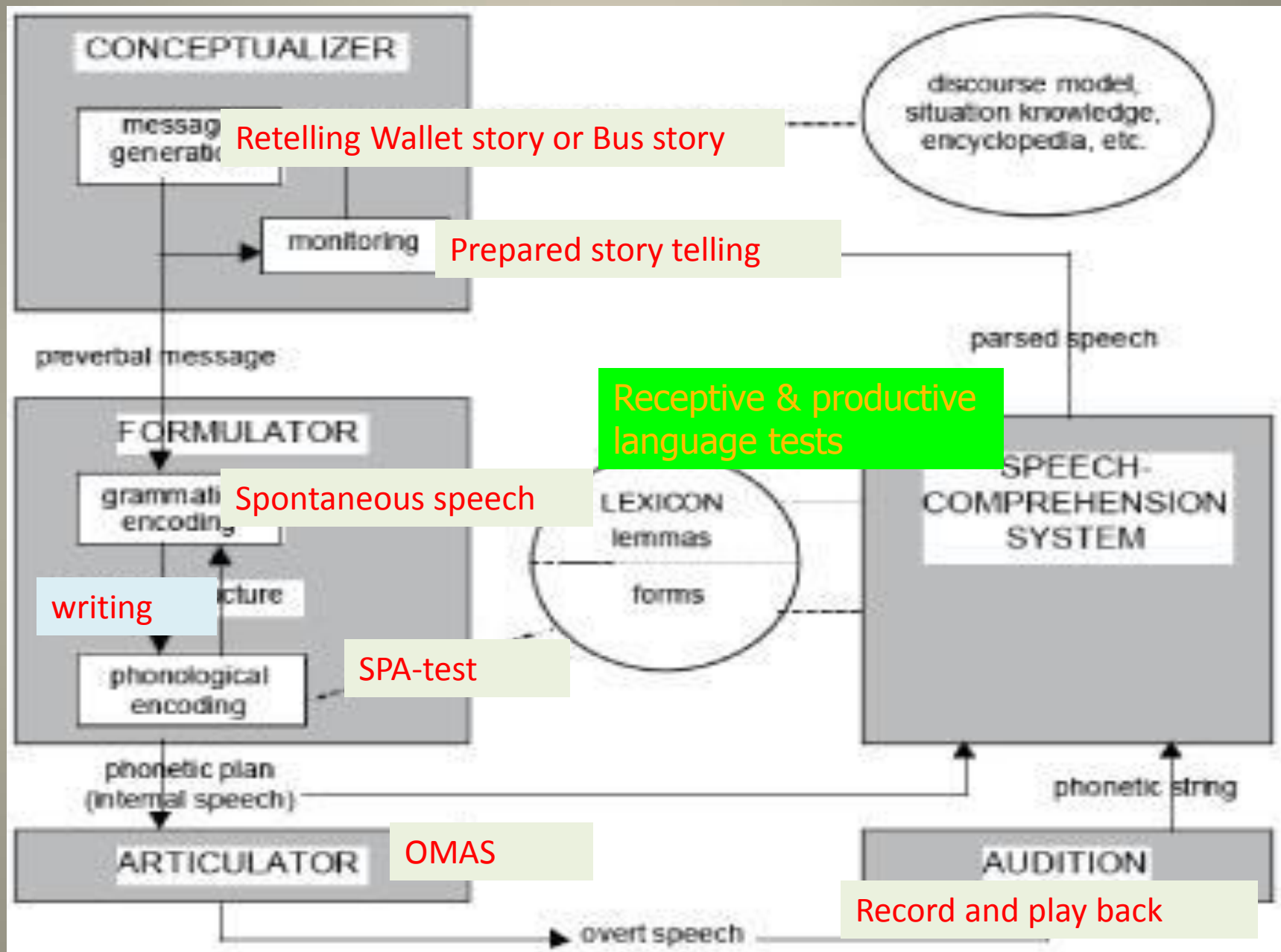
**8TH WORLD CONGRESS
ON FLUENCY DISORDERS**

July 2015

Lisbon, Portugal









Fluency Assessment Battery

1. Predictive Cluttering Inventory - revised
2. Spontaneous speech
3. Retelling a story: Wallet story
4. Reading (3 times)
5. Oral Motor Assessment Scale
6. Brief Cluttering and Stuttering Questionnaire (BCSQ)



Predictive Cluttering Inventory – revised (PCI)

PCI : 33 items (Daly& Cantrell, 2006)

1. Pragmatics
2. Speech motor
3. Language & cognition
4. Motor coordination & writing problems

PCI-revised: 10 items are indicative of cluttering (Van Zaalen et al, 2009)



Analysis

1. Predicting Cluttering Inventory, revised.
2. Rate variation and pausing
3. Fluency, SSI-4
4. Sentence structure (grammatical encoding)
5. Word and syllable structure (phonological encoding)
6. Motor control



2. Rate and rate variation

- Speech rate
- Articulatory rate:

Production of sound segments in stretches of speech (no pauses).

- Calculated in syllables per second (SPS)
- Analyzing only perceptually fluent utterances (Hall, Amir, & Yairi, 1999; Pindzola et al., 1989).



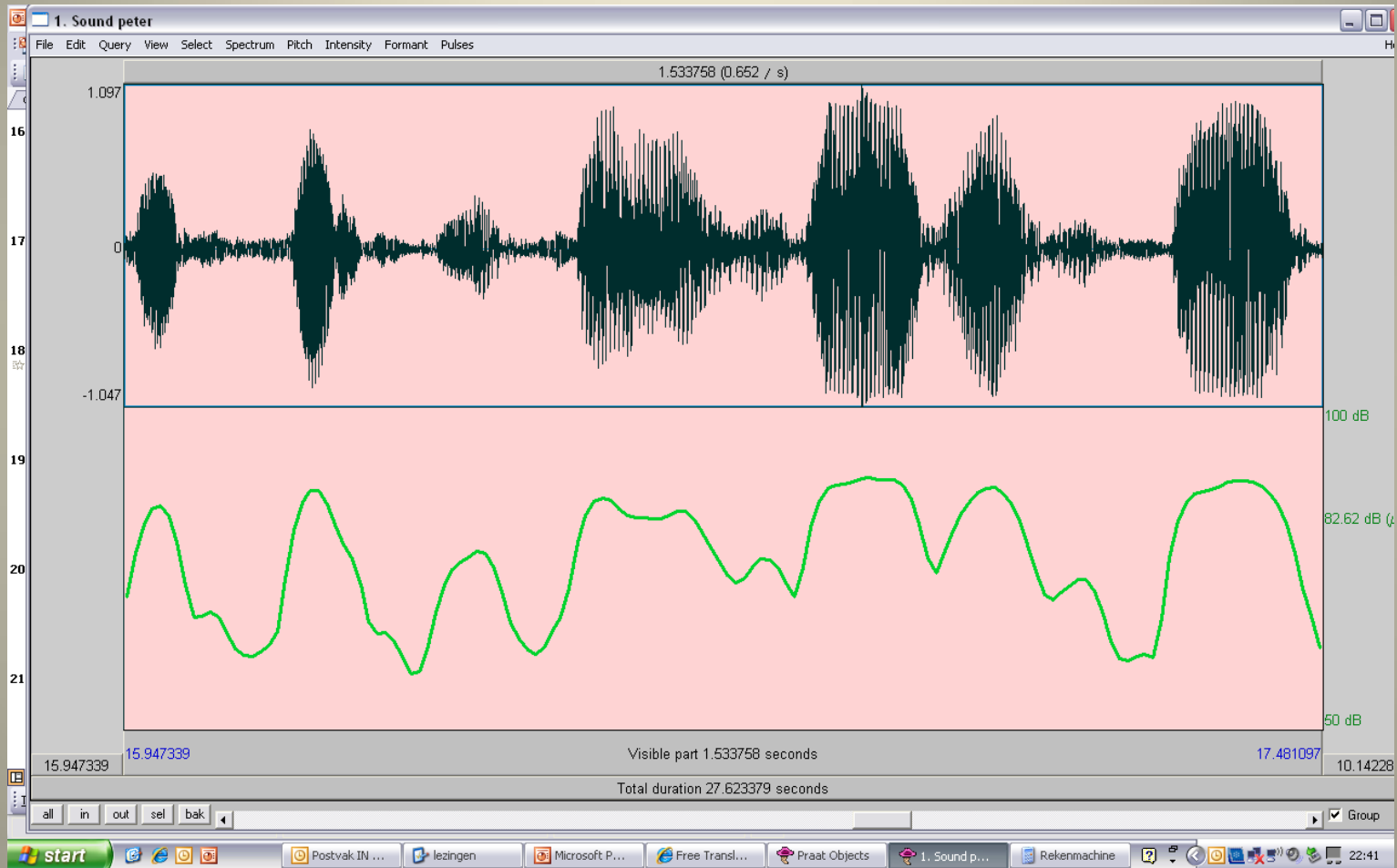
Determining Mean Articulatory Rate (MAR)

10-20 consecutive syllables in fluent speech should be digitally analyzed.

5 AR / 5 = Mean Articulatory Rate



$11 \text{ syll.} / 1.672422 \text{ sec} = 7.2 \text{ SPS}$



Peter: "It took some time that I realized myself"



Articulatory Rate Form

Form for Assessment of Articulatory Rate			
Name:			
Date:			
Age:			
Measurement	Spontaneous speech sample	Retelling	Reading
1.			
2.			
3.			
4.			
5.			
Mean Articulatory Rate			
Variation within speech condition			
Variation between speech conditions			



Normative Data

Articulatory Rate

Mean Articulatory Rate (n=5) Spontaneous Speech	Rate in Syllables per Second (SPS)
Normal	$4.5 < X < 5.5$
Children	> 5.2
Adolescents	> 5.6
Adults	> 5.4

Articulatory rate **variation**

Articulatory Rate Variation	SPS
Normal	$1 < ARV < 3.3$
Abnormal variation	> 3.3 within tasks
	< 1.0 between tasks



Pauses

Normal pauses 0.5 – 1.0 seconds

In PWC, pausing is:

- too short
- too often
- in linguistically “wrong” places

Pause “problems” in speech =>

- a) Formulation of sentences or phonological encoding (formulator)
- b) Initiation of speech (articulator)



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Disfluency Analysis

Assessment Form: Percentage of Normal and Stuttering-like Disfluencies

Name: _____

Date: _____

Age: _____

Task: ☐ Spontaneous speech ☐ Retelling ☐ Reading

										Type	Number
										WR	
										pWR	
										PR	
										Int	
										Rev	
										NDF	
										tWR	
										PRO	
										Block	
										SDF	
Comments on secondary behavior ☐ Visible: ☐ Auditory: ☐ Avoidance:										RATIO:	
										NDF	
										SDF	



Normal disfluencies

Frequency of normal disfluencies

Controls & phonological cluttering: $M=9.7$; $Sd=2.6$

Stuttering: $M= 5.0^*$

Syntactical cluttering: ≥ 2 SD above the mean: ≥ 14.9

NDF

$*N= 181$; $p < .0005$



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- Word and syllable structure (phonological encoding)
- Speech motor control



3. Wallet Story

- Retelling a memorized story



Story and sentence structure

Of the 13 main Issues the client retold main Issues (almost) completely.

Of the 9 side Issues the client retold side Issues (almost) completely.

The proportion of main Issues to side Issues is :

Total number of grammatically correct sentences:

Total number of sentences with the incorrect use of structure:

Mistakes in linguistics:

Mistakes in syntax:



4. Reading

- Rate (normal-fast-slow)
- HAF



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5. Word and Syllable Structure Phonological Encoding

Accuracy, smooth flow and rate

1. At the syllable level: OMAS
2. At the word level: SPA

Screening Phonological Accuracy (SPA)



Words:

*Previously unpublished encounters – Distinctive sounds – Clinical management perspective – **Possible probabilities** – Epidemiological data – Screaming and shrieking audience – **Impracticable communicative implications** – Hierarchically organized behavior – Most favored nation clause – **Compromised alternative condemnation** – Frequently used devices – Delayed auditory feedback.*



Accuracy - Smooth-flow-Rate

Van Zaalen-op't Hof, Wijnen and Dejonckere (2009)'A test of speech motor control on word level productions: The SPA Test (Dutch: Screening Pittige Articulatie)', International Journal of Speech-Language Pathology, 11:1, 26— 33

To link to this Article: DOI: 10.1080/17549500802617689

URL: <http://dx.doi.org/10.1080/17549500802617689>



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6. Oral Motor Assessment Scale

- Diadochokinetic tasks:
 - Puh-puh-puh
 -
-
- In cluttering there are no oral-motor difficulties
 - In stuttering oral-motor difficulties can be presented



Available Languages

- English, Dutch, Swedish, Norwegian, German, French, Arabic, Polish, Bulgarian, Portuguese, Italian, Spanish, Finnish, Chinese, Indonesian, Nigerian, Russian.



Validity

- French (Aumont-Becand, Desportes & ...)
- Taiwan (Shu-Lan...)
- England (Howell, Cook & ...)
- USA (Reichel & van Zaalen)
- German (Schnell & van Zaalen)



Introduction

Validation of a PCI-r and of the Fluency Assessment Battery in France

Véronique Aumont-Boucand, Emilie Desportes, Marie Meyer presented their data at the 2nd World Conference on Cluttering in July, 2014

Method

Spontaneous speech

Oral Motor Assessment Screening

Screening Phonological Accuracy

Results

Retelling a memorized story

Reading aloud

Slow and fast copy

Discussion

Spontaneous writing with and without time constraint

Conclusion

61 controls between 18 and 60 years old

33 PWC between 18 and 60 years old



Introduction

Method

Results

Discussion

Conclusion

Conclusion

The PCI-r allows to identify the cluttering characteristics in France.

The Fluency Assessment Battery confirms the hypothesis of cluttering by the overall patient profile's analysis.

It also allows to differentiate the phonological cluttering from the syntactic cluttering.

Aumont-Boucand, Desportes, Meyer , 2014