The defective language automatisation hypothesis in cluttering

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Cluttering

Cluttering is a fluency disorder characterized by a rate that is perceived to be abnormally rapid, irregular or both for the speaker (although measured syllable rates may not exceed normal limits). These rate abnormalities further are manifest in one or more of the following symptoms:
a) an excessive number of disfluencies, the majority of which are not typical of people who stutter

b) the frequent placement of pauses and use of prosodic patterns that do not conform to syntactic and semantic constraints; and

c) inappropriate (usually excessive) degrees of coarticulation among sounds, especially in multisyllabic words.

(St. Louis et al, 2007).
Cluttering

• Cluttering is a disorder of speech fluency, in which a person is not capable enough to adjust his/her speech rate to the syntactical or phonological demands of the moment. (Van Zaalen, 2009)
Main characteristics

A fast and or irregular articulatory rate combined with:

a. A higher than normal frequency of normal disfluencies and pausing errors (too short and on linguistical wrong places)

b. Errors in word structures (syllable sequencing errors, overcoarticulation).
Levelt, 1989 language production

Articulatory rate
Cluttering and stuttering

8-15% Cluttering

33-55% Cluttering-stuttering

30% Stuttering
Levei, 1989 Language production
Normal disfluencies

Typen:
Word repetitions (untensed)
Interjections
Sentence part repetitions
revisions

Frequency

Ratio disfluencies: NDF/SDF
Normale disfluencies

- **Frequency of normal disfluencies**
  cluttering: \( M=10.4 \); controls: \( M=10.0 \); stuttering: \( M=5.0^* \)

- **Type normal disfluency**
  cluttering: word- & sentence part repetitions and revisions
  stuttering: uh- interjections, revisions

- **Stutter-like disfluencies**
  cluttering: very short and frequency < 1%
  stuttering: > 3% SDF, variation in duration and type

- **Ratio disfluencies**:
  cluttering: \( M=7.4 \); stuttering: \( M=1.7^* \); controls: \( M=8.1 \)

\*\( N=181; \ p<.0005 \)
EXPLAN model
(Howell & Au Yeung, 2004)

Explanation NDF

When I ……
When I ……
When I go to the shop ……
   to the shop ……
   to the shop to buy trousers…..
Syntactical cluttering
Howell, 2004

- “Planning can be put under time pressure when a segment that is difficult, and therefore time-consuming to generate, has to be prepared. This plan is required quickly as when the planned segment follow[s] a word that is executed rapidly .... the process can fail to deliver the complete plan in time...”
Phonological cluttering
Word structure

Speech motor control  \[\rightarrow\]  phonological encoding

articulator  \[\rightarrow\]  formulator

OMAS (Riley & Riley, 1985)  \[\rightarrow\]  SPA (van Zaalen et al., 2009)

Correlation

- accuracy  \(p = .540\)  \(r = .20\)  (weak)
- smooth-flow  \(p = .509\)  \(r = .14\)  (weak)
- speed  \(p = .116\)  \(r = -.345\)  (weak)
- interpretation  \(p = .321\)  \(r = .22\)  (weak)
Word structure

Screening Pittige Articulatie (Van Zaalen et al., 2009)

**cluttering**: inconsistent errors, no speed adjustment, errors in syllable sequencing, smooth flow and coarticulation*.

**stuttering**: consistent errors, speed adjustment

**controls**: consistent errors, speed adjustment

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Means for groups in homogeneous subsets are displayed.
Pause duration

Normal pauses 0.5 – 1.0 seconds
In persons with cluttering:
- too short
- too often
- linguistically ‘wrong’ places

Pause ‘problems’ in speech =>
  a) Formulation of sentences or phonological encoding (formulator)
  b) Initiation of speech (articulator)
Sub-types

1. syntactical cluttering
   Linguïstical cluttering (Ward, 2006)
   Dysfascic cluttering (Damsté, 1984)

2. phonological cluttering
   Motorical cluttering (Ward, 2006)
   Dysrythmic and dysarthric cluttering (Damsté, 1984)
In syntactical cluttering, ‘word finding problems’ (lemma & lexeme) and syntacticale encoding problems in word and sentence part repetitions, interjections, hesitations and revisions

Example:
“Mama, I went to the, I walked to the library to buy, … borrow a book on… what is it called… dinosaurs.

Ward, 2006; van Zaal en et al., 2010
Phonological cluttering

In phonological cluttering, errors in phonological encoding are not detected by the monitor, and result in word structure errors ('motoric effects': coarticulation, telescoping or syllable sequencing errors) in multi-syllabic words.

Example:

"Mama, wentary to borrow a binosaus"
(coarticulation/telescoping)
(Mama I went to the library to borrow a book on dinosaurs)
Attentional capacity

=>

The possibility you have to focus on one or more aspects at the same time
Stroop effect

*http://faculty.washington.edu/chudler/words.html, retrieved November 6th, 2009, 06.34.
Attention capacity (AC)

=> The possibility you have to focus on one or more aspects at the same time

=>

Attention capacity is needed to monitor speech:

Invalid automatisation of language production:
⇒ attention capacity used primarily for language production
⇒ insufficient rest AC to monitor
⇒ Insufficient appliance of pragmatic rules
⇒ etc................
Cluttering example

- Peter
- AR 7.2 SPS
- Articulatory rate variation is high
- Telescoping
- Moments of reduced intelligibility
Peter: "It took some time that I realised myself"
Other cluttering characteristics

- Inner urge to speak
- Body restlessness during speech
- (Hand-)writing problems
- Reading ‘problems’
Pragmatic problems ??

- Pragmatic skills have not been investigated directly in PWC in running speech.
- The Wallet-story (Van Zaalen, Wijnen and Dejonckere, 2009b)
- Myers (1992) and St. Louis and Myers (1995), who reported (based on clinical observations) that PWC often have difficulty producing clear and cohesive narratives.

=> difference in story structure abilities between spontaneous speech and retelling a story can be an indication of automatization problems.
Language problems and cluttering

- Problems, errors or disorder.
- Differences between running speech, controlled speech, and writing.
- Normal disfluencies used
Attentional capacity

Molt,
No auditory processing disorders in cluttering can be determined

PWC respond (temporarily) to DAF and HAF
Attention capacity

In slow speech and writing reduction of formulation problems

Test situation: within limits
Take home message

1. Differential diagnostics between cluttering and stuttering is possible.
2. Always consider cluttering in disfluent or unintelligible people.
3. ..... especially in MR people
4. Assessment (and therapy) on different levels of language complexity is needed.
Contact

Chair of health care & technology for quality of life.

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