



Epidemiology and Phenomenology of Stuttering: a model of development



Ronny Boey Ph.D.

CPLOL
Ljubljana
May, 16th 2009



1

introduction study design methods model conclusions



introduction
study design
methods
model of onset
conclusions

2

introduction study design method model conclusions

The Antwerp Epidemiological and Phenomenological Study has been conducted in the Centre of Stuttering Therapy (Antwerp, Belgium) between 1991 and 2006 and is part of the doctoral research of Boey (2008) at the University of Antwerp Faculty of Medicine, Belgium.

Cross-sectional study of reported and observed stuttering characteristics and related variables

Longitudinal study on recovery and persistence of stuttering and on effects of a social cognitive behaviour therapy

3

introduction study design method model conclusions

Participants

Number. A group of 1549 persons who stutter participated, all native Dutch-speaking individuals living in Flanders, northern part of Belgium.

Age. The group consisted of 1048 young children and 501 children and adolescents. The mean age is 76.8 months (i.e., 6;4 years, range 1;9 - 17;8 years).

The group of males is older ($M = 7;7$ years, range 1;9-17;7 years) than the group of females ($M = 5;9$ years, range 1;11 - 16;9 years).

Gender. Participants were 1191 males and 358 females (ratio 3.2:1).

4

Criteria for participation:

- (a) being labelled as stuttering by one or both parents
- (b) either directly referred by a physician, speech language pathologist, school guidance team
- (c) affirmative description of characteristics of stuttering in the structured interview
- (d) a positive detection of stuttering based on one or more of tests for detection of stuttering and stuttering severity.

5

Procedure

Evaluation at intake in a standard clinical setting.

Standardized, reliable and validated *procedures, instruments* and *tests* have been used. Parent/clinician rater reliability have been calculated for reported and observed stuttering characteristics.

Reported and *observed* variables have been obtained concerning stuttering and related variables.

6



7

Data-analysis

Formulating and testing hypotheses.

Descriptive statistics have been calculated for nominal, categorical and continuous variables. All distributions of data have been checked for type of distribution, conditions e.g. heteroscedasticity, (multi-)collinearity etc.

Analysis of association and variance e.g. chi-square tests, bi-variate logistic analysis, sometimes ANOVA, and polynomial logistic regression analysis.

Structural equation modelling has been used to model multiple analysis and path analysis.

Rater agreement. For intra and inter-judge agreement Kappa (κ) and the Positive Agreement Index (PA) has been calculated.

8

Related to stuttering severity

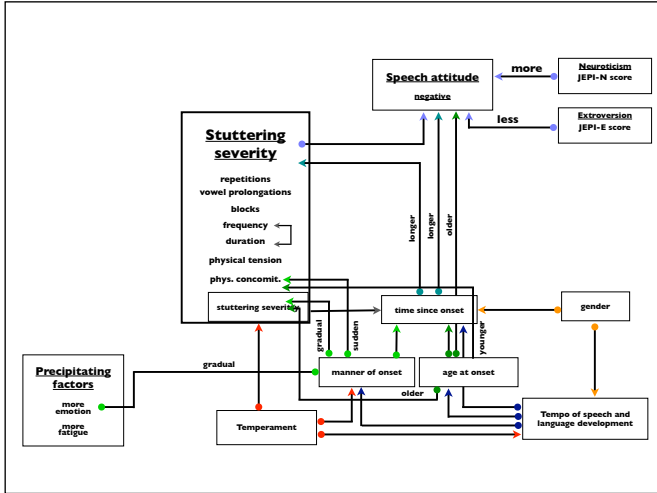
Onset of stuttering. The overall stuttering severity and variability of severity is significantly influenced by onset-related characteristics.

Age at onset. More avoidance behaviour is registered for stuttering children with a *later* age of onset. More physical concomitants are registered for stuttering children with an *earlier* age of onset.

Manner of onset. A *sudden* onset is more often associated with more severe physical concomitants. A *gradual* onset is more often associated with more avoidance behaviour.

Time since onset. Children with a *longer* time since onset, have been observed with an overall *higher* stuttering severity score and a more negative speech attitude, suggesting a developmental effect.

9



10

Tempo of speech/language development.

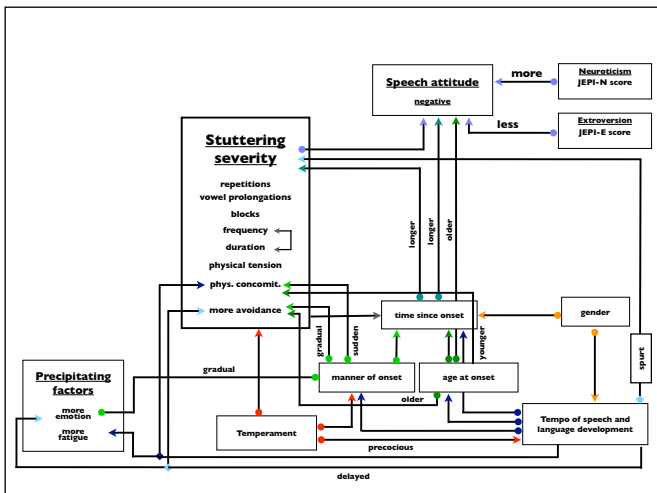
Children with a *precocious* speech/language development showed significantly more severe physical concomitants. More often emotion is reported as a precipitating factor.

Children with a *delayed* speech/language development showed significantly more avoidance behaviour and more often fatigue is reported as precipitating factor.

In addition, children with a delayed speech/language development and a reported *language development spurt* obtained a significantly higher stuttering severity.

Furthermore, the tempo of speech/language development is significantly associated with age and manner of onset, gender and temperament.

11



12

Temperament.

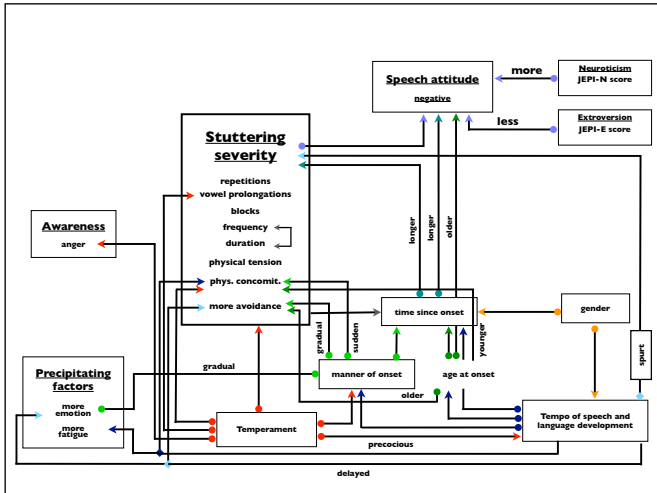
High temperamental children obtained a higher overall stuttering severity. More specifically, more frequent vowel prolongations and more intense physical concomitants have been observed.

Speech attitude.

A more negative speech attitude is associated with a higher overall stuttering severity score.

However, the major part of the variability of the speech attitude score, has been explained by personality characteristics (neurotic and extraversion scores).

13



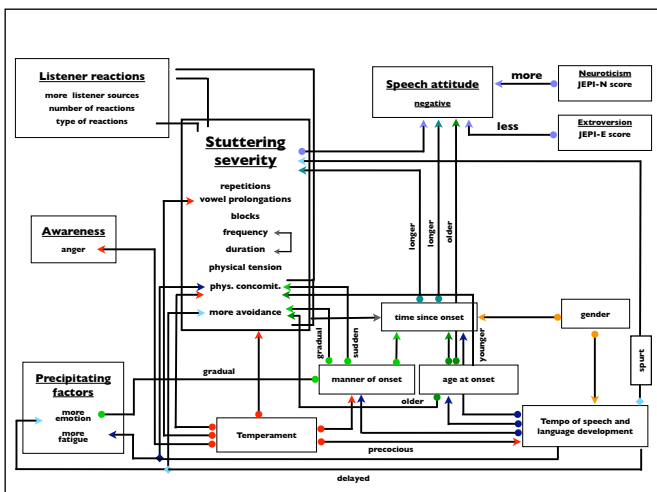
14

Listener reactions.

A higher number of different listeners reacting towards stuttering, and a higher number of reactions have been associated with a higher overall stuttering severity.

Specific reactions (e.g., instructions such as to breath well, to think about, to sing it etc.) have been associated with a higher over stuttering severity, and more in detail with more intense physical concomitants and avoidance behaviour.

15



16

Related to age

Stuttering characteristics.

Older children showed more blocks, a shorter duration and more tensioned of SLD and more severe avoidance behaviour.

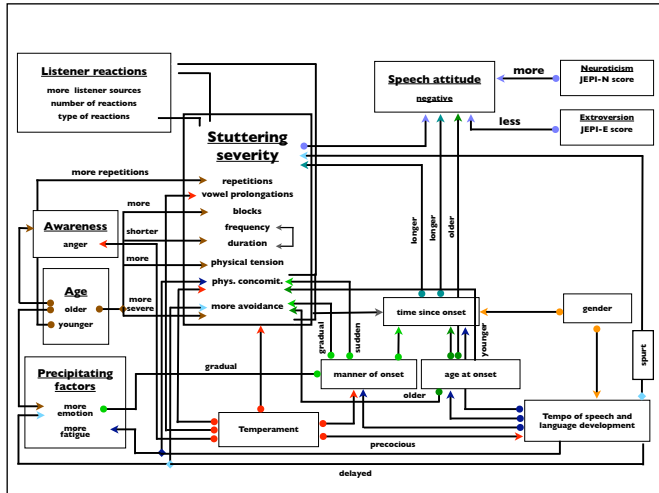
Younger children obtained more repetitions as type of SLD. Children with a longer time since onset obtained a higher overall stuttering severity.

Awareness.

Awareness of speech difficulty gradually increases with age.

Awareness is enhanced by specific instructions of listeners as a reaction towards the disfluent speech.

17



18

Speech attitude.

The speech attitude became more negative with a longer time since onset.

A more negative speech attitude is associated with an increased stuttering severity.

Speech attitude is effected by personality characteristics.

Precipitating factors.

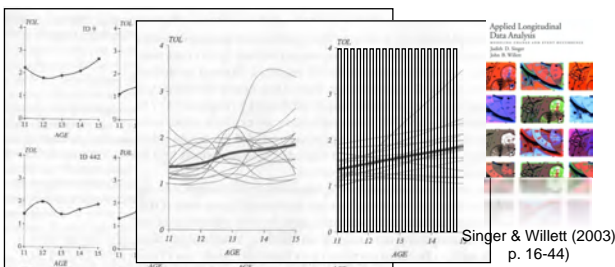
For older children (> 7 years old) more often emotion has been reported as a precipitating factor.

For younger children (< 7 years old) more often fatigue has been reported.

19

Conclusions

Just age-related or tendency of development ?



Singer & Willett (2003) p. 16-44)

20

With increasing time-since-onset and at older age
the characteristics of stuttering-like disfluencies change
i.e. type, duration and tension, not frequency
the amount and severity of stutter-related avoidance and
struggle behaviour increase

Several variables influence different aspects of stuttering
(i.e. stuttering-like disfluencies, stuttering behaviour,
awareness, speech attitude) e.g.

- onset-related variables
- precipitating factors
- personality traits
- listener reactions

21

Tendency of development:

more problematic and reduced quality of life

The study of long term effects of social-cognitive behaviour
therapy for stuttering (Boey, 2008) shows that such a
development can be prevented or reduced for the large
majority of patients.

About 74% of PWS at intake mild to severe, with the
existence of precipitating factors and reactions towards their
speech of themselves or their environment continue to
stutter on the average 10 years later.

About 73% of PWS at intake mild to moderate, without
precipitating factors, with no or mild reactions towards their
speech of themselves or their environment recover from
stuttering on the average 10 years later.

22



<http://web.me.com/rboey/publications>



<http://web.me.com/rboey/publicaties>



23