



Model of onset of stuttering and related variables

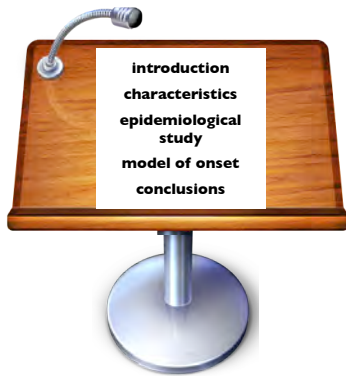
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introduction characteristics study Boey model of onset conclusions



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introduction characteristics study Boey model of onset conclusions

- Importance of knowledge about the onset of stuttering
- contribution to the *understanding* of stuttering and insight in the underlying *processes* of onset
- supports clinical practice
 - counseling
 - treatment (part of cognitive therapy)

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introduction characteristics study Boey model of onset conclusions

- Characteristics of onset
 - Age at onset
 - *typically* between 2 and 4 years old
 - Manner of onset
 - *gradual* (60 - 75% of the cases)
 - *sudden* (25- 40% of the cases)

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- Factors near onset
 - *emotional* (e.g. excitement, anxiety)
 - *behavioural* (e.g. development of milestones)
 - *physical* (e.g. illness, extreme fatigue)

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- Suggestions
 - *Gender*
 - girls earlier onset than boys
 - Relation with *speech and language development* [SLD]
 - often with retarded or distorted SLD
 - few cases with precocious SLD

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- Epidemiological and phenomenological study between 1991-2006
- Part of doctoral research



Boey, R. (2008) *Stuttering, An epidemiological and phenomenological study. Effects of a social-cognitive behaviour therapy*. Antwerp: University Press UA



Boey, R. et al. (2009) Stressors associated with the onset of stuttering in native Dutch-speaking children. *Journal of Stuttering, Advocacy and Research* (3) 1, 71-89.



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

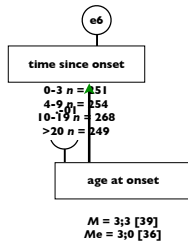
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- *Participants*
 - epidemiological group 1549 children who stutter & parents
 - model-of-onset-group 437 young children
 - mean age 4 years 2 months
 - range 1;11 - 7;3 years old
- *Criteria of stuttering*
 - (a) self-reported stuttering characteristics
 - (b) referral for reasons of stuttering
 - (c) observation of *stuttering-like disfluencies* in a speech sample (Boey et al. 2007, 2009)

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- Findings: descriptive data
 - *age at onset*
 - mean age 39 months (3 years 3 months)
 - median is 36 months [3 years 6 months]
 - *time since onset*
 - 0-3 months n = 251
 - 4-9 months n = 254
 - 10-19 months n = 268
 - > 20 months n = 249

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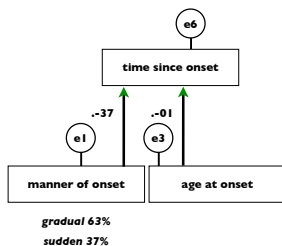


Structural equation modeling of onset

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- *Manner of onset*
 - gradual: 63% of the children
 - sudden: 37% of the children
- *Factors near onset20*
 - more reported factors near onset in case of (a) sudden onset compared with gradual onset ($p < .000$), (b) shorter time since onset ($p < 0.01$), (c) parents evaluated as being very concerned ($p = 0.009$), (d) a higher stuttering frequency at intake ($p < 0.000$)
 - principal reported factors are emotional/behavioural (ref. classification of Johnson and associates, 1959) or emotional (ref. Yairi and Ambrose, 2005)

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Structural equation modeling of onset

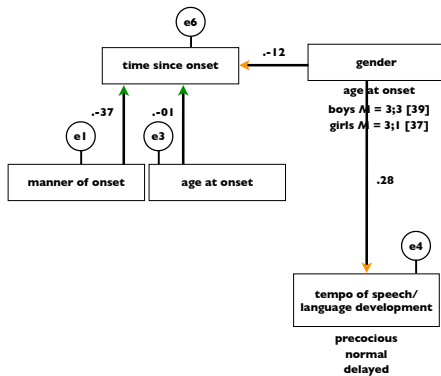
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- Onset-related variables
 - Gender
 - age of onset 2 months later for boys ($M = 39.9$ months) than for girls ($M = 37.7$), ($p = 0.03$)
 - females have more often a sudden manner of onset than males, ($p = 0.02$)
 - females have been seen closer to the onset of their stuttering ($M = 10.1$) than males ($M = 12.9$), ($p < 0.000$)

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- a significant gender effect has been found for the tempo of speech/language development related to the onset of stuttering, ($p = 0.03$)
- more boys (31%) than girls (22%) have been classified with a delayed tempo of speech/language development
- boys (39%) and girls (40%) are almost equally represented within the group of normal tempo of speech/language development
- more girls (38%) than boys (30%) have a precocious tempo of speech/language development

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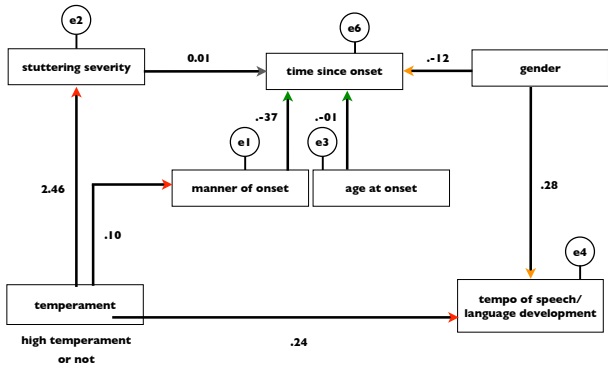


Structural equation modeling of onset

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- Temperament
 - a sudden onset of stuttering is more often associated with high temperamental children compared with low temperamental peers (53% versus 38.5%) than gradual onset (47% versus 62%)
 - factors near onset of stuttering have been reported more frequently for high temperamental children compared with low temperamental, ($p = 0.027$)
 - high temperamental children obtained a significantly higher stuttering severity than the low temperamental children, ($p < .000$)
 - delayed tempo of speech/language development is less associated with high temperamental children, and precocious tempo of speech/language development is more often associated, ($p = 0.01$)

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Structural equation modeling of onset

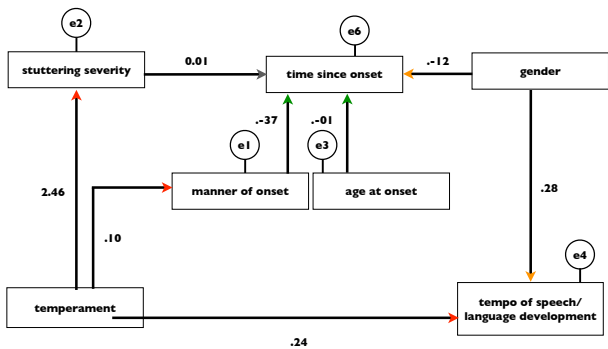
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- Stuttering severity
 - more often a sudden onset of stuttering has been reported for children with a higher stuttering severity ($p = 0.009$)
 - children with a higher stuttering severity have obtained a longer time since onset ($p = 0.016$); this suggests that a part of the older children obtained a higher stuttering severity post onset as a result of the development of their stuttering

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- Tempo of speech/language development
 - children with a precocious tempo of speech/language development have a younger age at onset; overall 2.3 months earlier, ($p < 0.000$) and have been seen closer to onset of stuttering, ($p < 0.000$)
 - children with a delayed tempo of speech/language development have been classified more frequently with a gradual onset than the children with a normal or precocious speech/language development ($p < 0.000$)

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Structural equation modeling of onset

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- Conclusions: *validity* of findings
 - largest number of participants and very powerful analysis of variables support the credibility of findings
 - comparison of Boey (2008) with 3 other epidemiological studies (Johnson and associates, 1959; Andrews & Harris, 1964; Yairi & Ambrose, 2005):
 - age at onset: 50 % < 3 years old
 - gender effect *suggested* by Yairi & Ambrose proven and explained
 - stuttering is not only associated with delay of speech/ language development *but also with precocious speech/language development (and spurt)*
 - factors near onset of stuttering confirmed
 - relationship of onset of stuttering with temperament described

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- Conclusions: *interpretations* of findings
 - Phenomenological support for the model of onset described by Geschwind & Galaburda ?
 - explanation of the early age at onset
 - explanation by the gender effect as the consequence of testosterone influenced growing mechanisms of the brain
 - a-specific morphological structure of the brain cells and a-specific lateralization processes reflected by more often the "extremes" of properties such as temperament and speech/ language development ?
 - Correlation with findings of PET, MRI and fMRI ?

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- Conclusions: *implications* of findings
 - Clinical practice
 - understanding of parental reported onset-related phenomena of stuttering (in stead off surprise or ignorance, scepticism)
 - counseling in order to support the understanding of the onset of stuttering
 - element of cognitive therapy with older children, adults, parental guidance program

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 - Research
 - refining the phenotype according to gender, speech/ language development, temperament
 - in order to reduce heterogeneity of findings ?
 - e.g. the actual outcome of genetic studies
 - e.g. the outcome of studies on effects of treatment

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