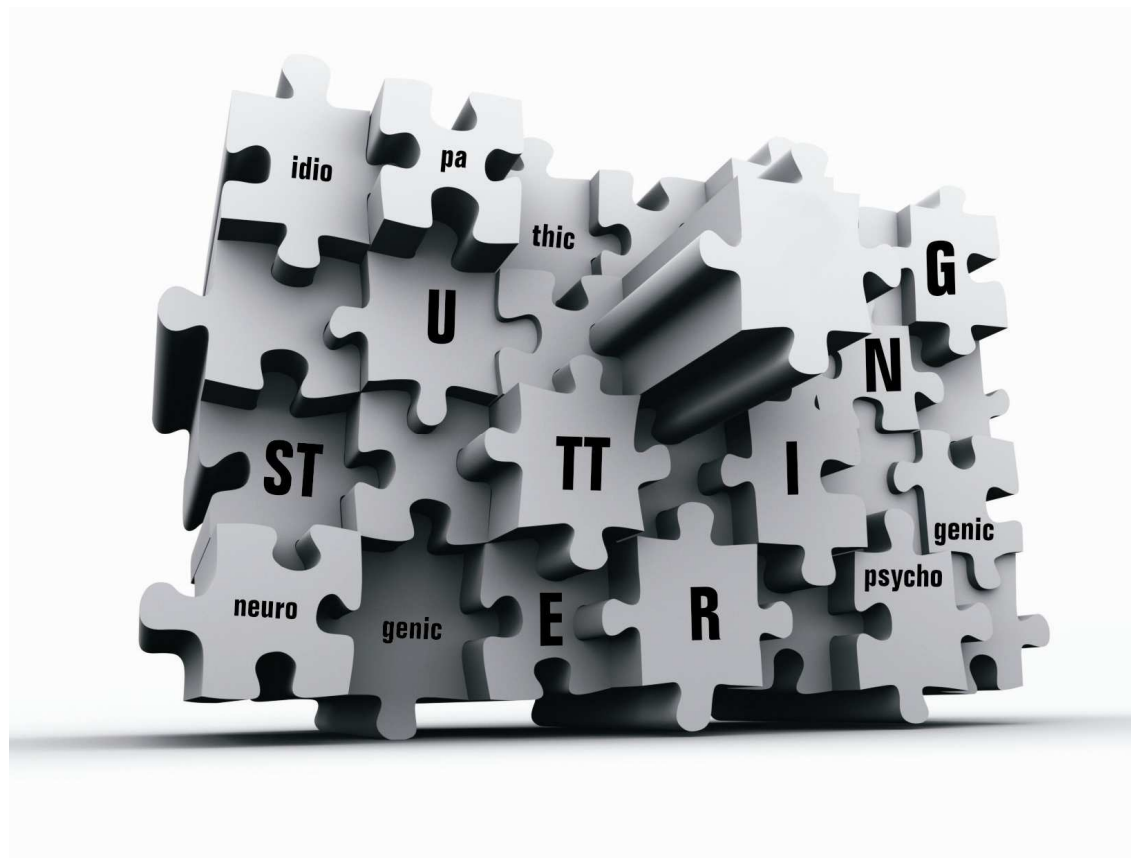


# **Possibilities in Neurogenic Stuttering Treatment**

An empirical study on  
therapists` experiences

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„Stuttering is more than a riddle. It is at least a complicated, multidimensioned jigsaw puzzle, with many pieces still missing”  
(Van Riper, 1982, 1).

# Presentation agenda

1. Definition and etiology

2. State of research in literature

3. Research questions

4. Empirical study and methodology

5. Findings

6. Conclusion

# Presentation agenda

1. Definition and etiology

2. State of research in literature

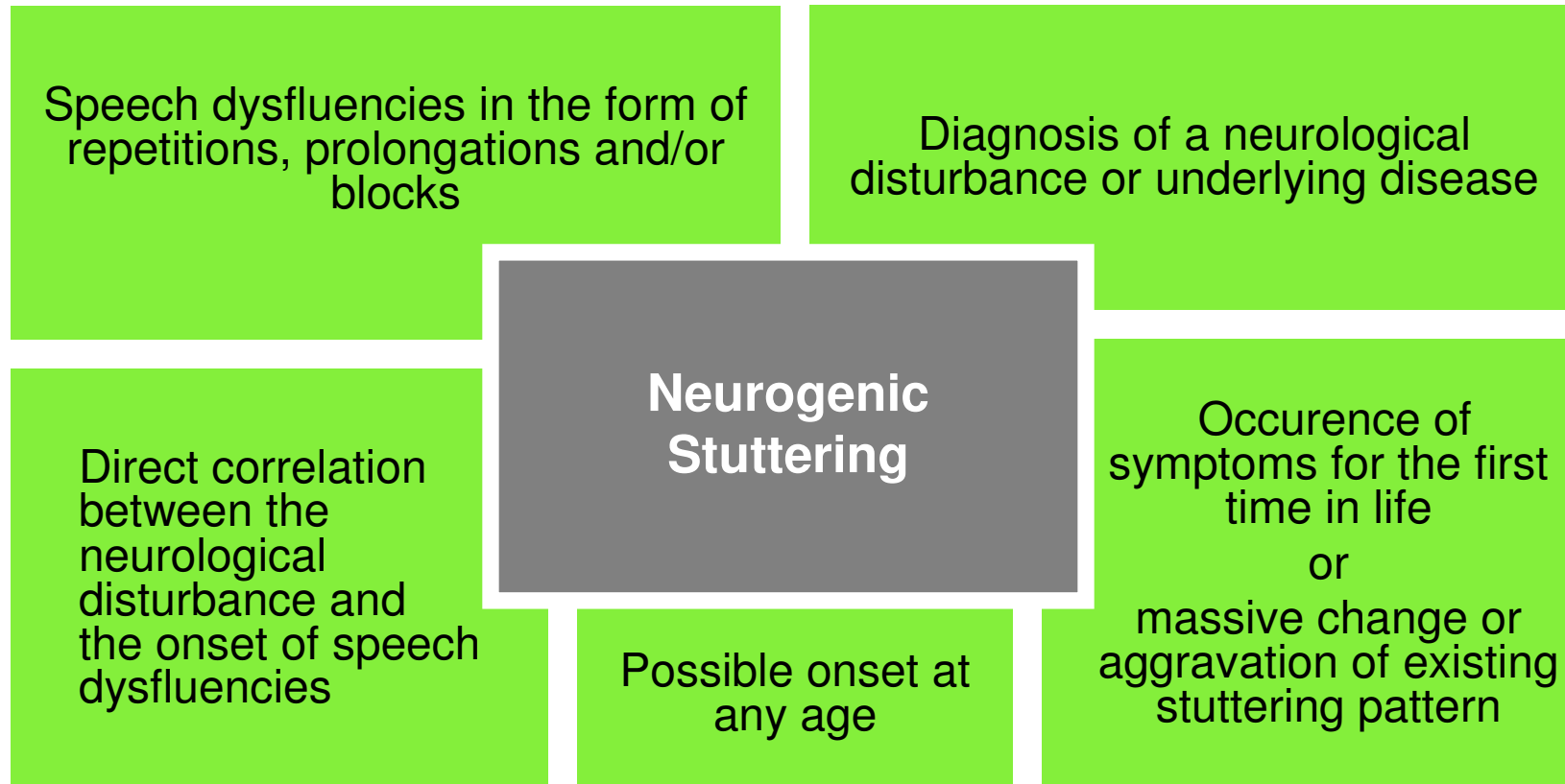
3. Research questions

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## Definition



## **Etiology**

- Cerebrovascular disease
- Head trauma/ traumatic brain injury
- Neurodegenerative disease
- Tumor
- Epilepsy
- Intoxication
- Neurosurgery
- Other diseases of the central nervous system

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## State of research

„Acquired stuttering in adults has received little attention relative to that given developmental stuttering“ (Marshall & Starch, 1984, 87).

„Extensive research has been conducted in the field of developmental stuttering, and many facts about this disorder are well documented in the developmental stuttering literature. An equivalent body of knowledge is not available in the area of neurogenic stuttering [...]“ (Ringo & Dietrich, 1995, 117f.).



## State of research

- Limited number of publications
- Single case studies
- Lack of empirical (group) studies

### **Critique:**

- lack of objectivity of studies
- lack of comparability of data
- inaccurate sampling procedure

## State of research

- Increased demand for research in the area of neurogenic stuttering treatment
- Highly discrepant hypothesis

„Our therapy experience with adults with neurogenic stuttering has been very encouraging. [...] in a good many cases we have seen the stuttering problem completely eradicated” (Canter, 1971,143).

„Results have rarely been dramatic and not always encouraging“ (Rosenbek, 1984, zit. n. Baumgartner & Duffy, 1997, 91).

„The call for more systematically collected data is long overdue“ (Curlee, 1995, 125).

# Presentation agenda

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## Research questions

- How is neurogenic stuttering currently treated in Germany?
  - Is neurogenic stuttering treatable?
  - Which factors evoke a good prognosis?
-

## Presentation agenda

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## Empirical study and methodology

### § Research method:

Written survey of 700 speech language pathologists in Germany

### § Sampling procedure:

Random sample  
Two-stage sampling procedure:  
Stage 1: Therapists (cluster)  
Stage 2: Clients

### § Research tool:

Structured questionnaire  
(30 questions: 178 items)

### § Period of examination:

4 years (1.08.2004 – 1.08.2008)

## Questionnaire – subject matters

Demographic data	Age, gender, handedness
Symptoms	Core symptoms, secondary behaviors etc.
Etiology	Medical history, neurological disturbance etc.
Therapy targets	Individual aims
Type of treatment	Stuttering therapy, general speech therapy etc.
Focus of treatment	Fluency shaping or modification techniques
Response to treatment	Learning, adopting and transferring techniques
Treatment outcome	Improvement, aggravation, difficulties etc.

# Pretest

## Two stage Pretesting (Prüfer & Rexroth, 2000)

### Phase 1: cognitive pretest

- § Cognitive interviews
- § n = 7 therapists
- different occupational groups
- different therapy setting

### Phase 2: field pretest (pilotstudy)

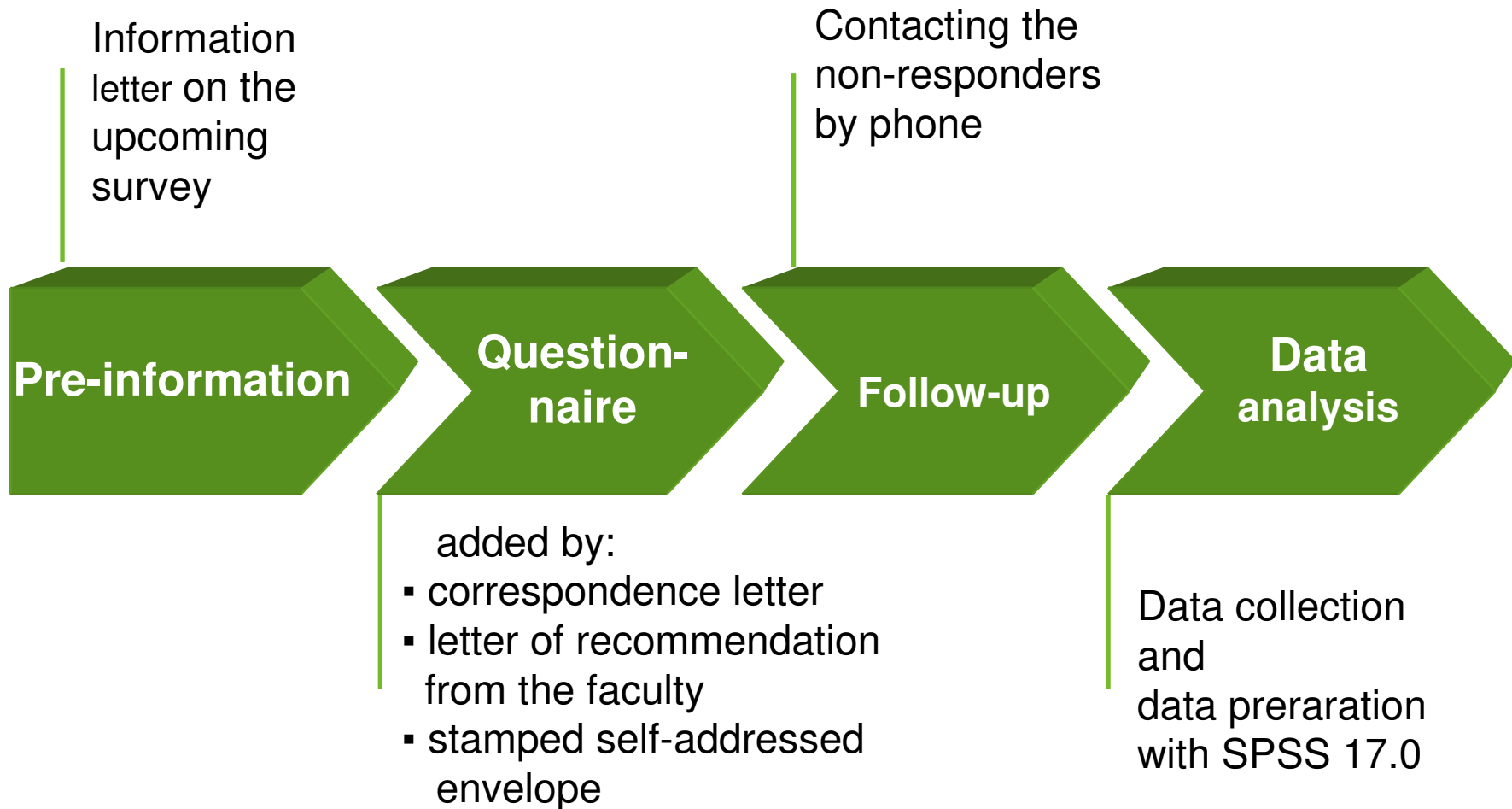
- § Written survey
- § n = 100 therapists
- § Split-ballot procedure

**assure** manageability of the questionnaire and  
correct understanding of questions

**avoid** ambiguity

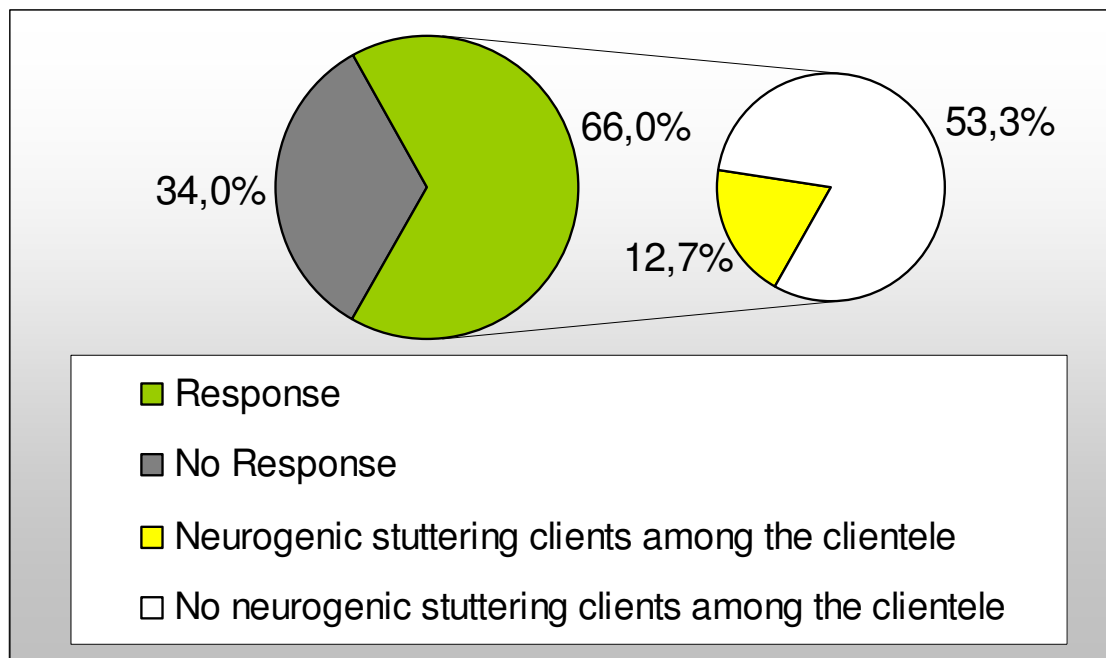


## Data collection



## Return rate

Return rate (n = 700)



89 therapists (12,7%)  
have treated one or  
more clients with  
neurogenic stuttering

68 case descriptions  
(9,7%)

after plausibility check:  
61 data sets (8,7 %)

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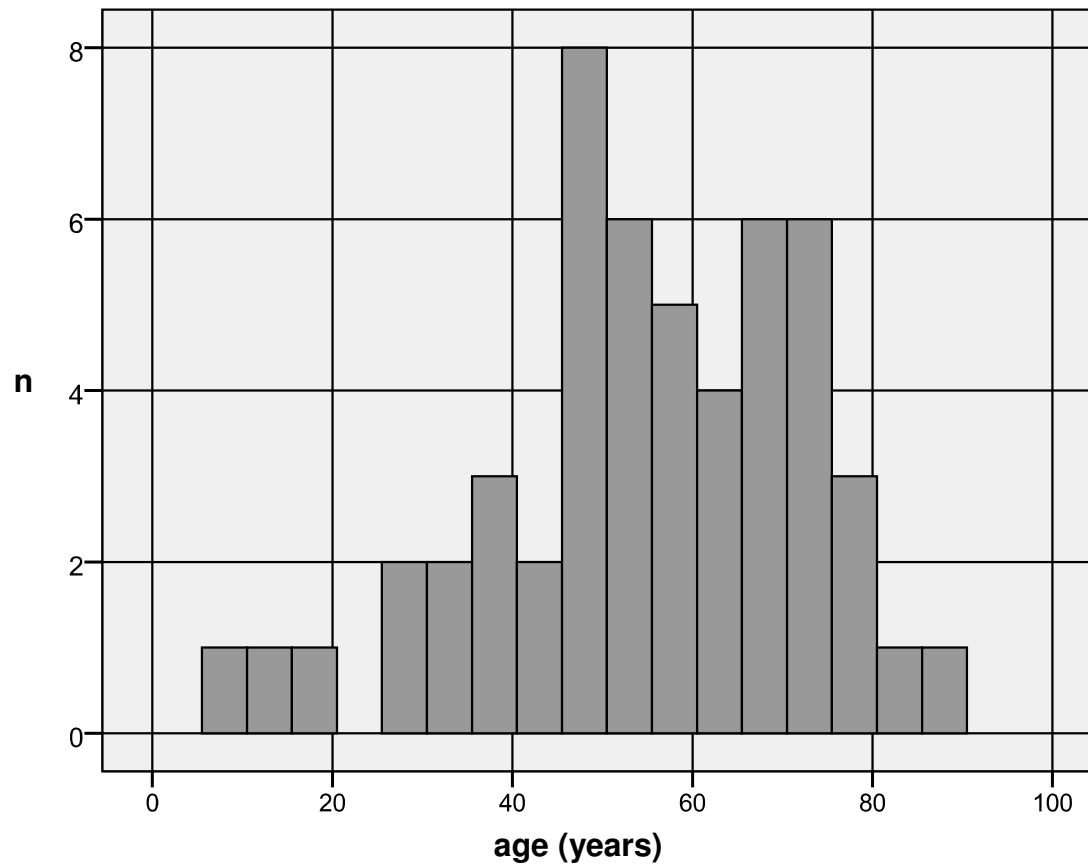
5. Findings

6. Conclusion

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## Results – age

Bar chart – age (n = 52)



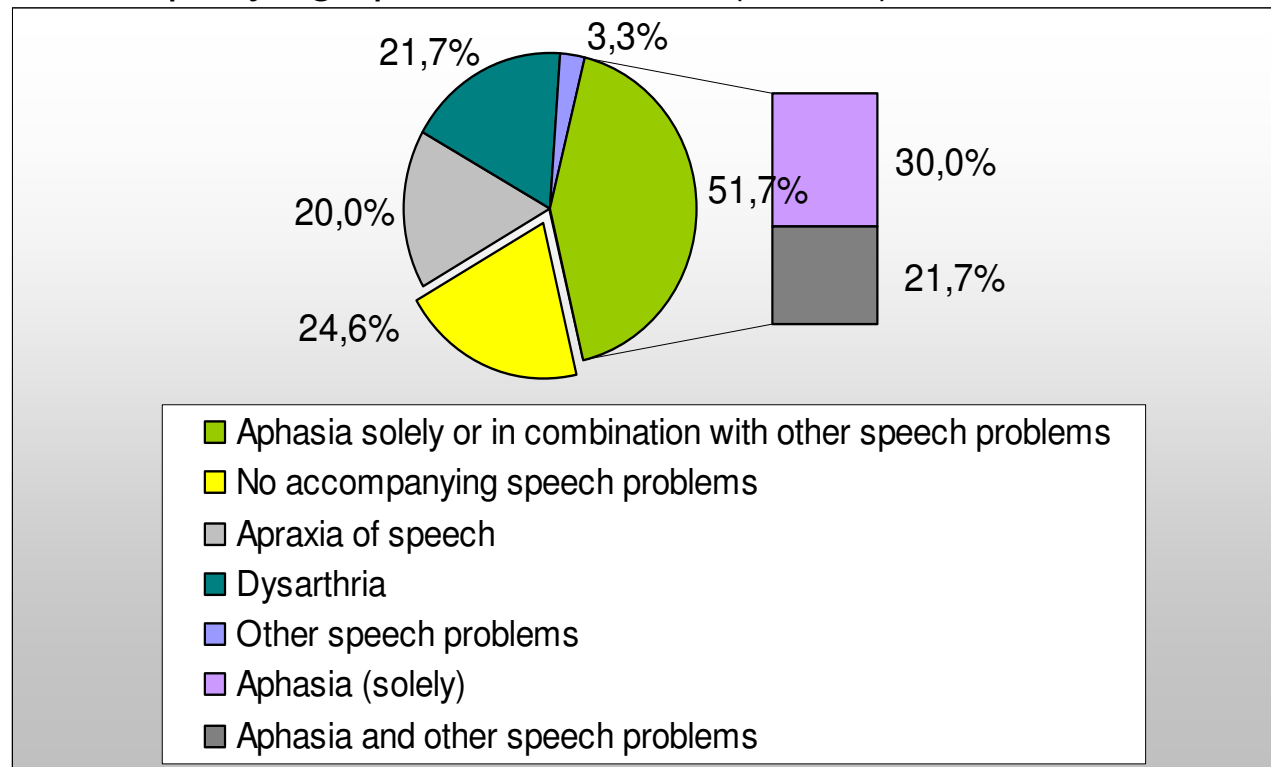
range: 8-87 years

mean: 55.4 years

standard deviation: 17.4 years.

## Results – accompanying speech problems

Accompanying speech disorders (n = 60)

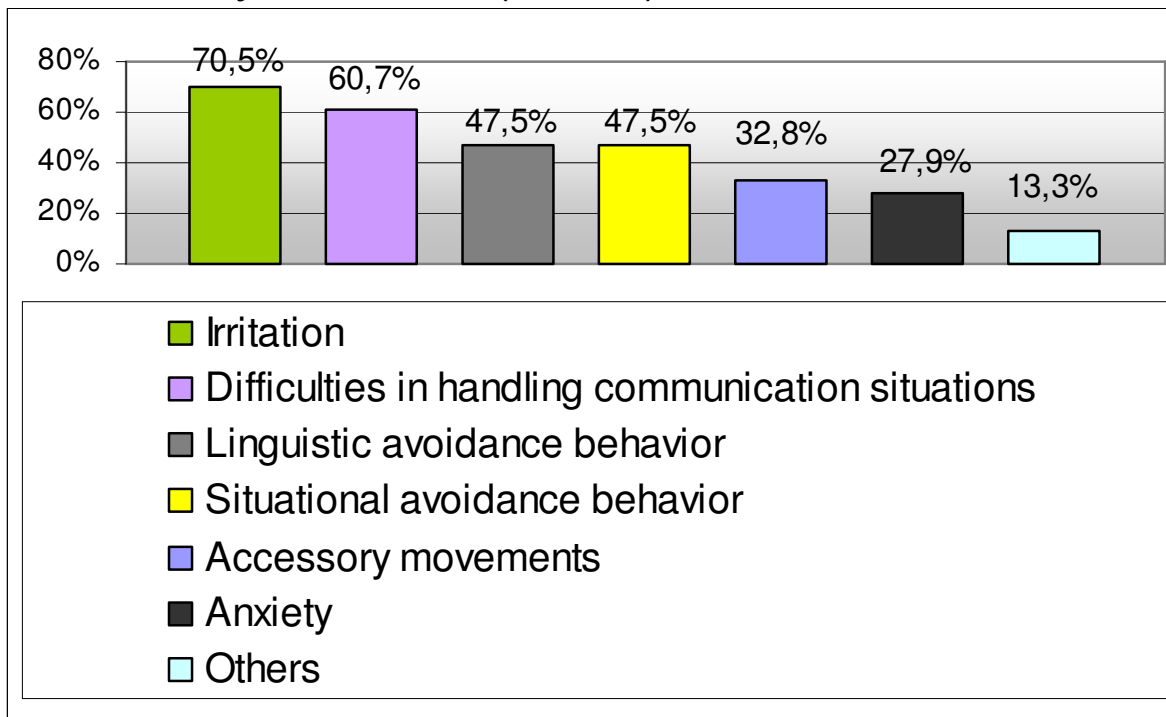


In three fourths of all cases neurogenic stuttering clients showed accompanying speech disorders.

In every second case the client had aphasia.

## Results – secondary behaviors

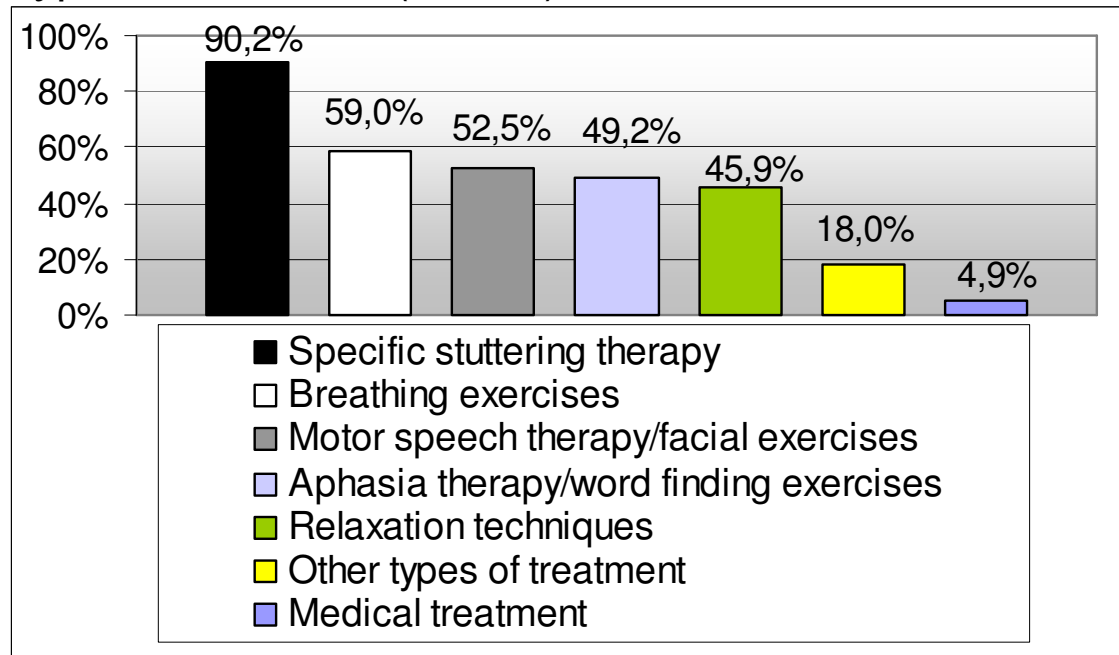
Secondary behaviors (n = 61)



95.1% of all patients showed secondary behaviors

## Results – Chosen type of treatment

Type of treatment (n = 61)



Huge variety of different types of treatment

Average: use of 3.21 types of treatment (sd = 1.07)

Specific stuttering therapy as the most used type of treatment

## Results – Specific stuttering therapy

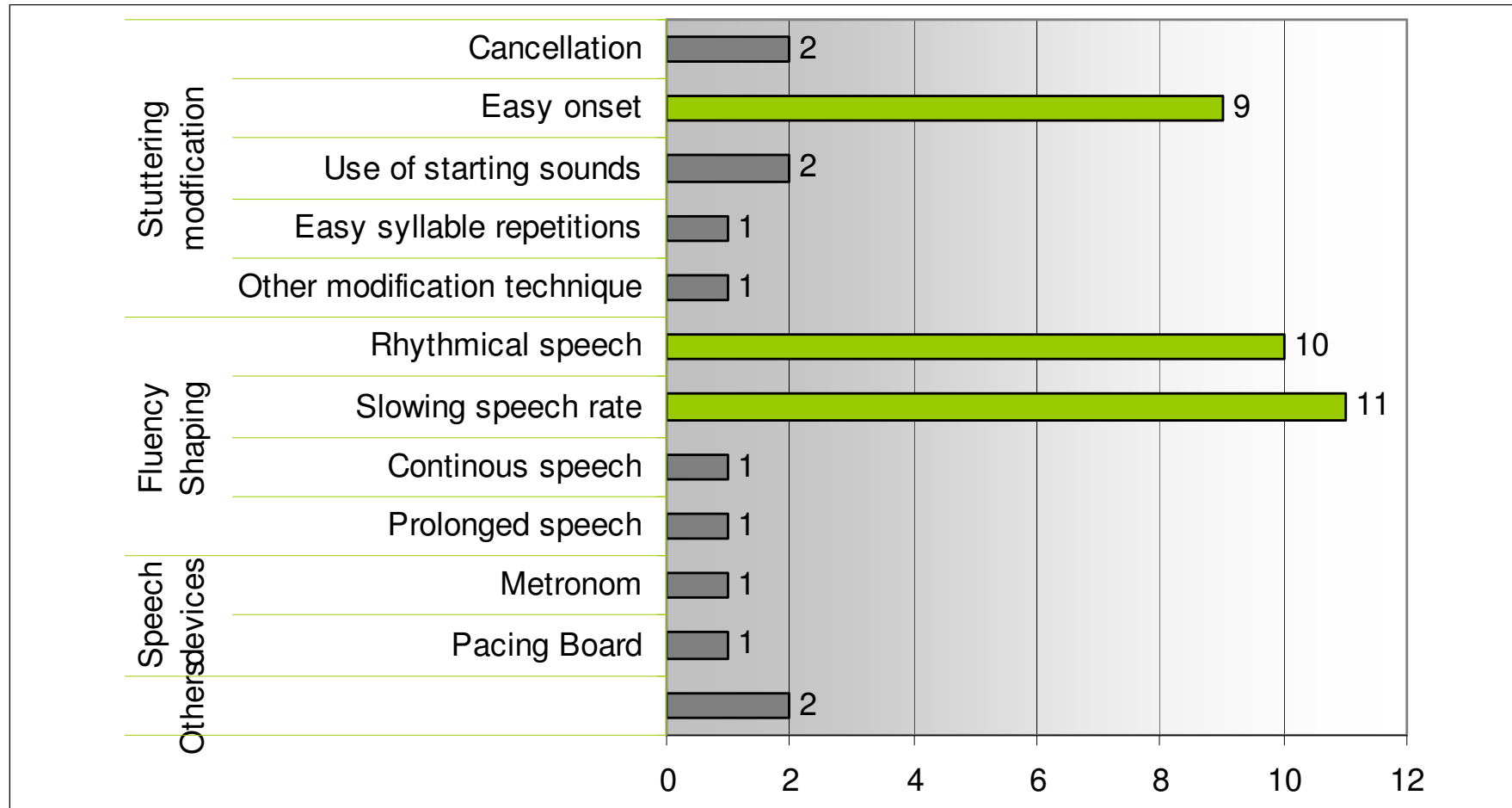
Type of stuttering treatment (n = 54)

Stuttering modification	n	Fluency Shaping	n	Speech devices	n
Easy onset	30	Slowing speech rate	37	Metronome	11
Easy syllable repetitions	21	Rhythmical speech	37	Chorus speaking	9
Easy articulatory contacts	15	Continuous phonation	5	Shadowing	7
Cancellation	14	Prolonged speech	5	Pacing Board	5
Use of starting sounds	9			Biofeedback	1
Pull-out	8	Other fluency shaping techniques	3	Delayed auditory feedback	1
Other modification techniques	2			Other speech devices	3



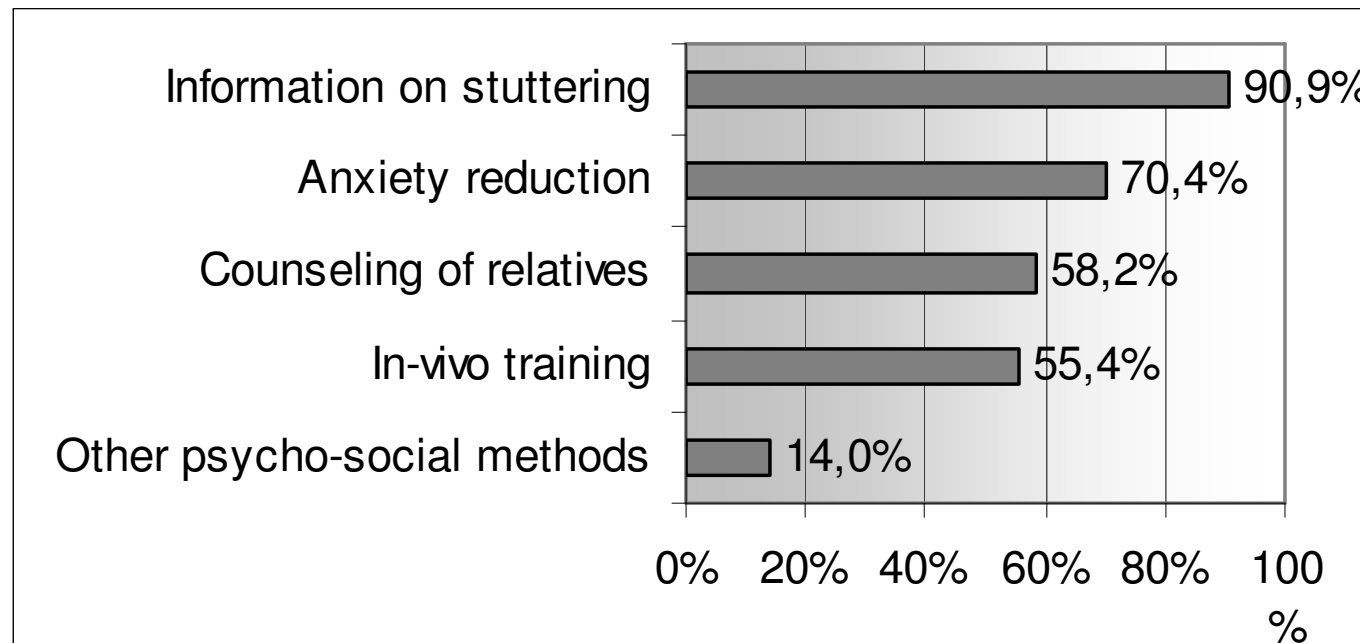
## Results – Core techniques

Focus of stuttering therapy (n = 42)



## Results – Psycho-social methods

Psycho-social methods (n = 56)



94,9% of all therapists used psycho-social methods

## Results – „Success“ of treatment

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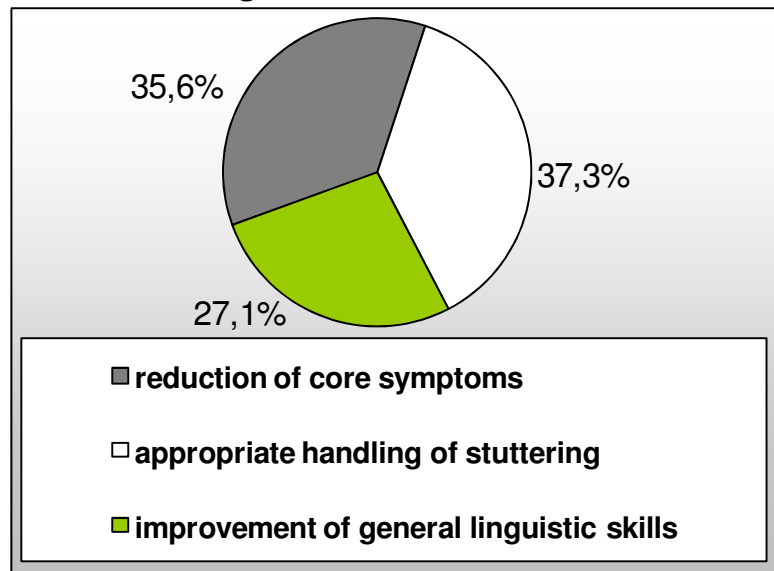
Achievment of therapy target

Improvement of speech (improvement of body functioning)

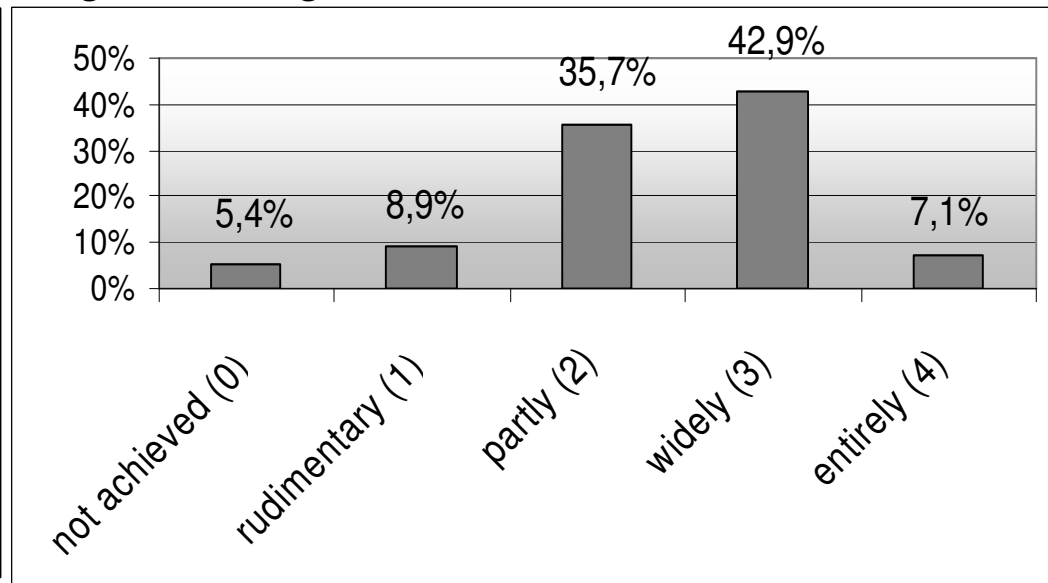
Improvement of psycho-social factors (activity and participation, positive affect on context factors)

## Results – Achievement of therapy target

Overall target of treatment



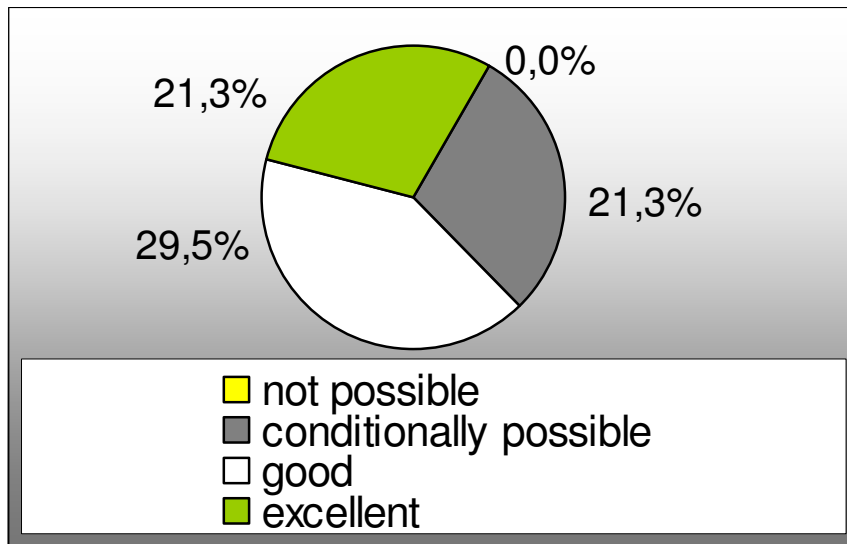
Degree of target achievement



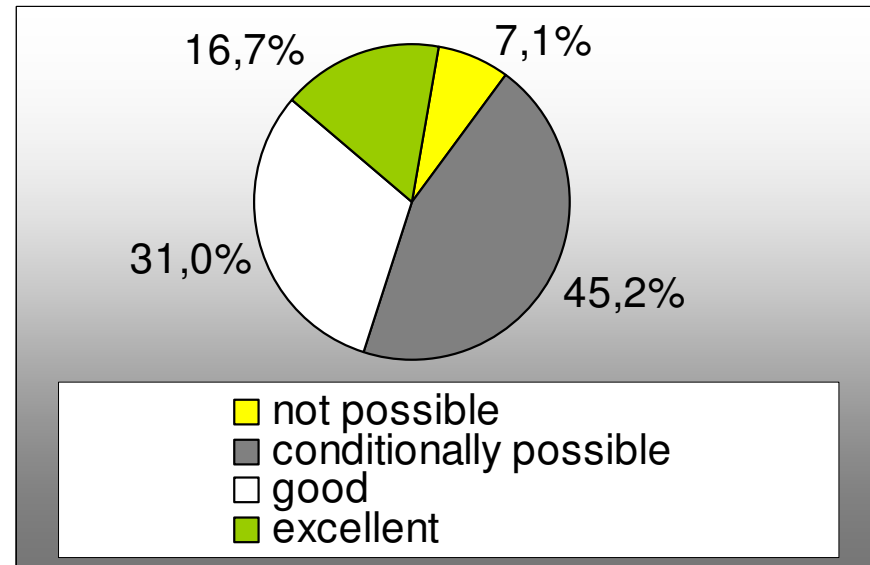
No significant difference between the 3 superordinate targets of treatment with regard to the degree of target achievement ( $\chi^2 = 1,429$ ;  $p = 0,489$ ).

## Results – Improvement of speech

Acquisition of the chosen speech technique (n = 44)



Use of the chosen technique in spontaneous speech (n = 42)



### Comparison of speech techniques:

Easy onset, rhythmical speech, slow speech rate

No significant difference between the 3 techniques with regard to acquisition ( $\chi^2 = 0,421$ ;  $p = 0,814$ )

and use in spontaneous speech ( $\chi^2 = 1,668$ ;  $p = 0,434$ )

## Results – Improvement of speech

Correlation matrix – Acquisition and use in spontaneous speech

		Acquisition	Use in spontaneous speech
Acquisition	r	1,000	,635**
	Sig. (2-sided)		,000
	n	44	42
State of health	r	-,308*	-,143
	Sig. (2-sided)	,045	,372
	n	43	41
Motivation	r	,542 **	,519 **
	Sig. (2-sided)	,000	,000
	n	44	42

The speech technique was acquired best, in cases of

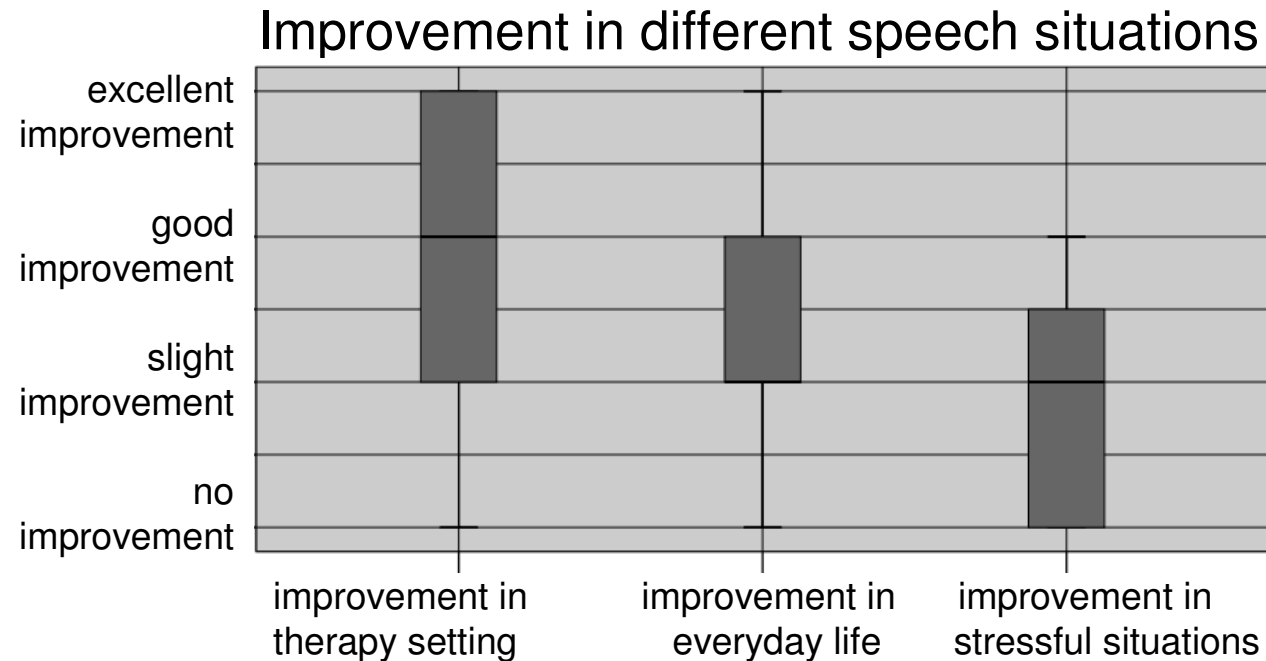
- good state of health
- high therapy motivation (of the patient)

The use in spontaneous speech was best, in cases of

- an excellent acquired technique
- high therapy motivation (of the patient)

\* sig. 0,05 level    \*\*sig. 0,01 level

## Results – Improvement of speech



No significant differences between speech techniques

### Comparison of speech techniques:

Easy onset, rhythmical speech, slow speech rate

- Improvement in therapy setting:  $\chi^2 = 0,391$ ;  $p = 0,572$
- Improvement in everyday life:  $\chi^2 = 1,395$ ;  $p = 0,238$
- Improvement in stressful situations:  $\chi^2 = 0,043$ ;  $p = 0,836$

## Results – Improvement of speech

		therapy setting	everyday life	stressfull situations
acquisition	r	0,632**	0,515**	0,425*
	Sig. (2-sided)	<0,001	0,003	0,015
	n	32	32	32
use in spontaneous speech	r	0,461**	0,545	0,487**
	Sig. (2-sided)	0,009	0,002	0,005
	n	31	31	31
motivation	r	0,347*	0,576**	0,513**
	Sig. (2-sided)	0,019	<0,001	<0,001
	n	45	45	44

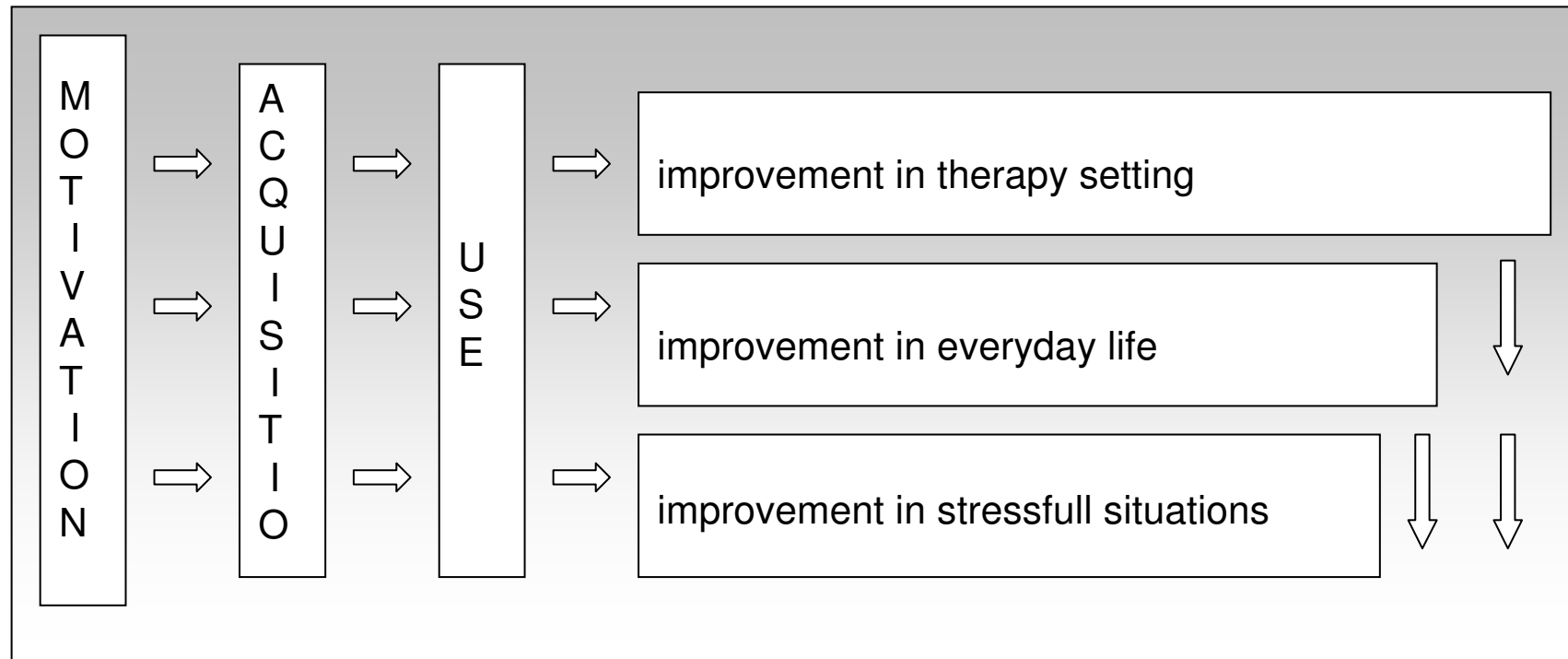
Improvement of speech in different speech situations is correlated with

- the factor „acquisition“
- the factor „use in spontaneous speech“
- the factor „therapy motivation“



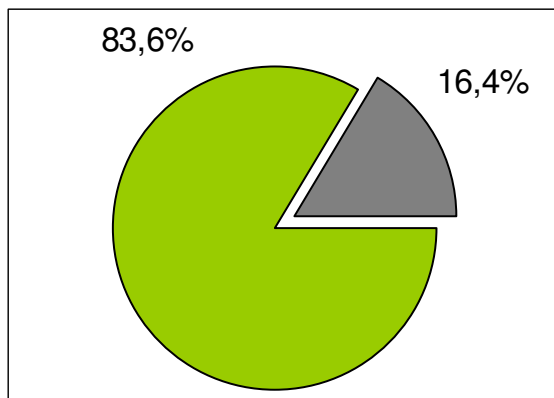
## Results – Improvement of speech

### Transferring practiced skills

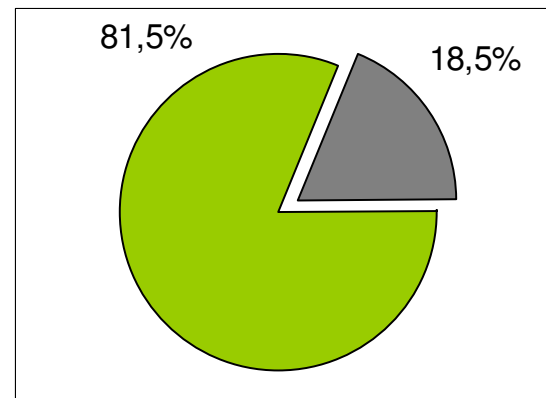


## Results – Improvement of psycho-social factors

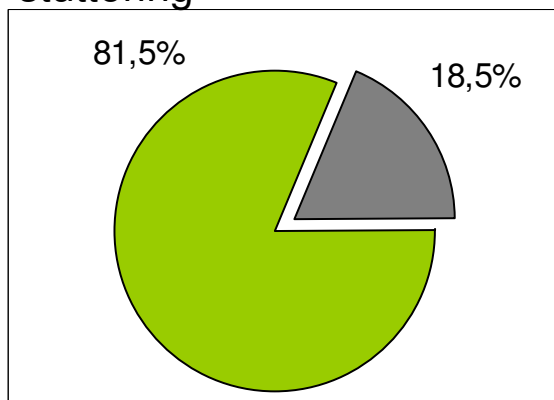
Reduction of psychological strain



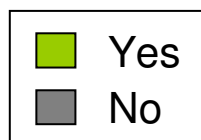
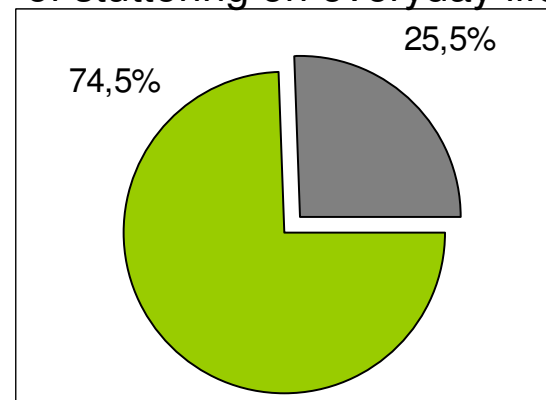
More participation in communication situations



Self-confident handling of stuttering

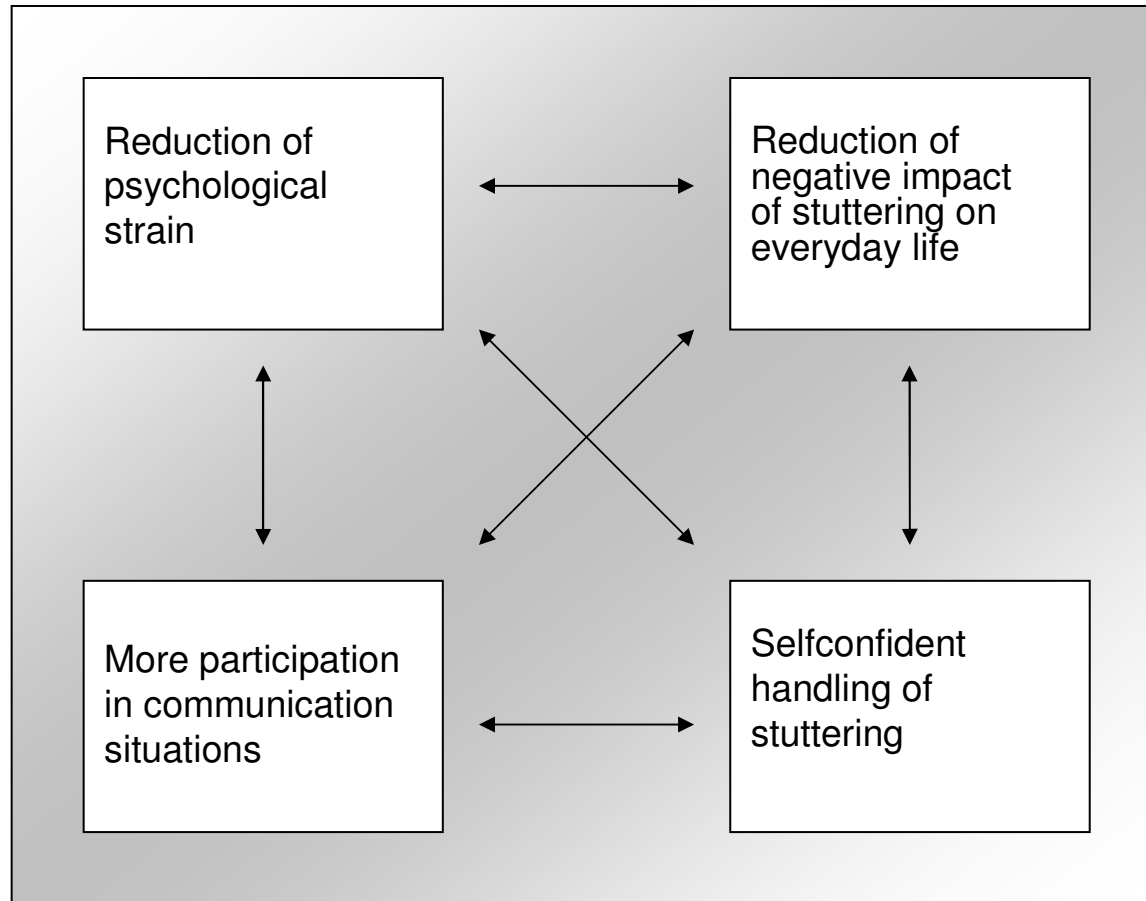


Reduction of negative impact of stuttering on everyday life



## Results – Improvement of psycho-social factors

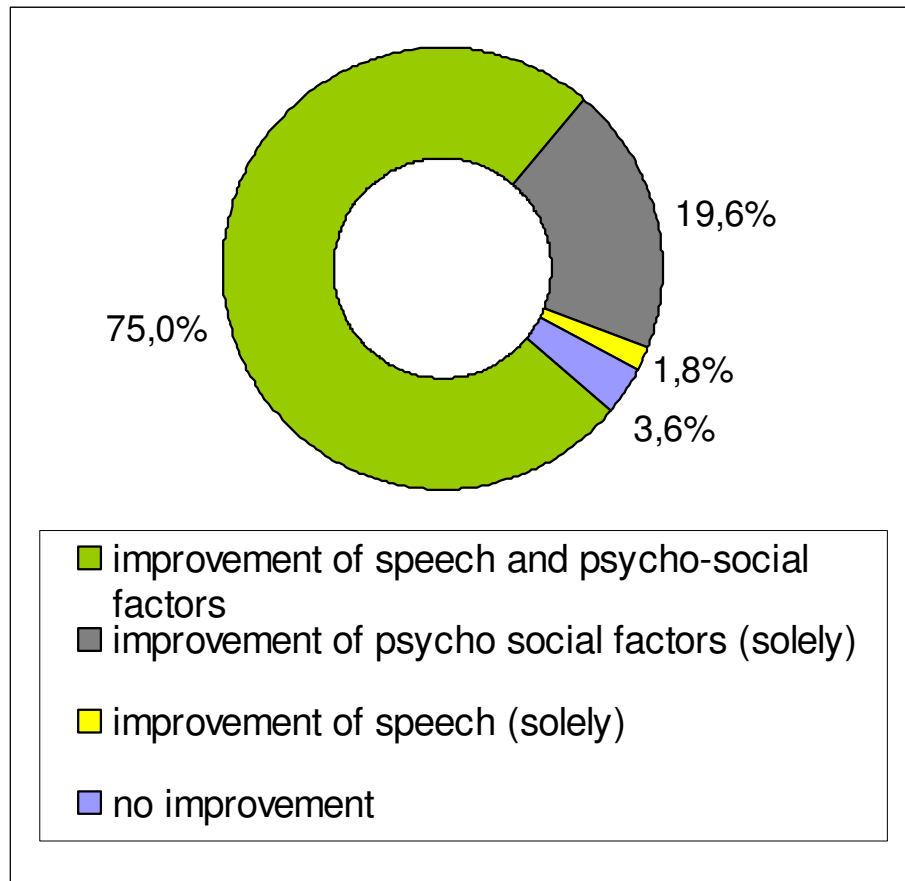
Reciprocal conditionality of psycho social improvement



significant correlation between different aspects of psycho-social improvement.

## Results – treatment outcome

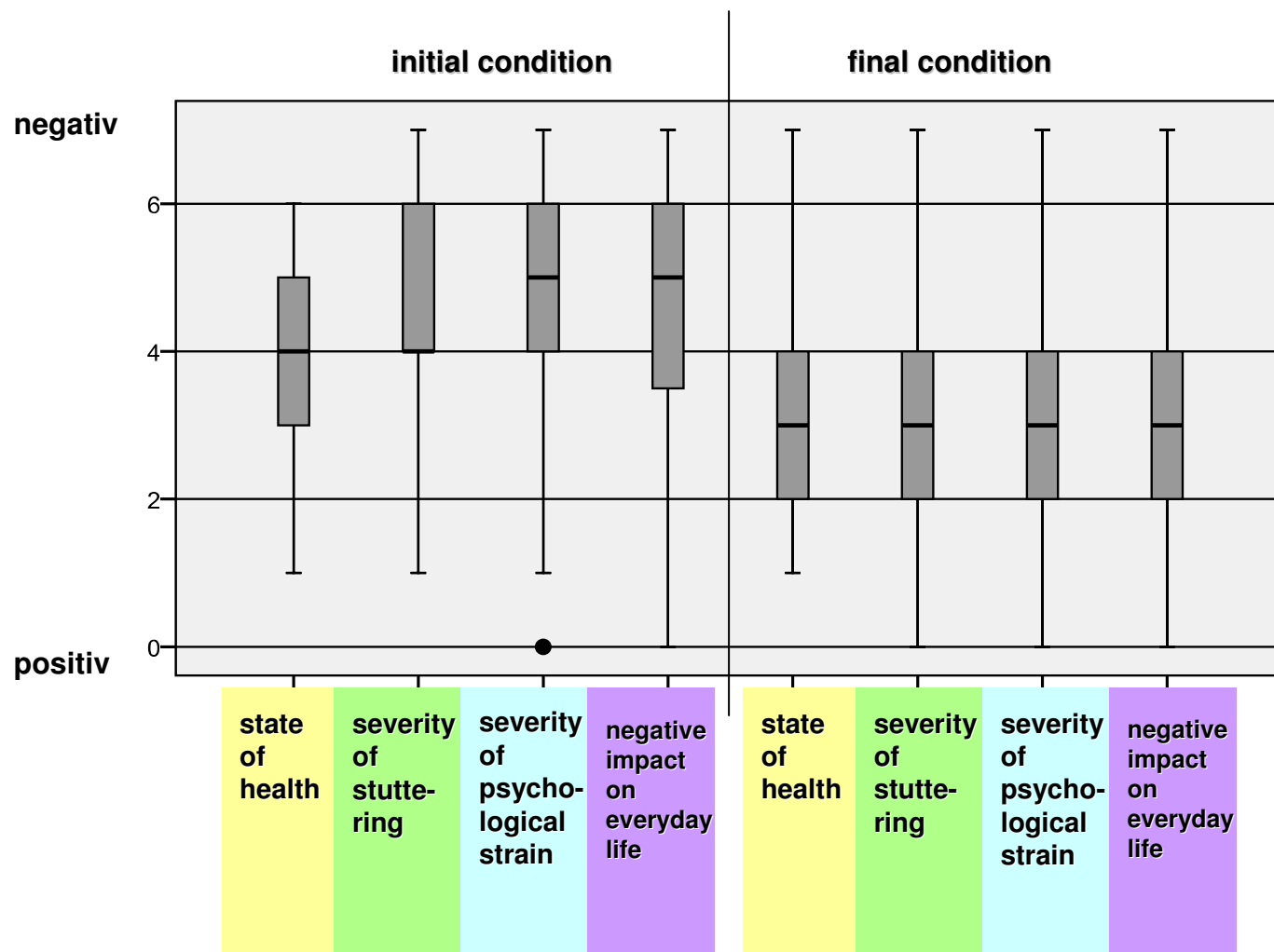
Improvement of speech and psycho-social factors (n = 56)



inhibiting factors:

- bad state of health
- lack of motivation
- irregular attendance of therapy sessions

## Results – treatment outcome



significant improvement over the period of treatment:

- psycho-social improvement
- speech improvement
- better state of health

( $p < 0,001$ )

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## Conclusion

▪ Similar methods as in developmental stuttering therapy can be used

▪ Specific stuttering therapy is often supplemented by other approaches

▪ A combination of multiple speech techniques is most often used

Easy onset

Rhythmical speech

Slowing speech rate

most  
frequently  
used  
techniques

## Conclusion

- Demand: treatment has to be based on the patients` indiviudal needs

**Practicing**

Learning and using an exact speech technique

**Transfer**

Supporting transfer into various speech situations

**Motivation**

Strengthening the patient`s motivation

- Improvement of speech and psycho-social factors in the majority of cases



## Prospect

### Research desideratum

„Patients with acquired stuttering – just as those with developmental stuttering – deserve to receive the best evidence-based fluency intervention“  
(De Nil, Jokel, Rochon, 2007, 327).

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Thank you very much for your attention!

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## Discussion

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