"Lexicon Pirate" – Efficacy of the Lexical Strategy Therapy in a successive bilingual preschool child with Primary Language Impairment

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Introduction

Theoretical and Scientific Background

Similar to monolingual children with Primary Language Impairment (PLI), many bilingual children with PLI present with semantic disorders: more specifically, they often present with difficulties in word processing, memorization during fast mapping, word retrieval and word association skills. Since most speech and language therapists in Germany can only offer monolingual services in the child's L2, there is a need for effective and efficient approaches in German for successful use with bilingual children. Although researchers agree on the importance of lexical performance, there is only little research on the effectiveness of specific therapy approaches concerning bilingual preschool children with lexical disorders.

The "Lexicon Pirate" therapy program is a strategy-oriented intervention which teaches the child prevalent strategies for vocabulary acquisition, which are non-specific to the child's L1 or L2. Thus, a greater benefit of this approach is expected for bilingual children in both of their languages.

Based on current findings, the following study examines potential cross-lingual transfer with the "Lexicon Pirate" strategy therapy program in a successive bilingual Russian-German speaking preschool child with PLI.

Research Questions

(1) Does the "Lexicon Pirate" strategy therapy, when conducted in a monolingual German work mode, help to improve the lexical skills of a successive bilingual Russian-German speaking preschool child with PLI in his L2 German?

Sub-questions:
- Does the successive bilingual preschool child improve regarding naming performance and word retrieval latency on trained vocabulary immediately after the intervention period?
- Do any generalization effects that have been achieved through the intervention demonstrate greater increases of scores in naming performance and word retrieval latency on untrained vocabulary immediately after the intervention period?

(2) Does the "Lexicon Pirate" strategy therapy, when being conducted in a monolingual German work mode, help in achieving a cross-lingual transfer of the semantic strategies to the non-treated first language (L1) Russian?
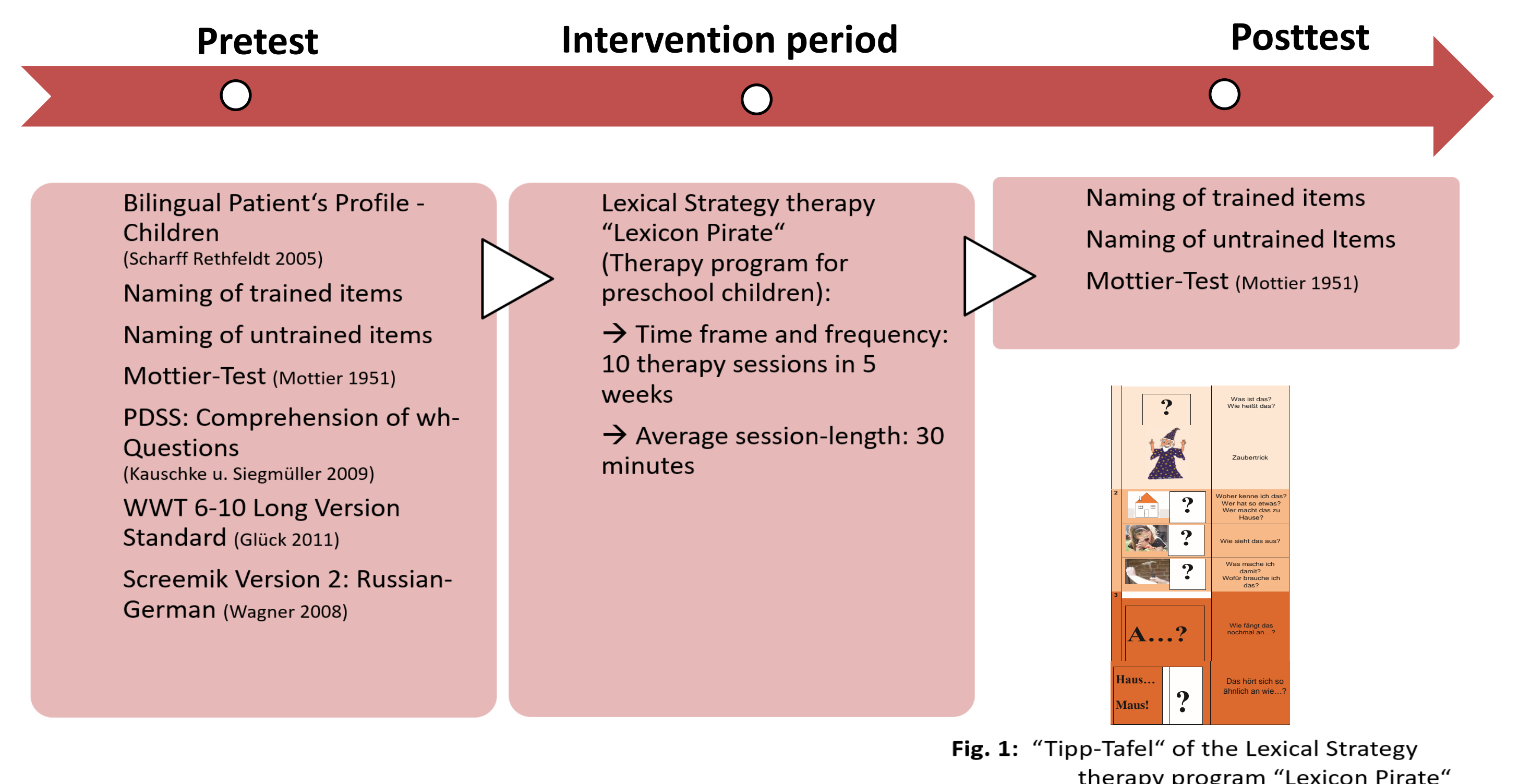
Methodology

Research Design
- Controlled single-case study (1 therapy session/week) using a pre-post-test design
- Specific control -task: plural of real- and pseudo-words (linguistically controlled according to gender, animacy, developmental age)

Participant
- 6;9 year old boy with little significant social subsystems (e.g. friends, sports club)
- Successive language acquisition: L1 Russian since birth, L2 German since entry to kindergarten (aged 3;7 years)

Data Collection
- Hypothesis-driven and process-oriented approach for bilingual children, adapted from Scharff Rethfeldt (2013)
- Structured questionnaire: for four weeks, the parents observed and documented the semantic strategies the child used at home when speaking Russian (L1)
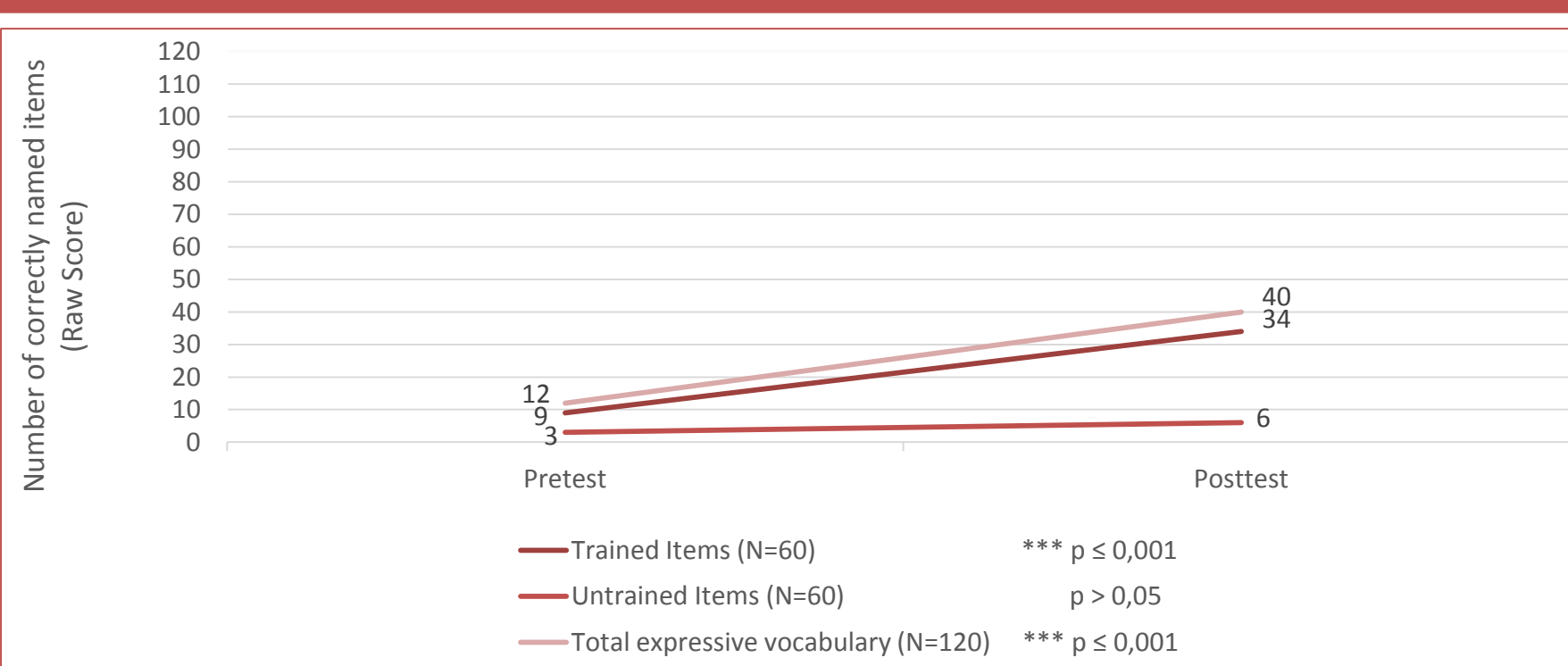
Pretest — **Intervention period** — **Posttest**

Bilingual Patient's Profile - Children (Scharff Rethfeldt 2005)
Naming of trained items
Naming of untrained items
Mottier-Test (Mottier 1951)
PDSS: Comprehension of wh-Questions (Kauschke u. Siegmüller 2009)
WWT 6-10 Long Version Standard (Glück 2011)
Screemik Version 2: Russian-German (Wagner 2008)

Lexical Strategy therapy "Lexicon Pirate" (Therapy program for preschool children):
→ Time frame and frequency: 10 therapy sessions in 5 weeks
→ Average session-length: 30 minutes

Naming of trained items
Naming of untrained Items
Mottier-Test (Mottier 1951)

Fig. 1: "Tipp-Tafel" of the Lexical Strategy therapy program "Lexicon Pirate"

Results

Figure 2: Performance development in the naming of trained and untrained vocabulary: pre-post-test comparison (McNemar-Test, two-sided)

Trained Items (N=60)   *** p ≤ 0,001
Untrained Items (N=60)   p >0,05
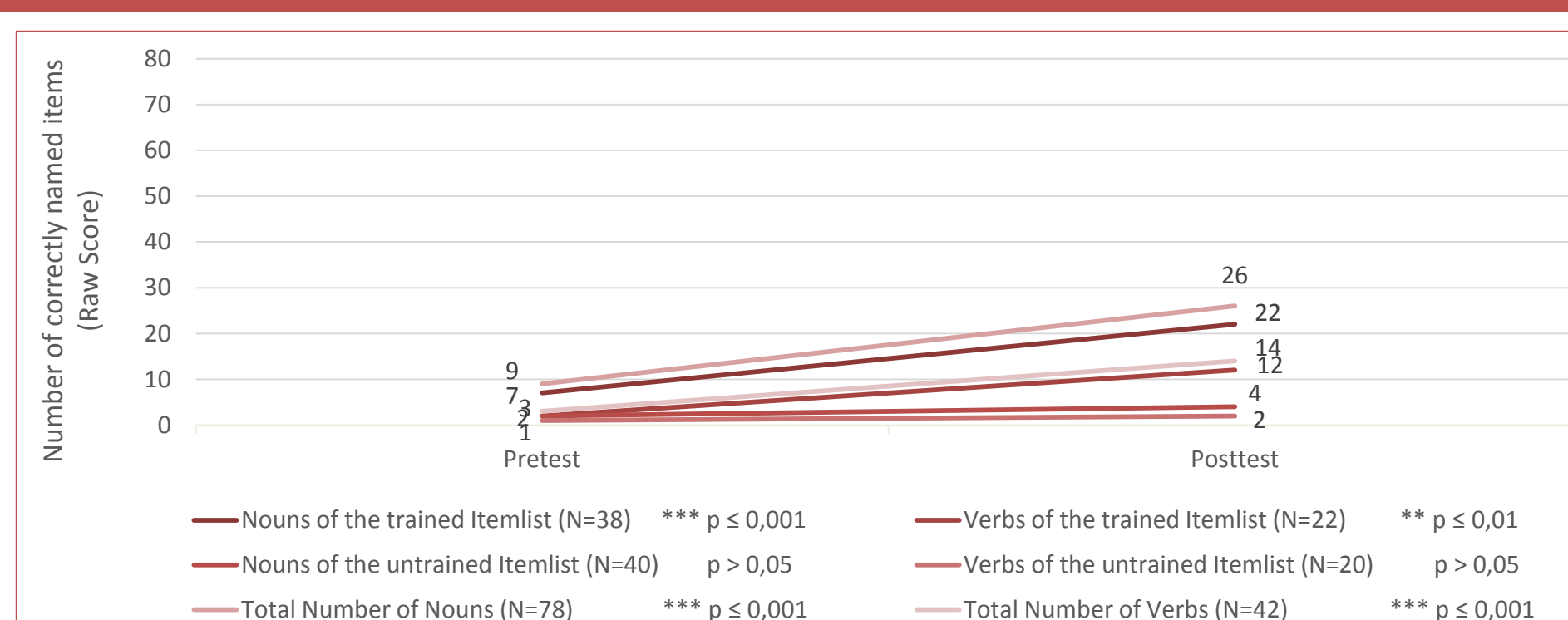Total expressive vocabulary (N=120)   *** p ≤ 0,001

Figure 3: Performance development in the naming of the main word classes 'nouns' and 'verbs': pre-post-test comparison (McNemar-Test, two-sided)

Nouns of the trained Itemlist (N=38)   *** p ≤ 0,001   Verbs of the trained Itemlist (N=22)   ** p ≤ 0,01
Nouns of the untrained Itemlist (N=40)   p >0,05   Verbs of the untrained Itemlist (N=20)   p >0,05
Total Number of Nouns (N=78)   *** p ≤ 0,001   Total Number of Verbs (N=42)   *** p ≤ 0,001
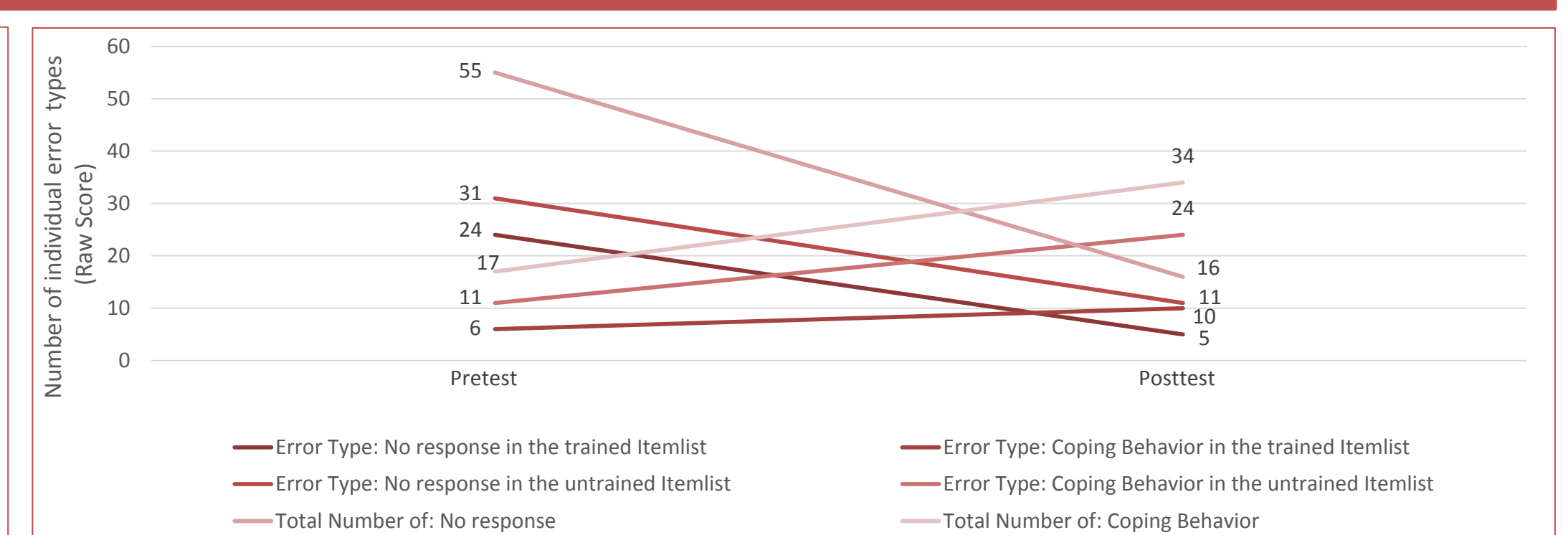

Figure 4: Qualitative classification of error types, adapted from Glück (2002): analysis of the responses for incorrectly named items in pre-post-test comparison

Error Type: No response in the trained Itemlist   Error Type: Coping Behavior in the trained Itemlist
Error Type: No response in the untrained Itemlist   Error Type: Coping Behavior in the untrained Itemlist
Total Number of: No response   Total Number of: Coping Behavior

Level of significance of the differences (pre-post-test)
- Highly significant increase of performance in correct naming of trained vocabulary (Fig. 2: McNemar-Test *** p ≤ 0,001)
- Highly significant increase of performance in the main word classes 'nouns' (McNemar-Test: *** p ≤ 0,001) and 'verbs' (Fig. 3: McNemar-Test ** p ≤ 0,01)
- The frequent use of the semantic strategies led to qualitative changes in the child's communicative behaviour (Fig. 4)

Cross-lingual transfer: results from the structured questionnaire
- Parents observed and documented the semantic strategies used by the child in Russian (L1) at 15 self-selected time points
- Week 1-3 of the intervention: parents needed to remind the child to use the newly established strategies in his L1
- Parents used non-verbal (referring to the "Tipp-Tafel", Fig. 1) and verbal assistance (e.g. „What can you do when you don't remember a word?")
- Week 1-3 of the intervention: the child produced a high percentage of emotional accessory symptoms when facing retrieval difficulties and naming errors
- Beginning of week 4: strong reduction of the previously observed emotional accessory symptoms – simultaneously to decreasing parental support

Discussion and Conclusions

The successive bilingual preschool child improved to a highly significant extent regarding naming performance on trained vocabulary and achieved a highly significant increased score for the main word classes 'nouns' and 'verbs' (trained items) immediately after the five-week intervention. The gains in naming performance on untrained vocabulary and word-class-effects did not reach statistical significance (McNemar-Test: p > 0,05). The lack of generalization effects on untrained vocabulary could be due to the short intervention period. The results indicate a positive trend towards cross-lingual transfer of the semantic strategies to the child's L1 Russian. For future studies it is recommended to develop self-evaluation forms or screening instruments, so that the use of the semantic strategies can be documented systematically for all the languages spoken by the child.

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