



FACTORS AFFECTING BILINGUAL PRIMARY SCHOOL CHILDREN'S PROBLEM SOLVING PROCESS IN MATHEMATICAL WORD PROBLEMS

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THEORETICAL BACKGROUND AND RESEARCH QUESTIONS

Word problems

- Important part in the primary school mathematics (Verschaffel, Corte & Lasure, 1994)
- Effective on pupils' problem solving competence (Rasch, 2001) representations are important for the problem solving process in mathematics and an adequate representation promote to find the solution (Schnotz & Bannert, 2003)
- Research outcomes show conflicting views about the learning of mathematics in second language at all levels of education (Barwell, 2003).

Research Questions

- 1) Does the language make a difference for the solutions? (representations & answers)
- 2) Do gender, grade & skill level moderate these effects?

METHOD

Sample	Measures	Analysis
<ul style="list-style-type: none"> • 5 primary schools in Landau & Mannheim • 202 students from 2nd, 3rd and 4th grade • 107 German-Turkish bilinguals • 95 German monolinguals 	<ul style="list-style-type: none"> • <i>Quantitative</i>: BVAT, ELFE, HRT, CPM, Attitude (TOMRA), Motivation • SES (e.g. number of books at home) • <i>Qualitative</i>: Interview, Video records • <i>Dependent variable</i>: word problems (Rasch, 2001) 	<ul style="list-style-type: none"> • Descriptive • Rating scale for video (score 0-2) • Multilevel Analysis of variance • Multiple Regression Analyses

RESULTS

- Instruction language was performed better on word problems when presented in German than in Turkish
- Frequency of language use % 57 German for (DE- TR) bilinguals
- Number of books at home max 11-25 books (% 39,2) for DE-TR bilingual students, more than 200 books (% 32.6) for German monolinguals
- ELFE bilingual M= 43.9 SD=10,9 / monolingual M= 47,7 SD=11,9
- HRT bilingual M= 46 SD=10,2 / monolingual M=53 SD=41,1

DISCUSSION

- Are word problems too early for the Grade 2 bilingual students?
- Language switching (DE-TR / TR-DE) is much more successful among the Grade 4 students
- Proficiency at least in one language is important for students' understanding and success
- Importance of family literacy level in child language development and success at school
- Social, cultural and daily experience aspect in word problems & representation (e.g. Different symbol for division in TR and DE /How can I help the snail? / We are shopping for ice-cream only in a box not in a cornet)

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