NEPS WORKING PAPERS

Inge Blatt and Anna Prosch

THE ASSESSMENT OF ORTHOGRAPHIC COMPETENCE

LIfBi

**LEIBNIZ INSTITUTE FOR
EDUCATIONAL TRAJECTORIES**

Working Papers of the German National Educational Panel Study (NEPS)
at the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg

The NEPS Working Papers publish articles, expertises, and findings related to the German National Educational Panel Study (NEPS).
The NEPS Working Papers are edited by a board of researchers representing the wide range of disciplines covered by NEPS. The series started in 2011.

Papers appear in this series as work in progress and may also appear elsewhere. They often represent preliminary studies and are circulated to encourage discussion. Citation of such a paper should account for its provisional character.

Any opinions expressed in this series are those of the author(s) and not those of the NEPS Consortium.

The NEPS Working Papers are available at
https://www.neps-data.de/projektübersicht/publikationen/nepsworkingpapers

Contact: German National Educational Panel Study (NEPS) – Leibniz Institute for Educational Trajectories – Wilhelmsplatz 3 – 96047 Bamberg – Germany – contact@lifbi.de

The Assessment of Orthographic Competence

Inge Blatt and Anna Prosch
University of Hamburg

E-mail address of lead author:

Inge.Blatt@uni-hamburg.de

The Assessment of Orthographic Competence

Abstract

The measurement of competencies from a lifelong-learning perspective is an important aim of the National Educational Panel Study (NEPS). In NEPS, orthographic competence is measured as a stage-specific supplement in secondary school from Grades 5 through 9 because it forms an essential aspect of educational success. Orthographic competence influences a student's career decisively (Schneider, 2008), and good spelling achievement is an important prerequisite for the labor market. This paper summarizes the test and its theoretical framework.

Keywords

spelling competency, orthography, graphematic

1. Characteristics of the Framework for the Assessment of Orthographic Competence

The test is based on graphematic research by Eisenberg (1995). The linguistic field of graphematics is concerned with the written language and its structure. Written language is considered to be interdependent from spoken language. According to the German written language a distinction can be drawn between a regular core area of orthography and peripheral spelling. The core area determines the spelling of about 90% of the native vocabulary. The main characteristics of the core area are the prototypical two-syllable word and the morphological stability.

The framework of the test is based on these linguistic results. For all grades it distinguishes between five subskills of orthography (phonographic syllabic subskill, morphological subskill, peripheral subskill, word formation subskill, and syntactic subskill). Each subskill has different learning requirements which must be mastered by the student.

Table 1

Framework of the Test (Blatt et al., 2011, p. 237)

Principles of orthography	Subskills
Phonographic syllabic principle in the core area	Understanding the corresponding syllabic structure of written and spoken words
Morphological principle in the core area	Understanding the structure of words in inflected and derived forms (morphological stability); Understanding inflectional morphemes
Peripheral area	Identifying exceptions in spelling; knowing the correct spelling of foreign words
Word formation principle	Knowing parts of speech and derivational morphemes (i.e., for compounding)
Syntactic principle	Knowing about the capitalization of nouns and using syntactic structures for capitalization and punctuation

The first subskill is related to the phonographic syllabic principle. The words belonging to this category are two-syllable words—the prototype of German words. In order to spell word units of this category correctly, one has to understand the corresponding syllabic structure of written and spoken words. The second category is based on the morphological principle that requires the learner to understand the structure of words in inflected forms. The term morphological stability expresses the fact that lexemes always stay the same throughout all forms of inflection. In contrast, the peripheral area contains irregular spellings. This includes the marking of open syllables (i.e., fahren – silent h), which is redundant for correct pronunciation but still occurs in German orthography. Furthermore, one has to be able to identify exceptional spellings and the correct spelling of words that are not of German origin. The word formation principle includes the building of compounds, which is quite common in German word formation processes, as well as derivational processes. In order to spell word

units in this category correctly, one has to know and use parts of speech and derivational morphemes (i.e., for compounding or affixes). Finally, the syntactic principle focuses on the sentence level and determines the capitalization of words and the punctuation.

In order to measure these five skills, structural units of words are assigned to the subskills. Table 2 shows the segmentation of the noun *Eisenbahnausstellung* (railway exhibition).

Table 2

Segmentation of the Word Eisenbahnausstellung

Phonographic syllabic subskill	Morphological subskill	Peripheral subskill	Word formation subskill	Syntactic subskill
#eisen	#stell	#bahn	#aus #ung #eisenbahnausstellung (compounding)	#E

The structural unit #eisen is a prototypical two-syllable word and therefore it has to be classified according to the phonographic syllabic subskill. The root #stell is a structural unit in the morphological subskill. A peripheral subskill is #bahn because of the irregular marking of the long vowel. Structural units in the word formation subskill are the prefix #aus, the suffix #ung and the compounding of the whole word. The majuscule #E is part of the syntactic subskill.

Each word is also assessed at whole-word level, regardless of the subskills. Hence, the test offers an insight into two levels of orthography, depending on what kind of objectives are pursued for using the data—either a differential score of spelling based on subskills or a generalized score based on the whole-word level.

Orthographic competence is measured every other year in the main studies (Grades 5, 7, and 9). In order to develop the test, we conduct preliminary studies every year.

In order to measure orthographic competence longitudinally, we use an anchor-item design (see Table 3). This design allows us to link the grades longitudinally and to add new curricular content.

Table 3

Anchor-Item Design

	Number of structural unit	Anchor items				
		Grade 5	Grade 6	Grade 7	Grade 8	Grade 9
Grade 5	234	100% (234)				
Grade 6	300	40,3% (121)	59,7% (179)			
Grade 7	364	26,1% (95)	36,8% (134)	37,1% (135)		
Grade 8	334	22,2% (74)	25,4% (85)	29,3% (98)	23,1% (77)	
Grade 9	360	18,9% (68)	23,1% (83)	22,2% (80)	19,7% (71)	16,1% (58)

The test for Grade 5 consists of 234 structural units. We chose 121 items of those units as anchor items for Grade 6. They were combined with 179 new structural units. This procedure continues in the following grades.

The spelling test used in NEPS is based on the existing theoretical framework that had been developed in previous works by Inge Blatt and Andreas Voss (Voss et al., 2007; Jarsinski, 2010; Blatt et al., 2011; Frahm et al., 2011). In NEPS the spelling tests were further developed to comply with the needs of a longitudinal study. Like in most competence tests, scaling is also carried out by using models based on item response theory (IRT) in order to evaluate the quality of the test (Jarsinski, 2014).

1.1 Item Formats

The tests for all grades consist of a cloze test and a full sentence test. Table 4 gives an overview of the contents in the main studies.

Table 4

Contents of the Tests in the Main Studies

Main study	Cloze test words	Full sentences	Full sentence words
Grade 5	30	3	44
Grade 7	18	9	119
Grade 9	11	9	126

The test content was selected under various aspects. Primarily, words were chosen based on a curriculum-related selection process. For example, the peripheral area extends in higher grades as more foreign words are added as well as structural units addressing the syntactic subskill. Furthermore, it is important that there are enough structural units in each subskill in order to measure them adequately. Finally, sufficient anchor items must also be available for the longitudinal measurement. This process is based on prior analyses and a variable test development. The item fit and the item difficulty were proven by statistical analyses (see Blatt et al., 2014).

1.2 Assessment Conditions and General Remarks

In the main studies the spelling test takes 25 min. The test instructions and the test content were played back from a CD that had been prerecorded with a professional speaker. Due to this procedure there is no spilt design. The entire group takes the test simultaneously.

The test starts with an introduction. After this, the students complete an example sentence and have time to ask questions. Then the test starts. First, the entire sentence is read out by the speaker, and then the cloze words or respectively the sentences are repeated twice. The sentences are read out in segments. At the end, the whole test is repeated.

As test items are protected by copyright, we are unable to reproduce any examples of real test items in this paper.

References

Blatt, I., Voss, A., Kowalski, K., & Jarsinski, S. (2011). Messung von Rechtschreibleistung und empirische Kompetenzmodellierung. In U. Bredel (Eds.), *Weiterführender Orthographieunterricht* (pp. 226–56). Baltmannsweiler: Schneider Verlag Hohengehren.

Blatt, I., Frahm, S., Jarsinski, S., & Prosch, A. (2014). *Technical Report for Orthography: Scaling results of Starting Cohort 3 in Grades 5 and 7* (NEPS Working Paper No. 49). Bamberg: Leibniz Institute for Educational Trajectories, National Educational Panel Study.

Eisenberg, P. (1995). Der Buchstabe und die Schriftstruktur des Wortes. In Duden (Eds.), *Die Grammatik der deutschen Gegenwartssprache*. Mannheim: Dudenverlag, 56–84.

Frahm, S., Goy, M., Kowalski, K., Sixt, M., Strietholt, R., Blatt, I., … & Kanders, M. (2011). Transition and development from lower secondary to upper secondary school. In H.-P. Blossfeld, H.-G. Roßbach, & J. von Maurice (Eds.), *Zeitschrift für Erziehungswissenschaften, 14. Education as a lifelong process: The German National Educational Panel Study (NEPS)* (pp. 217–32). Wiesbaden: VS Verlag für Sozialwissenschaften.

Jarsinski, S. (2010). *Längsschnittanalyse der Rechtschreibentwicklung von Fünftklässlern mit Daten aus der Ergänzungsstudie Orthographie des Hamburger Leseförderprojekts 2007/08 (HeLp): Auswertung der Kontrollklassen* (Diplomarbeit). Technische Universität Dortmund, Dortmund.

Jarsinski, S. (2014). *Quantitative Datenanalyse zur längsschnittlichen Erfassung der Rechtschreibkompetenz in NEPS unter besonderer Berücksichtigung der Kompetenzstruktur und der Einflussfaktoren.* IFS. Technische Universität Dortmund, Dortmund.

Schneider, W. (2008). Entwicklung und Erfassung der Rechtschreibkompetenz im Jugend- und Erwachsenenalter. In W. Schneider, H. Marx & M. Hasselhorn (Eds.), *Diagnostik von Rechtschreibleistungen und –kompetenzen* [Diagnostics of achievement and competence in spelling] (pp. 145 – 157). Göttingen: Hogrefe.

Voss, A., Blatt, I., & Kowalski, K. (2007). Zur Erfassung orthographischer Kompetenz in IGLU 2006. In *Didaktik Deutsch, 23*, 15–33.