[NEPS
National Educational Panel Study

The Assessment of Reading Speed in Grade 5 and Grade 9
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Within the National Educational Panel Study (NEPS) different competencies are measured coherently across the life span. These include, among other domains, language competencies in the lingua franca of society (reading competence, listening comprehension), mathematical competence, and domain-general cognitive functioning. Weinert, Artelt, Prenzel, Senkbeil, Ehmke, & Carstensen (2011) give an overview of the competence domains measured in the NEPS. In additional to the assessment of reading competence, which refers to the comprehension of written texts (Gehrer, Zimmermann, Artelt, & Weinert, submitted; see Gehrer, Zimmermann, Artelt, & Weinert, 2012 for a summary), a test of reading speed is administered once in almost every NEPS starting cohort.

I. Assessment of Reading Speed in the NEPS

The indicator for reading speed primarily captures basic reading processes such as decoding and, thus, focuses on automatized reading processes. A low degree of automation in decoding processes will hinder the comprehension process, especially in novice readers (Rosebrock & Nix, 2006). Yet even in older age groups, interindividual differences in reading speed do exist. It is therefore not surprising that decoding skills still predict differences in reading comprehension in grade 9 (Artelt, Stanat, Schneider, & Schiefele, 2001).

The test which is used in NEPS is based on the test principles of the Salzburg reading screening (SLS; e.g., Auer, Gruber, Mayringer, & Wimmer, 2005). As is the case with SLS, the NEPS reading speed test consists of a number of short sentences that have to be rated as either true or false by the participants (e.g., "There is a bath tub in every garage"). Given that the test aims at the assessment of automatized reading processes, the sentences to be evaluated draw on common world knowledge only. At the end of the construction process (which, among other things, also includes expert ratings on the difficulty of the sentences), 51 sentences were selected for the final reading speed test (see Figure 1 for two example sentences [in German]). In the test booklet, the items were presented in order of sentence length, with sentences ranging from 5 to 18 words. The 51 items version of the test was used for age cohort 3 (fifth grade), age cohort 4 (ninth grade), cohort 5 (first-year students), and cohort 6 (adults), and it was administered as a speed test with a test time of exactly 2 min. The test primarily intends to capture individual differences in the lower performance range of each age group. As the time limit remains the same in each age group, the performance is cross-sectionally comparable but, in older age groups, ceiling effects may occur as data from grade 9 have shown.

Instruktion		
Auf den nächsten Seiten findest du eine Reihe von Sätzen. Der Inhalt der Sätze stimmt aber nicht immer. Deine Aufgabe ist es, bei jedem Satz durch Ankreuzen zu markieren, ob er wahr oder falsch ist. Die Sätze kommen dir vielleicht recht leicht, teilweise auch lustig vor. Es geht bei diesen Sätzen eher um Schnelligkeit und weniger um dein Wissen. Auf dieser Seite findest du zwei Beispielsätze, so dass du dich mit den Aufgaben vertraut machen kannst. Blättere erst weiter auf die nächste Seite, wenn du ein Zeichen vom Testleiter erhältst!		

	richtig	falsch
In einer Garage findet man immer eine Badewanne.	☐	☐
Die Person, die bei einem Fußballspiel auf die Einhaltung der Regeln achtet, nennt man Schiedsrichter.	☐	☐

Figure 1. Two examples of reading speed items (not included in the final instrument).

II. Reading Speed in Grade 5 Main Study

The description of the sample as well as information on the implementation can be found in Skopek, Pink, and Bela (2012a). A description of the design of the study and the competence measures deployed in the main survey can be found in the information provided on competence assessment in NEPS (NEPS, 2011a).

For 5208[2] individuals, a sum score has been calculated. The items are numbered in the order of administration (1-51). Missing values are coded as -55 (not determinable), -94 (not reached), -95 (not valid), and -97 (omitted). An example of the variable code is: rsci0001_c (= rs: reading speed, ci: cohort invariant; 0001: item 1; _c: scored). The sum of scores (rsci_sc3, = sc: scored; 3: sum score) is obtained by the number of sentences correctly judged during the 2-min processing limit. Table 1 displays descriptive statistics of the sum scores.

As intended, the amount of participants with falsely judged sentences can be neglected. On average the participants misjudged 0.64 sentences, indicating that the sentences were easy to be judged, which confirms the assumption that differences in individual test scores can primarily be attributed to differences in reading speed.

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[2] Note that these numbers may differ from those found in the SUF. This is due to still ongoing data protection and data cleaning issues. The number also varies because students attending special needs schools in the area of learning (N=587) who were enrolled in an experimental feasibility study separated from regular NEPS competence testing are also included in the SUF. These cases, however, have missing values (by design) for the competence scores.

Table 1.

Descriptive Statistics for the Sum Scores of Reading Speed in Starting Cohort 3 (Fifth Grade)

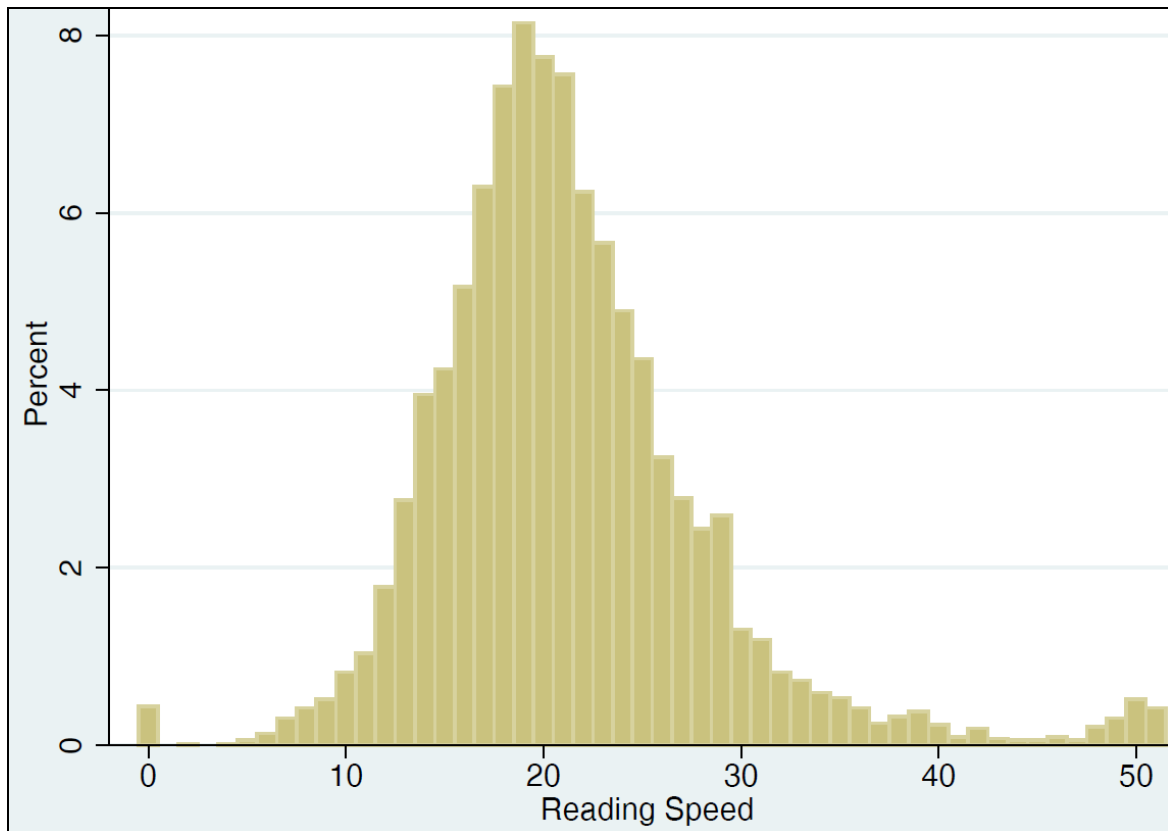|	**Sum score**
Mean	21.24
Median	20.00
Standard deviation	7.00
Minimum	0
Maximum	51

Figure 2. Distribution of reading speed performance in starting cohort 3 (fifth grade).

The distribution of reading speed shows that there is a small ceiling effect in grade 5 (see Figure 2), as 0.42% of the participants rated all sentences correctly. Note also that 0.44 % of the sample failed to evaluate any of the sentences correctly.

III. Reading Speed in Grade 9 Main Study

The description of the sample as well as information on the implementation can be found in Skopek, Pink, and Bela (2012b). A description of the design of the study and the competence measures deployed in the main survey can be found in the information provided on competence assessment in NEPS (NEPS, 2011b).

For 14524[3] individuals, a sum score has been calculated. The items are numbered in the order of their administration (1-51). Missing values are coded as -55 (not determinable), -94 (not reached), -95 (not valid), and -97 (omitted). An example of the variable code is: rsci0001_c (= rs: reading speed, ci: cohort invariant; 0001: item 1; _c: scored). The sum of scores (rsci_sc3, = sc: scored; 3: sum score) is obtained by the number of sentences correctly judged during the 2-min processing limit. Table 2 displays descriptive statistics of the sum scores.

As intended, the amount of participants with falsely judged sentences can be neglected. On average the participants misjudged 1.11 sentences, indicating that the sentences were easy to be judged, which confirms the assumption that differences in individual test scores can primarily be attributed to differences in reading speed.

Table 2.

Descriptive Statistics for the Sum Score of Reading Speed in Starting Cohort 4 (Ninth Grade)

	Sum score
Mean	34.06
Median	33.00
Standard deviation	8.68
Minimum	0
Maximum	51

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[3] Note that these numbers may differ from those found in the SUF. This is due to still ongoing data protection and data cleaning issues. The number also varies because students attending special needs schools in the area of learning (N=1186) who were enrolled in an experimental feasibility study separated from regular NEPS competence testing are also included in the SUF. These cases, however, have missing values (by design) for the competence scores.
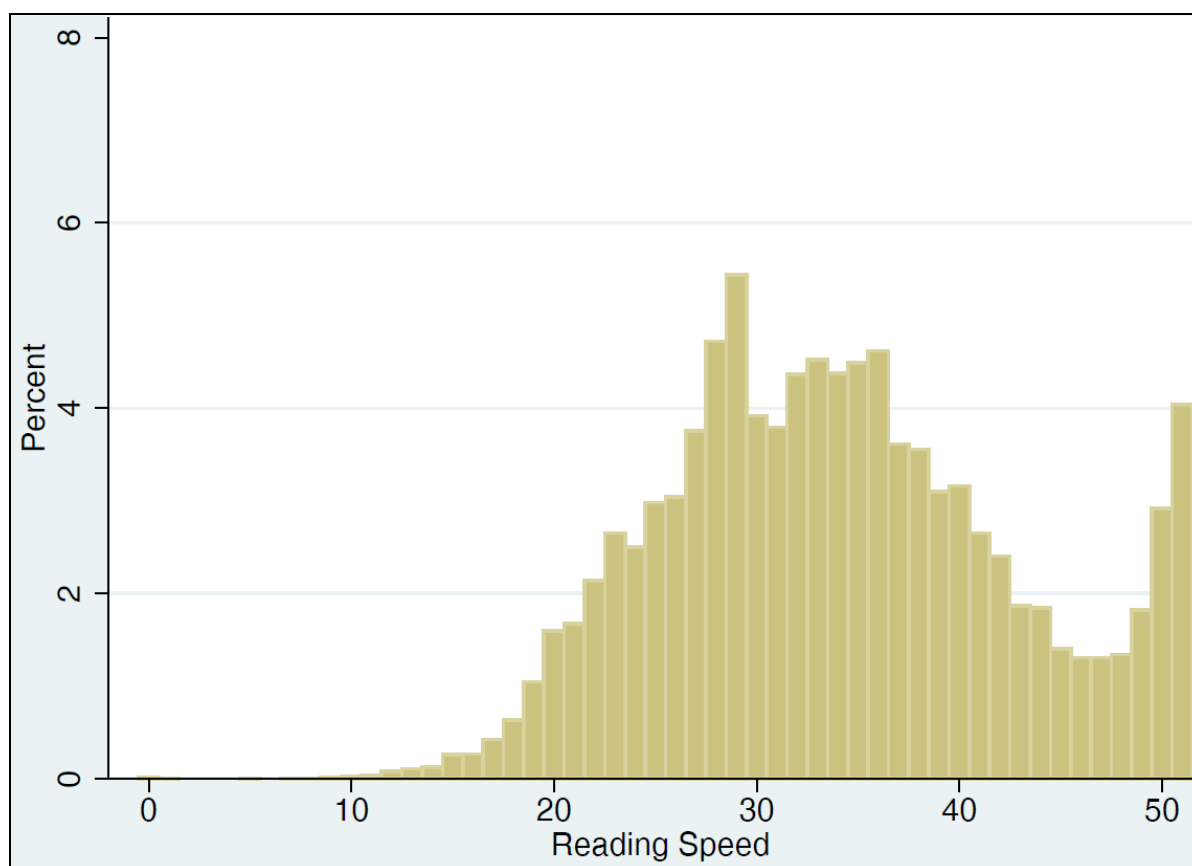
Figure 3. Distribution of reading speed performance in starting cohort 4 (ninth grade).

The distribution of reading speed shows that there is a ceiling effect for the top 4.03% in grade 9 (see Figure 3), suggesting that the time limit was too long for this particular age group. As mentioned above, in older participants the measure of reading speed does not differentiate well between students with high competence levels, and this is likely to become more pronounced in the adults and the university student sample.

IV. References

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