leo.

leo. – Level One Study

Literacy of adults
at the lower rungs
of the ladder.

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Universität Hamburg
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alphabund
Forschung zur Alphabetisierung & Grundbildung

GEFÖRDERT VOM
Bundesministerium für Bildung und Forschung

1 Level One subdivided into Alpha Levels

For some time Germany has required better research data on reading and writing skills at the lowest end of the skills spectrum, known as Level One which has been subdivided into Alpha Levels (1-6) since 2010. Initial results of the Level One Survey (*leo.*) are now available.

1.1 Scale of functional illiteracy

leo. 2010 - Figure 1 shows how levels of illiteracy are distributed in Germany. The coloured figures represent the leo. main study items.

Poor writing skills - despite the command of standard vocabulary - affect another 25 percent of the working-age population, particularly where spelling is concerned (Alpha Level 4, 18 - 64 years of age). This figure represents over 13 million people in Germany.

This is the case when at sentence and text level, even with commonly used words, people read and write slowly and/or with mistakes. There is no sufficient command of spelling, in the form taught until the end of primary school. People concerned often typically avoid reading and writing.

Functional illiteracy affects an accumulated 14 percent of working-age population (Alpha Level 1-3, 18 - 64 years of age). This figure translates to 7.5 million functionally illiterate people in Germany.

The term is used when people can read or write single sentences, but not continuous text - even if it is brief. Due to their limited written language skills, people affected cannot properly deal with everyday requirements of life in society. For example, even if they do simple jobs they cannot read written instructions.

Illiteracy in the strictest sense of the word affects more than four percent of the working-age population (Alpha Level 1-2, 18-64 years of age).

This is when people can read, understand and write single words - but not whole sentences. People affected also have to read standard words letter by letter.

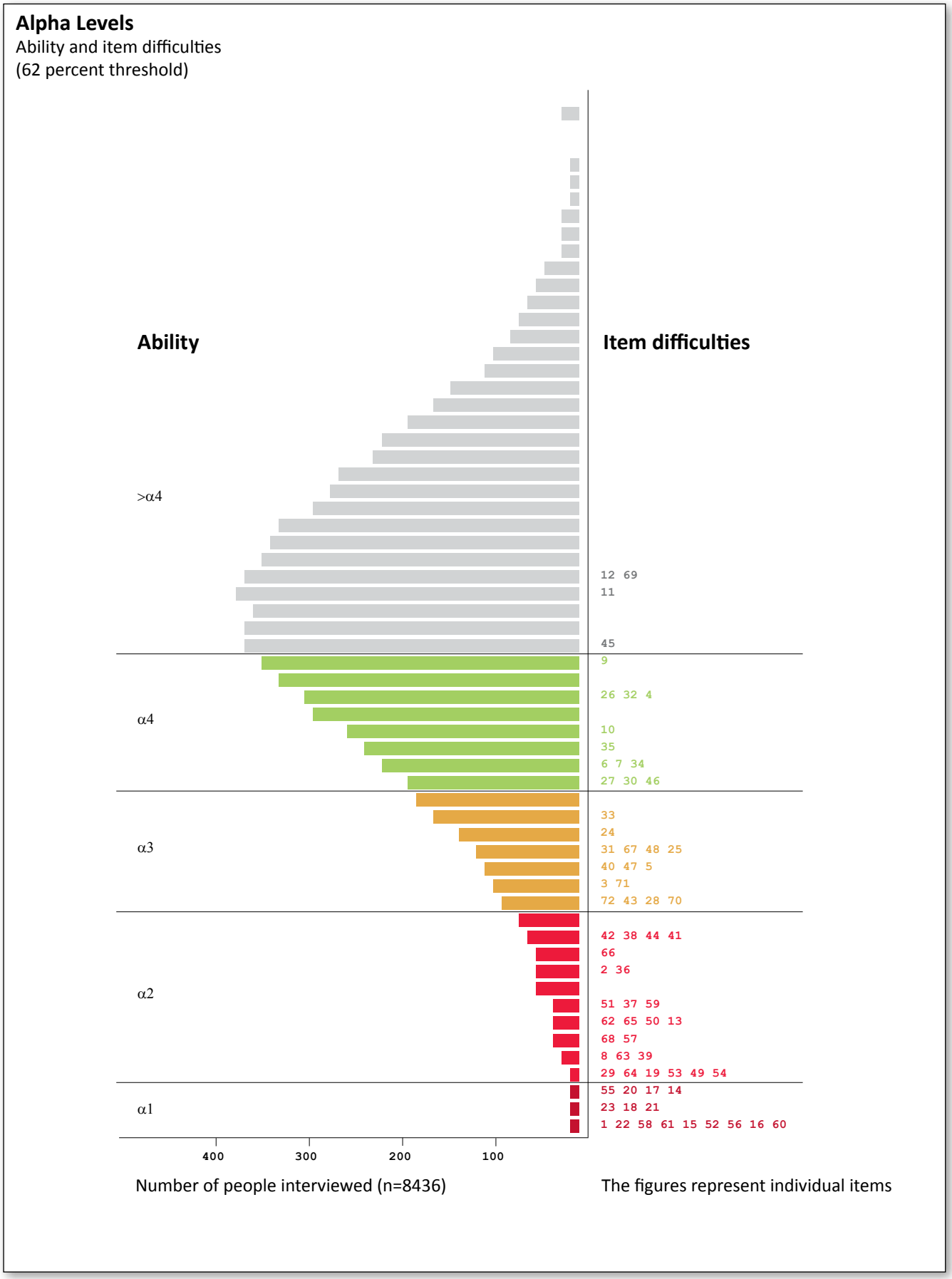

Figure 1: level of item difficulties and ability

Literacy	Alpha Level	Proportion of the adult population	Number (projected)
Functional illiteracy	α 1	0.6%	0.3 million
	α 2	3.9%	2.0 million
	α 3	10.0%	5.2 million
Sub-total		***14.5%***	***7.5 million***
Poor writing skills	α 4	25.9%	13.3 million
	> α 4	59.7%	30.8 million
Total*		***100.1%***	***51.6 million***

Table 1: functional illiteracy and poor writing skills in the German-speaking adult population (18-64 years of age)
**(Difference in the totals of 100 percent due to inaccuracies from rounding up and down)*

When looking at each of the Alpha Levels, it becomes clear that only half a percent of the adult population is on the lowest Alpha Level, i.e. does not reach the word level in reading and writing (see table 1). Another 3.9 percent is on Alpha Level 2, i.e. does not reach the sentence level, but can read and write single words.
A further 10 percent of the population is on the following level.

They can deal with brief sentences, but have problems with whole texts and avoid them at all costs. At 7.5 million, the number of functionally illiterate people in Germany is much higher than the estimated approx. 4 million. There are also a further 13.3 million adults whose written language skills, even when they are in command of standard vocabulary, are poor.

1.2 Level One studies in France and England

France (IVQ 2004-2005) - In France, the IVQ study identified 9 percent of the adult population as functionally illiterate.
Considering there are 40 million people of employment age, the number of functionally illiterate people in France totals 3.1 million.[1]
Only people who had visited school in France were surveyed (ANLCI - Agence Nationale de la Lutte contre l'Illetrisme (2005), p. 3).

England (Skills for Life 2003) - The English Skills for Life study makes a distinction between three entry levels. Together they form Level One and are distributed as follows:

Entry Level 1: 3%
Entry Level 2: 2%
Entry Level 3: 11%

Some 16 percent of the 8,730 people between 16 and 65 years surveyed fall into level one. When extrapolated to the whole population this translates to a figure of 5.2 million people affected (DfES 2003).

1 There is no French equivalent for the term functional illiteracy. In France a distinction is made between 'analphabetisme' - people who have never been literate and 'illetrisme' for people who have been to school in France but never achieved adequate reading and writing skills and a level of basic education to be independent in simple day-to-day situations (ANLCI - Agence Nationale de la Lutte contre l'Illetrisme (2005), p. 18).

1.3 Literacy according to gender: men have poorer skills

leo. 2010 - Table 2 shows the percentage of men and women who are functionally illiterate and people with poor writing skills.

60.3 percent of functionally illiterate people are men and 39.7 percent are women.

Proportion	Functional illiteracy				Poor writing skills		Proportion of random sample
Alpha Level	α 1	α 2	α 3	*Total* α 1 - α 3	α 4	> α 4	
Percentage of men	59.7%	64.1%	58.8%	60.3%	56.1%	45.8%	50.6%
Percentage of women	40.5%	35.8%	41.1%	39.7%	44.0%	54.2%	49.4%
Total	***100.2%***	***99.9%***	***99.9%***	***100.0%***	***100.1%***	***100.0%***	

Table 2: functional illiteracy according to gender and poor writing skills in the German-speaking adult population (18 - 64 years of age)

1.4 Literacy according to age: a culturally pessimistic hypothesis?

leo. 2010 - Some 13 percent of people who are functionally illiterate are in the 18 to 29-year-old age group, about 15 percent in the 30 to 39-year-old age group and 40 to 49-year-old age group and about 16 percent in the 50 to 64-year-old age group (see figure 2). Poor writing skills despite a command of familiar vocabulary are identified in just under 25.9 percent of the 18 to 29-year-olds with the 30 to 39-year-olds showing a similar figure. However, the figures for the 40 to 49-year-old age group are slightly better than the younger and older groups. These cohorts must have started school between 1967 and 1974 and finished primary school from 1971 to 1980. Since the mid 1970s they might have benefited from the institutionalised, publicly funded adult education schemes.

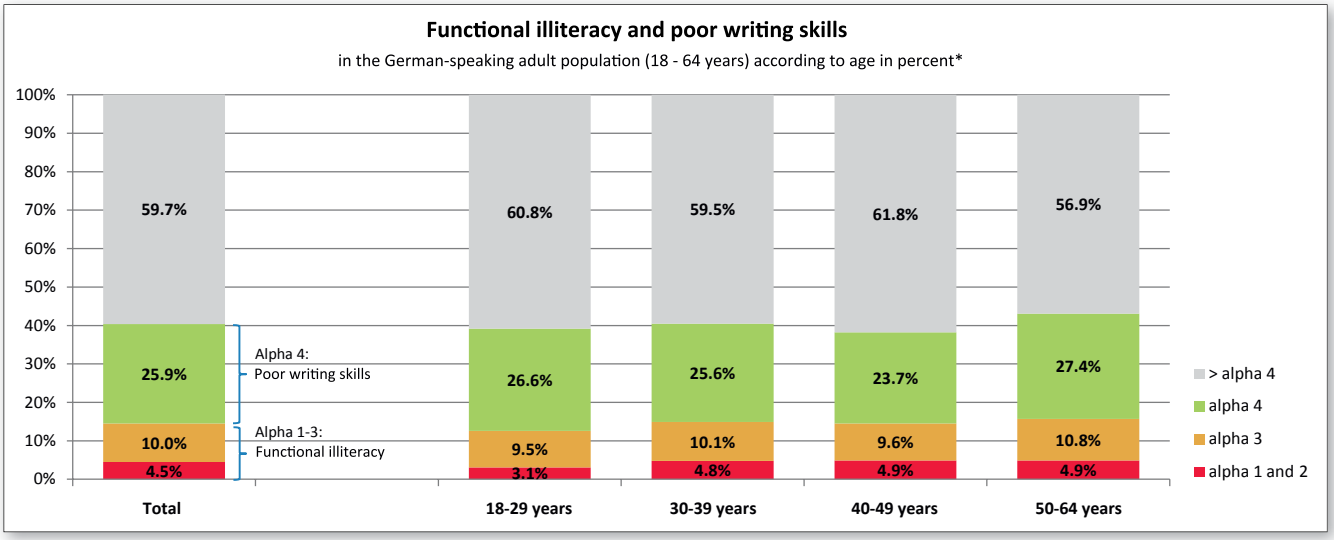

*Figure 2: functional illiteracy as proportions of the age groups in the population *(difference in the totals of 100 percent due to inaccuracies from rounding up and down)*

An overview of the structure

Poor writing skills - despite command of standard vocabulary - affect another 25 percent of the working-age population, particularly where spelling is concerned (Alpha Level 4, 18 - 64 years of age). This figure represents over 13 million people in Germany.

This is the case when at sentence and text level, even with commonly used words, people read and write slowly and/or with mistakes. There is no sufficient command of spelling, in the form taught until the end of primary school. People concerned often typically avoid reading and writing.

Functional illiteracy affects an accumulated 14 percent of working-age population (Alpha Level 1-3, 18 - 64 years of age). This figure translates to 7.5 million functionally illiterate people in Germany.

The term is used when people can read or write single sentences, but not continuous text - even if it is brief. Due to their limited written language skills, people affected cannot properly deal with the everyday requirements of life in society. For example, even if they do simple jobs they cannot read written instructions.

Illiteracy in the strictest sense of the word affects more than four percent of the working-age population (Alpha Level 1-2, 18-64 years of age).

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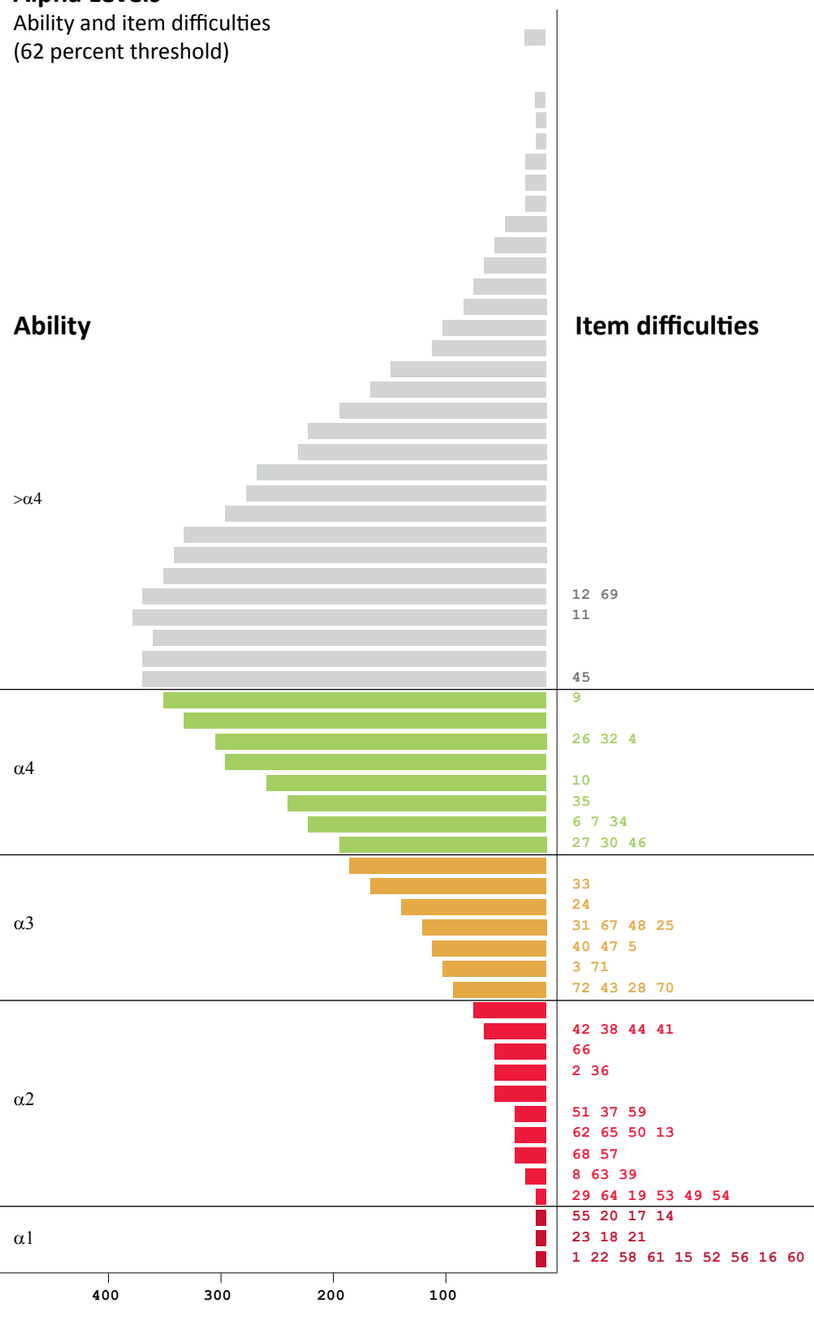


Exercise type audio dictation (Alpha Level 4)

Interviewer: Some people say funny things at work. Please listen and note down the words the speaker states afterwards. (Note: the audio file is switched on if consent is given.)

One **baker** says to another: "Rumour has it that the beach is underneath the paving **stones** - have a look in the driveway".
"Doesn't matter" replies his apprentice "For my **holiday** I'm heading into the mountains anyway!"

Afterwards: dictation of the words baker, paving stones, driveway, holiday.

Exercise type sentence level (Alpha Level 3)

Interviewer: Below are the beginnings to some sentences. How would chef Lena continue? Can you complete her sentences for her?

If the arguing in the kitchen doesn't stop soon... _____

Just before I finish work I always get annoyed when... _____

When I'm a master chef I'm going to ... _____

Exercise type allocation (Alpha Level 2)

Interviewer: Now let's turn to the next page in the puzzle book. On the left you can see four titles and on the right four sentences about them. Please draw an arrow from the title to the sentence that goes with it. An arrow has already been drawn as an example.

Youth	A rich man and a poor man were standing about looking at one another. And the poor man says: If I wasn't poor, you wouldn't be rich.
Pain	How do you stay young? Live honourably, eat slowly and give the wrong age!
Death	Pain is only pleasant once it has abated.
Wealth	Dying is so hard and eternity is so long!

Exercise type picture puzzles (Alpha Level 1 and 2)

Interviewer: Please look at the pictures and tick the right answer.

What has been damaged?	o pavement o sign o road

What is the ship called?	o Frau o Heidi o Hedi

Table 3 shows the percentages of people with functional illiteracy and spelling problems according to age groups. The majority of functionally illiterate people are currently 50 to 64 years of age, or about 33 percent. About 20 percent of people with functional illiteracy are in the 18 to 29-year-old age group.

Proportion	**Functional illiteracy**				**Poor writing skills**		**Proportion of random sample**
Alpha Level	α 1	α 2	α 3	*Total* α 1 - α 3	α 4	> α 4	
18-29 years	15.8%	15.9%	21.7%	19.9%	23.5%	23.4%	22.9%
30-39 years	20.7%	21.6%	20.1%	20.6%	19.8%	20.0%	20.0%
40-49 years	27.0%	30.0%	25.8%	27.0%	24.8%	28.0%	27.0%
50-64 years	37.2%	32.4%	32.4%	32.6%	31.9%	28.7%	30.1%
Total	***100.7%***	***99.9%***	***100.0%***	***100.0%***	***100.0%***	***100.1%***	

Table 3: age distribution of functional illiteracy and poor writing skills in the adult German-speaking population (18 - 64 years)

1.5 Literacy according to first language: speaking German, writing German?

leo. 2010 - Table 4 shows the percentage of people with functional illiteracy whose first language is German. Of the 7.5 million people with functional illiteracy, 4.4 million (58%) learnt German as their first language. A further 3.1 million (42%) learnt another language first. The random sample only includes people whose verbal command of German is good enough to take place in a survey and a skills test. If immigrants without verbal German skills had been included and this group had a proportionate number or a disproportionately large number of functionally illiterate people, these people would have to be added to the 7.5 million figure.

Proportion	**Functional illiteracy**				**Poor writing skills**		**Proportion of random sample**
Alpha Level	α 1	α 2	α 3	*Total* α 1 - α 3	α 4	> α 4	
Percentage of first language German	27.9%	49.4%	63.2%	58.1% (4.4 million)	80.4%	93.7%	85.1%
Percentage of other language	72.5%	50.4%	36.8%	41.8% (3.1 million)	19.6%	6.3%	14.9%
Total	***100.4%***	***99.8%***	***100%***	***99.9% (7.5 million)***	***100%***	***100%***	

Table 4: first language analysed for functional illiteracy and poor writing skills in the adult German-speaking population (18 - 64 years)

1.6 Literacy according to educational qualifications: is a qualification per se not sufficient?

leo. 2010 - As table 5 shows, 19.3 percent of functionally illiterate people have no school qualifications, a further 47.7 percent have basic educational qualifications. But 12.3 percent of people who are functionally illiterate also have higher qualifications - which is quite a substantial figure.

Proportion	Functional illiteracy				Poor writing skills		Proportion of random sample
Alpha Level	α 1	α 2	α 3	*Total* α 1 - α 3	α 4	> α 4	
No qualifications	50.4%	28.3%	14.0%	19.3%	5.0%	1.1%	4.7%
Poor qualifications	32.0%	44.6%	49.8%	47.7%	41.0%	20.7%	29.9%
Average qualifications	10.0%	13.4%	21.5%	18.9%	31.2%	36.0%	32.3%
High qualifications	4.0%	11.8%	12.9%	12.3%	21.4%	40.4%	31.4%
Still school pupils	0.0%	0.0%	0.9%	0.6%	0.6%	1.1%	0.9%
*Total**	***96.4%***	***98.1%***	***99.1%***	***98.8%***	***99.2%***	***99.3%***	
**Difference to 100% = Category: No information provided*							

Table 5: distribution of school qualifications evaluated according to functional illiteracy and poor writing skills in the adult German-speaking population (18 - 64 years)

1.7 Literacy according to occupational status: employed illiterate people

leo. 2010 - Of the functionally illiterate people, just under 57 percent are gainfully employed and just under 17 percent are unemployed, a further 10.1 percent are at home (table 6).

Proportion	Functional illiteracy				Poor writing skills		Proportion of random sample
Alpha Level	α 1	α 2	α 3	*Total* α 1 - α 3	α 4	> α 4	
Employed	55.5%	54.2%	58.0%	56.9%	64.5%	69.5%	66.4%
Unemployed	19.1%	21.5%	14.6%	16.7%	8.9%	4.8%	7.6%
Unfit to work	2.7%	2.3%	2.3%	2.3%	1.5%	0.9%	1.3%
Housewives/ house husbands, parental leave	17.9%	10.7%	9.4%	10.1%	8.2%	7.9%	8.3%
Retired	5.2%	6.3%	6.4%	6.3%	6.2%	3.8%	4.8%
In vocational training	0.4%	4.0%	7.9%	6.5%	9.9%	11.6%	10.4%
Other	0.0%	0.8%	1.4%	1.2%	0.8%	1.4%	1.2%
Total	***100.8%***	***99.8%***	***100%***	***100%***	***100%***	***99.9%***	

Table 6: professional status according to functional illiteracy and poor writing skills in the German-speaking adult population (18 - 64 years)

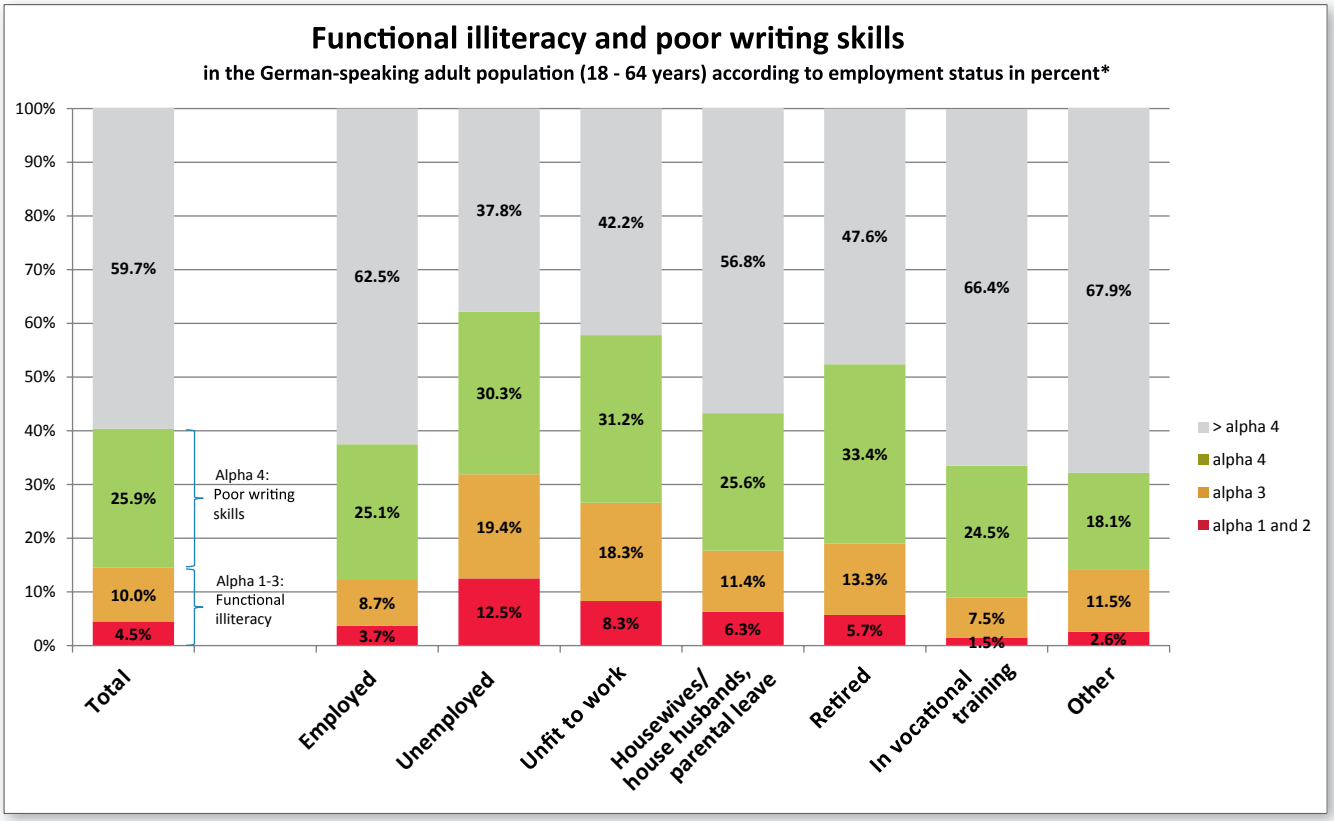


*Figure 3: functional illiteracy as proportions of the professional status groups *(difference in the totals of 100 percent due to inaccuracies from rounding up and down)*

Some 12.4 percent of the working population are functionally illiterate. Some 31.9 percent of unemployed people are functionally illiterate. High proportions of the smaller population groups, such as retired people under 65, as well as people unable to work, are affected by functional illiteracy (26.6% and 19%).

2 Item development and dummy items

In Germany, the *leo.* items are the first items that record the scale of functional illiteracy which do not just fulfil the demands of the International Adult Literacy Survey (IALS), but surpass them in terms of theoretical basis.

The goals of *lea.* and *leo.* are also to differentiate at the lower end of the spectrum, roughly called Level One, between small increments and exactly described Alpha Levels.

Exercise type picture puzzles (Alpha Level 1 and 2)

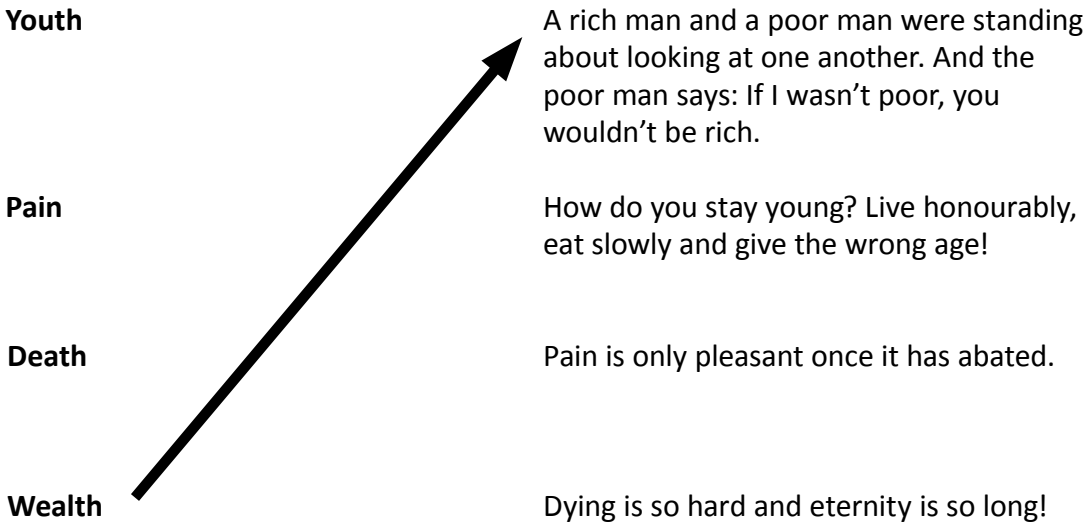
Interviewer: Please look at the pictures and tick the right answer.

What has been damaged?	o pavement o sign o road

What is the ship called?	o Frau o Heidi o Hedi

Exercise type allocation (Alpha Level 2)

Interviewer: Now let's turn to the next page in the puzzle book. On the left you can see four titles and on the right four sentences about them. Please draw an arrow from the title to the sentence that goes with it. An arrow has already been drawn as an example.



Exercise type sentence level (Alpha Level 3)

Interviewer: Below are the beginnings to some sentences. How would chef Lena continue? Can you complete her sentences for her?

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Exercise type audio dictation (Alpha Level 4)

Interviewer: Some people say funny things at work. Please listen and note down the words the speaker states afterwards. (Note: the audio file is switched on if consent is given.)

> One **baker** says to another: "Rumour has it that the beach is underneath the paving **stones** - have a look in the driveway".
> "Doesn't matter" replies his apprentice "For my **holiday** I'm heading into the mountains anyway!"

Afterwards: dictation of the words baker, paving stones, driveway, holiday.

3 Goal and conception of the study

The basis of the Level One Study is a random selection of people living in Germany and aged between 18 and 64. The random sample comprises 7,035 people and an additional random sample of 1,401 people who are at the lower end of the educational scale. The skills tests are carried out after a standard survey on various aspects of people's situations in life and attitude to further education (Adult Education Survey - AES 2010). All interviews carried out as part of the *leo.* study are computer-assisted personal interviews (CAPIs).

The *leo.* study consists of several sections. After the questions in the Adult Education Survey, all 7,035 people received a puzzle booklet. The average interview times in the puzzle book were under 15 minutes. If the performance achieved after doing the puzzle book was too low, people were asked to fill in an Alpha booklet lasting about ten minutes.

4 Literacy is…

Research by Alphabund (www.alphabund.de) establishes a definition which primarily aims at the relationship between written language and the minimum requirements of society (www.grundbildung.de).

Definition of functional illiteracy

Alphabund: functional illiteracy exists when the written skills of adults are lower than those which are the minimum and considered a matter of course to cope with day-to-day requirements in society. […]
… If a person cannot read one or several items of information directly contained in a simple text so that the sense is understood and/or is at a similar skills level when writing.

UNESCO talks about functional illiteracy when full command of reading, writing and maths skills is lacking. This definition is high and difficult to operationalise. Alphabund's definition requires precision to a minimum framework. Therefore, *leo.* differentiates according to Alpha Levels 1 - 6 and assigns non-attainment of the text level (Alpha Level 4) to functional illiteracy.

Figure 4: Definition of functional illiteracy in terms of a shortfall at text level

5 About this publication

The *leo. – Level One Study* is carried out by The University of Hamburg. Prof. Anke Grotlüschen and Dr. Wibke Riekmann are responsible for the content.

The differentiation of theory, level description and item development was prepared by the affiliated project entitled *lea. – Literalitätsentwicklung von Arbeitskräften* (lea.- Development of literacy in working people[1]). The University of Hamburg is responsible for the development of items suitable for the survey. The University was advised by TNS Infratest Sozialforschung and the Humboldt University in Berlin. The Hamburg team was also responsible for designing, compiling and analysing the scale pre-tests for employment providers.

Frauke Bilger, Dr. Robert Jäckle and Bernhard von Rosenbladt from TNS Infratest Sozialforschung were experienced partners responsible for programming, procedural pre-testing, coding, data capture and generating the data tables, as well as sampling and weighting.

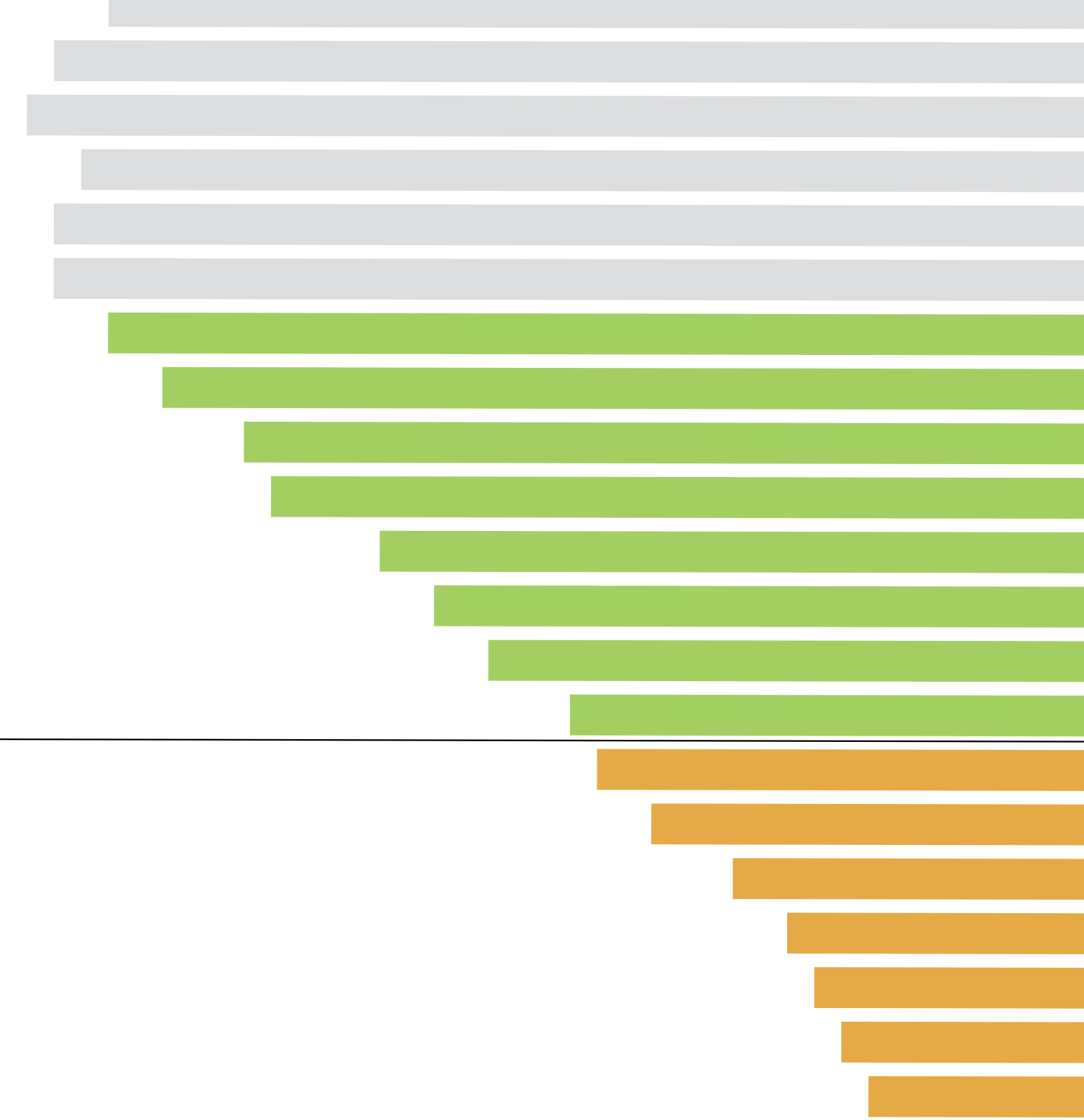
TNS Infratest Sozialforschung carried out all the interviews and skills tests in the form of a representative survey as an additional module to the Adult Education Survey (AES-leo.).

Prof. Rainer Lehmann with his team Dr. Doreen Holtsch and Ulrike Fickler-Stang, from the Humboldt University in Berlin were responsible for the Berlin part of the scale pre-tests, data capture, test-theoretical checking of the results and providing design advice for the main study.

Prof. Johannes Hartig's skills were involved in the probability estimation of item difficulties and personal capabilities. He was able to identify features which determined level thresholds which enhance the validity of the results even further. Assistance with the diagnostic evaluation of personal skills in the population by using plausible values is also thanks to him.

The *leo. – Level One Survey* also benefited from the "Preliminary study on the magnitude of functional illiteracy in Germany" particularly from the literature research included in it (Tröster [2009], Chenot, Humbertus [2009]).

1 http://blogs.epb.uni-hamburg.de/lea/



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