**trans-kom 18** [1] (2025): 330–354
Seite 330

Margot Madina & Itziar Gonzalez-Dios & Melanie Siegel

# Easy-to-Read German

## A statistical analysis

*Abstract*

Easy-to-Read (E2R) and its German variant Leichte Sprache (LS) are simplified and controlled versions of written language designed to make texts accessible for all. Traditionally, experts adapt texts, but there is an increasing reliance on automatic tools to adapt standard texts into E2R. Nonetheless, a major challenge is the lack of a standardized method to assess these automatically adapted texts. While user comprehension tests are often used, they are not always feasible. This study measures linguistic features traditionally associated with text complexity over standard German texts and their LS counterparts. A total of 456 text pairs from two different broadcasters are analyzed. While the analysis reveals patterns in adapted texts, the results indicate that more data is needed to develop generalizable, objective criteria for evaluating LS texts.

## 1 Introduction

Easy-to-Read language (E2R), is a simplified controlled language variant of a given standard language. Its main aim is to make written texts accessible for different target groups, among which we can find people with cognitive or intellectual disabilities, migrants who are learning the language of the country they live in or people with low literacy. E2R receives a different name depending on the variant; in German it is called *Leichte Sprache* (LS).

E2R follows a set of rules or guidelines that define how these texts should look, in terms of grammar and syntax but also in terms of layout design. Usually, sentences are simplified, technical or foreign terms are avoided or explained and texts are accompanied with pictures to enhance comprehension. These rules may also be language-independent or language-dependent. The latter applies when certain linguistic phenomena occur in one language but not in another. An example of a language-independent rule can be to avoid the use of difficult terms. On the other hand, an example of a language-dependent rule can be the split of *Komposita* words in German.[1] Germany's most widely used LS

[1] A *Kompositum* (plural *Komposita*) is a compound word consisting of two or more individual words that are combined to form a single term that conveys a specific, unified meaning. This may lead to

guidelines were developed by the Netzwerk Leichte Sprache (Network Leichte Sprache),[2] first published in 2009 and later promoted by the Bundesministerium für Arbeit und Soziales (German Federal Ministry of Labor and Social Affairs). These guidelines were created collaboratively with individuals with cognitive disabilities. Inclusion Europe also developed E2R guidelines for multiple languages, including German.[3] Most of the rules encompassed in their guidelines are language-independent (Kapnas/Hansen-Schirra 2024). The *Barrierefreie-Informationstechnik-Verordnung* (The Accessible Information Technology Regulation) (BITV) regulates web accessibility and includes Easy Language requirements in its 2011 version (BITV 2.0).[4] However, its rules are inconsistently structured (Maaß 2020), and it does not mandate quality assurance, unlike *Netzwerk Leichte Sprache* and Inclusion Europe. Additionally, *Duden* provides an empirically based linguistic rulebook (Kapnas/Hansen-Schirra 2024) with a comprehensive scientific work (Bredel/Maaß 2016b), a guidebook (Maaß/Bredel 2017), and a workbook (Bredel/Maaß 2016a). Despite the presence of multiple LS guidelines, Germany lacks a national legal or regulatory framework. A DIN standard was initiated in 2019 but has not yet been published. For now, DIN SPEC 33419:2023-04[5] offers recommendations for LS. Unlike DIN standards, DIN SPECs do not require full consensus or the involvement of all stakeholders during their development.[6]

In light of the fact that these rules have been established for the purpose of adapting standard texts to E2R, it seems reasonable to conclude that the E2R texts created in accordance with those rules are accurate and appropriate for their intended audience. Various tools now assist in automatically adapting standard texts into LS; we can find both rule-based approaches as well as Artificial Intelligence (AI) based ones. *EasyTalk* (Steinmetz/Harbusch 2020) supports assisted LS typing through a paraphrase generator based on Performance Grammar. *SUMM AI*,[7] the first AI-driven tool for automatic LS adaptation in German, allows users to automatically adapt texts and provides feedback on the tool. It also allows them to create personalized glossaries and offers easier synonyms for complicated words. *SIMBA,*[8] developed by the Alexander von Humboldt Institute, simplifies complex German texts through AI, offering a web app and browser extension to enhance digital inclusivity. Additionally, Siegel and Lieske have integrated LS rules into language checkers such as *Acrolinx* (Lieske/Siegel 2014) and *LanguageTool* (Siegel/Lieske 2015), facilitating LS rule compliance. Nevertheless, there is no objective method for evaluating the suitability of an E2R text for its intended audience (Madina/

having very long words that are difficult to read for people with cognitive disabilities. An example is "Haustürschlüssel" – front door key.

2 Netzwerk Leichte Sprache (n. d.).

3 Inclusion Europe (2009).

4 BITV 2.0 (2011).

5 DIN SPEC 33419:2023-04 (2023).

6 A DIN norm for *Einfache Sprache* (the Plain Language version of German) is available already: DIN ISO 24495-1 (2023). However, this is outside the scope of this paper.

7 SUMM AI (n. d.).

8 SIMBA (n. d.).

Gonzalez-Dios/Siegel 2024). Currently, the evaluation of E2R materials usually depends on subjective feedback from target users, who assess the texts based on their personal understanding and comprehension. Although this method is important and useful, it lacks objectivity and a consistent framework. Furthermore, it is difficult to find target users that can make the assessment, and the texts typically evaluated are those produced by professional E2R translators. This leaves a critical gap when it comes to automatically adapted E2R texts, as there is no clear indication of whether these texts are of sufficient quality to be presented to individuals with disabilities. As a result, researchers and practitioners often rely on metrics designed for related tasks, such as machine translation or text summarization. While these metrics may be useful for their intended purposes, they are not well-suited to the unique requirements of E2R text evaluation. Although some frameworks for E2R evaluation have been proposed and theorized, a concrete and widely accepted methodology has yet to be established. In the absence of a standardized evaluation approach, measuring the effectiveness and quality of E2R texts objectively becomes challenging.

One proposed methodology for evaluating Easy-to-Read (E2R) texts, as suggested by Madina, Gonzalez-Dios and Siegel (2024), involves examining the linguistic features that distinguish E2R texts from their standard language counterparts. This approach seeks to analyze a large corpus of texts to identify quantitative differences in aspects such as text length, sentence structure, and the use of subordinate clauses. By providing measurable insights into these structural variations, their work aims to establish benchmarks typically achieved in E2R adaptations.

Building on this idea, this paper applies a similar analytical framework to a collection of German texts in both the LS format and their standard language versions. Through this analysis, we aim to contribute empirical evidence to the discussion of structural and linguistic distinctions in E2R and, more specifically in this case, LS text evaluation. The rest of the paper is organized as follows: Section 2 deals with the state of the art, in section 3 we introduce the methodology, in section 4 we present the results, and in section 5 we outline the conclusions and future work.

## 2 State of the art

This section will explore the current state of the art regarding the evaluation methods for simplified texts.

As stated by Grabar and Saggion (2022), defining a standard output of simplification is challenging due to the fact that it is not something factual, as it relies on a series of transformations, and it is not consensual, as it is based on people's opinions on the simplification output itself. It is also important to consider that, unlike other languages, there are no native speakers of simplified language (Siddharthan 2014). Consequently, it is not possible to consult an "expert" or "native speaker" to determine which output sounds the most natural or correct. As of today, there is no consensus on how simplified texts, E2R or LS text should be evaluated.

Manual evaluations are often conducted by human evaluators by means of Likert scales (scores from 1 to 5) that assess three main criteria: simplicity, grammaticality and meaning. However, this may lead to subjective results, as it relies mainly on annotators prior knowledge and experiences (Grabar/Saggion 2022). In an aim to aid in this manual evaluation process, Cumbicus-Pineda, Gonzalez-Dios and Soroa (2021) proposed a checklist-based, language-independent assessment method for text simplification. To our knowledge, they do not take into account different target audiences.

In the field of Automatic Text Simplification (ATS), computational methods are usually employed in order to get faster and more objective evaluations. Automatic evaluation methods like *BLEU* (BiLingual Evaluation Understudy) (Papineni et al. 2002) and *SARI* (System output Against References and Input sentence) (Xu et al. 2016) are commonly used. While these metrics offer a faster and more objective alternative to human evaluation, they each have significant limitations (Alva-Manchego/Scarton/ Specia 2020; Vásquez-Rodríguez et al. 2021). *BLEU*, although effective in machine translation, proves unreliable for ATS, as it shows a negative correlation with simplicity (Sulem/Abend/ Rappoport 2018a). *BLEU* calculates the overlap between n-grams in the system output and reference texts, so it does not directly assess the quality of simplifications, such as whether a more complex word has been substituted with a simpler one. *SARI* is useful for evaluating lexical simplifications but is limited in its ability to measure other types of simplifications, such as structural changes or semantic adjustments (Alva-Manchego/ Scarton/Specia 2021). *ROUGE* (Lin/Hovy 2003; Lin 2004) is a popular metric in summarization, but it is rarely applied to ATS. It evaluates the overlap of n-grams, similar to *BLEU*, and has similar limitations in capturing simplicity or structural changes in the text.

Besides, the Levenshtein distance (Levenshtein 1966) has also been employed in ATS evaluation (Wubben/Van den Bosch/Krahmer 2012; Agrawal/Carpuat 2024). The Levenshtein distance measures how alike two pieces of text are using string edit distance, that is, the number of edits needed to transform one text into the other. On the other hand, the Wagner–Fischer Algorithm is a computational method for finding the minimum edit distance (Vásquez-Rodríguez et al. 2021). They are not ideal for evaluating simplification, as simplification involves lexical and syntactic changes to the source text, increasing the edit distance. Moreover, these transformations are often subjective and lack consensus. However, such measures can still be useful for pre-annotating transformations caused by simplification (Grabar/Saggion 2022). Other text simplification evaluation methods exist, but have been primarily designed for English (Sulem/Abend/ Rappoport 2018b; Yamanaka/Tokunaga 2024). *Flesch Reading Ease* (FRE) and *Flesch-Kincaid Reading Grade Level* (FKGL), though widely used for readability, fail to account for elements like layout, images, or writer-specific factors, including educational background or writing style appropriateness (Jindal/MacDermid 2017). Furthermore, these metrics are language-dependent, limiting their use to English texts. Other languages have developed their own readability formulas; the German version is known as the Amstad's adaptation of FRE for German (Amstad 1978).

Additionally, other methods of evaluating LS have been implemented beyond metrics based solely on the text itself. Deilen (2020) analysed the main challenges when conducting eye-tracking research with target users of E2R. Some studies analysing the impact of simplified language techniques have also been conducted (Deilen/Hansen-Schirra/Nagels 2021; Schiffl 2022). Steinmetz and Harbusch (2022) conducted eye-tracking tests with LS target users to evaluate the interface design of *EasyTalk*, a tool that assists in the adaptation of German texts into LS. The application of other methods besides eye-tracking, such as EEG and fMRI to investigate the cognitive processing of LS have also been discussed (Borghardt et al. 2021). However, to the best of our knowledge, they have not been implemented. Säuberli et al. (2024) evaluated the comprehensibility of texts by involving participants with and without intellectual disabilities. These participants read original, automatically simplified, and manually simplified German texts, and researchers assessed text comprehensibility using four methods: multiple-choice comprehension questions, self-reported difficulty ratings, response time, and reading speed.

These studies collectively highlight the diverse methodologies employed in evaluating simplified language, ranging from empirical data collection and user feedback to manual quality assurance.

## 3 Methodology

In this section, we present the data, compiled from MDR and *Stadt Köln*, and the linguistic analysis we have carried out.

### 3.1 Data

We chose broadcasters that offered parallel texts in both LS and German. We would like to point out that explicit permission was obtained from both MDR and *Stadt Köln* to carry out this research.

#### 3.1.1 MDR

MDR (*Mitteldeutscher Rundfunk*, Central German Broadcasting)[9] is a prominent public broadcaster in Germany, part of the ARD network. Its news portal, *MDR Nachrichten (MDR News*), provides comprehensive coverage of regional, national, and international news, primarily for audiences in the central German states of Saxony, Saxony-Anhalt, and Thuringia. Among its offerings is a section titled *MDR Nachrichten in Leichter Sprache* (MDR News in Easy Language), which simplifies news content for individuals with limited German proficiency, cognitive challenges, or those seeking easier-to-understand information. MDR's editorial team selects four topics from the broadcasting area every working day, and on Fridays a cultural topic is also added. These topics are sent to a LS translation agency, where authors and people with learning disabilities work together. The

[9] MDR (n. d.).

authors adapt the original texts into LS, and the people with learning disabilities check whether they understand the content (MDR 2023).

To create a parallel linguistic corpus, articles from the LS section were paired with their standard German counterparts. Each LS article contained a link to the corresponding standard German version, allowing for systematic extraction of paired articles. Using Python's `BeautifulSoup` library, a web scraping tool was employed to extract all articles from the *Leichte Sprache* section. The embedded links in these articles were then accessed to retrieve the corresponding standard German versions. The dataset was cleaned to remove duplicates, especially in cases where a single standard German article linked to multiple simplified versions. This ensured the dataset's accuracy and consistency.

The LS archive on MDR only contains articles from the past three months, so the scraping process was conducted on October 31, 2024, to gather the most complete dataset within this time frame. The final dataset includes 313 pairs of articles, each consisting of one LS version and its corresponding standard German version.

### 3.1.2 Stadt Köln

The official website of the *Stadt Köln* (City of Cologne)[10] functions as the city of Cologne's primary digital platform, offering a wide array of information and services for residents, businesses, and visitors. The site addresses diverse topics such as municipal services, daily life in Cologne, political structures, cultural events, and economic opportunities.

Notably, the website employs LS to communicate essential information about services, rights, and announcements. This includes guidance on tasks like applying for documents, participating in elections, and navigating municipal processes. By incorporating LS, the city of Cologne underscores its dedication to inclusivity and ensuring equitable access to information for all community members. *Stadt Köln* works together with a LS translation agency. Texts in standard language are submitted to the translation agency; in response, a preliminary draft in LS is provided. This is subsequently reviewed by the specialist department. If the content of the draft is found to be satisfactory, it is then sent to a review group hired by the translation company. After the completion of the review, the finalized and reviewed draft is published on the website.[11]

For this study, we utilized a database created by Toborek et al. (2023), which compiled parallel URLs from various sources and provided them in JSON format. Based on this resource, we constructed a CSV file containing paired LS and standard German texts. Using the `BeautifulSoup` library, we extracted the text directly from the website. This dataset contains a total of 143 pairs of texts.

---

[10] *Stadt Köln* (n. d.).
[11] This information was provided directly by the Online Editorial Team (*Online Redaktion*) of *Stadt Köln*.

## 3.2 Analysis

The automatic linguistic analysis was conducted using *Profiling-UD* (Brunato et al. 2020), a tool for multilingual linguistic profiling based on the Universal Dependency (UD) framework (Nivre 2015). UD is an international collaborative project aimed at developing cross-linguistically consistent treebank annotations for multiple languages. Its primary objective is to facilitate multilingual parser development, cross-lingual learning, and parsing research from a language typology perspective (Universal Dependencies contributors 2014–2024). The aim of UD is to create "a standard for cross-linguistically consistent grammatical annotation, a standard that brings out cross-lingual similarities in a perspicuous way without forcing all languages into the same mold" (Nivre 2015). Profiling-UD provides access to analyze more than 130 features in 59 different languages.

In this work, we have focused on those linguistic features that are related to text complexity, namely the following ones:

- **Raw text properties**
  - Number of tokens: The total count of tokens present in the text. Tokens typically refer to individual words or units of meaning as segmented by a tokenization process.
  - Number of sentences: The total count of sentences in the text. This metric, when considered alongside the number of tokens, provides insights into the overall length of the text and its division across individual sentences.
  - Average tokens per sentence: The mean number of tokens per sentence, which serves as an indicator of average sentence length and, by extension, syntactic complexity.
  - Characters per token: The average number of characters per token, reflecting the morphological complexity of the text. Higher values may indicate the use of longer or more complex words, while lower values may correspond to simpler or shorter lexical items.
- **Lexical variety**
  - Type/Token Ratio (TTR): The ratio of unique lexical types to total tokens, used to assess lexical variety. A higher TTR indicates greater vocabulary diversity, while a lower TTR suggests more repetition. Due to its sensitivity to sample size, TTR is calculated for text samples of equal length, such as the first 100 and 200 tokens.
- **Morphosyntactic information**
  - Lexical density: A measure of the proportion of content words (nouns, verbs, adjectives, and adverbs) to the total number of words in a text. Texts with higher lexical density contain more content words relative to function words.

- **Syntactic features**
  - Verbal predicate structure
  - Average distribution of verbal heads in the document: Calculated as the average number of verbal heads (verbs that serve as the central word in a verb phrase) per sentence. This metric corresponds to the number of propositions, both main and subordinate clauses, that occur within the sentence. A higher average suggests a greater number of propositions or actions per sentence, which may indicate more complex sentence structures. A lower average implies fewer propositions and simpler sentence structures, which may reflect a more straightforward or descriptive style.
- **Global and local parsed tree structures**
  - Average clause length: Calculated as the average number of tokens per clause. A longer average clause length suggests more tokens per clause, indicating more complex or detailed information within each clause. Conversely, shorter average clause lengths may reflect simpler, more concise clauses.
- **Use of subordination**
  - Principal proposition distribution: This refers to the proportion of main clauses (principal propositions) in relation to the total number of propositions (main and subordinate clauses) in a text. A principal proposition is a clause that can stand alone as a complete sentence. A higher proportion of principal propositions suggests that the text relies more on independent, self-contained statements, often leading to simpler, more direct sentence structures.
  - Subordinate proposition distribution: This refers to the proportion of subordinate clauses (subordinate propositions) relative to the total number of propositions in the text. A subordinate proposition is a dependent clause that cannot stand alone as a complete sentence, as it typically provides additional information to the main clause. Both the principal proposition distribution and the subordinate proposition distribution metrics help analyse the complexity and depth of a text's sentence structures. A higher proportion of subordinate propositions usually implies greater syntactic embedding and thus more complex sentence structures. Conversely, a higher proportion of principal propositions tends to reflect a more straightforward or action-oriented style, with more independent sentences and simpler syntax.
  - Average length of subordinate chains: The average length of subordinate chains is a useful measure of how deeply embedded subordinate clauses are within the sentence structure. Longer subordinate chains may indicate a more intricate syntactic structure, while shorter chains suggest a simpler, more direct sentence structure.

We employed Profiling-UD to analyze the aforementioned features; this allowed us to systematically examine and quantify the various linguistic characteristics across our database. We were able to compare how LS and standard German (SG) texts differ in terms of lexical variety, sentence structure and syntactic complexity.

## 4 Results

This section presents a quantitative analysis of the linguistic features introduced in Section 3 comparing SG and LS texts. The findings are summarized in terms of instances where LS exhibits higher values than SG, where SG exceeds LS, and where both are equal. The results for the MDR dataset analysis are in Table 1, Table 2 and Table 3, and the results for the *Stadt Köln* dataset analysis are in Table 4, Table 5 and Table 6.

### 4.1 MDR

The analysis of the raw text properties showed that SG texts have more tokens on 79.5 % of the occasions; on average, they have 169.06 % more tokens than their LS counterparts.

Regarding the number of sentences, the difference was not so notorious, as LS texts contain more sentences in 104 cases, accounting for 33.2 % of the analyzed texts, while SG texts contain more sentences in 61.1 % of the occasions. Nonetheless, sentences were longer in SG versions in 89.13 % of the instances.

SG texts outperform LS texts in all instances in terms of characters per token. The tokens in SG texts have 5.89 characters on average, while the ones in LS texts have 4.97.

SG demonstrates higher lemma TTR[12] in 293 instances (93.61 %). The average difference in TTR is 23.37 %.

Lexical density values are almost equally divided between LS and SG versions. Lexical density is higher in LS in 155 cases (49.5 %), and higher in SG in 158 cases (50.47 %). On average, LS exhibits a 5.53 % increase in lexical density compared to SG, while SG exhibits 5.03 % increase. This indicates that LS often uses a higher proportion of content words to enhance clarity.

When it comes to the syntactic complexity of the texts, SG includes more verbal heads per sentence in 250 cases (79.87 %). The average increase is 36.12 % more verbal heads per sentence.

SG surpasses LS in average tokens per clause in 190 occasions (60.7 %), with 19.98 % more tokens per clause on average.

The proposition distribution showed that LS texts use much more principal propositions than subordinate propositions. 81.84 % of the total of propositions in LS texts are principal propositions, as opposed to 18.16 % of subordinate propositions. Meanwhile, in SG texts 70.03 % are principal propositions and 29.97 % are subordinate.

12 The table shows the TTR calculated with respect to the lemmata in the first 100 tokens of a text.

Furthermore, SG texts have more subordinate clauses than LS texts in 246 instances (78.59 %).

Lastly, SG features longer subordinate chains in 141 cases (45.05 %). The average increase is 16.15. There are 120 instances where the subordinate chain length is equal in both the LS and SG versions.

| MDR – LS excedes SG | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tokens | Sentences | Tokens per sentence | Characters per token | TTR | Lexical density | Verbal heads | Tokens per clause | Principal propositions | Subordinate propositions | Subordinate chain length |
| Instances | 104 | 64 | 34 | 0 | 15 | 155 | 59 | 123 | 246 | 62 | 52 |
| % of total | 33.23 | 20.45 | 10.86 | 0 | 4.79 | 49.52 | 18.85 | 39.30 | 78.59 | 19.81 | 16.61 |
| Average | 17.22 | 236.56 | 13.90 | 4.97 | 0.54 | 0.54 | 1.27 | 11.08 | 81.84 | 18.16 | 0.99 |
| How many more | 57.77 | 43.23 | 10.99 | – | 3.93 | 5.53 | 14.99 | 13.14 | 27.38 | 51.18 | 21.30 |

Table 1: Instances and mean results where LS exceeds SG in the MDR dataset

| MDR – SG exceeds LS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tokens | Sentences | Tokens per sentence | Characters per token | TTR | Lexical density | Verbal heads | Tokens per clause | Principal propositions | Subordinate propositions | Subordinate chain length |
| Instances | 193 | 249 | 279 | 313 | 293 | 158 | 250 | 190 | 62 | 246 | 141 |
| % of total | 61.66 | 79.55 | 89.14 | 100 | 93.61 | 50.48 | 79.87 | 60.70 | 19.81 | 78.59 | 45.05 |
| Average | 28.35 | 520.34 | 18.15 | 5.89 | 0.65 | 0.54 | 1.57 | 11.73 | 70.02 | 29.98 | 1.07 |
| How many more | 138.58 | 169.07 | 38.79 | 18.76 | 23.38 | 5.03 | 36.13 | 19.99 | 12.28 | 135.48 | 16.15 |

Table 2: Instances and mean results where SG exceeds LS in the MDR dataset

| MDR – Equal instances for LS and SG | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tokens | Sentences | Tokens per sentence | Characters per token | TTR | Lexical density | Verbal heads | Tokens per clause | Principal propositions | Subordinate propositions | Subordinate chain length |
| Instances | 16 | 0 | 0 | 0 | 5 | 0 | 4 | 0 | 5 | 5 | 120 |
| % of total | 5.11 | 0 | 0 | 0 | 1.60 | 0 | 1.28 | 0 | 1.60 | 1.60 | 38.339 |
| Average | 17.3 | – | – | – | 0.25 | – | 1.27 | – | 77.06 | 22.94 | 1.003 |

Table 3: Instances and mean results where LS and SG have equal values in the MDR dataset

The MDR dataset confirms that LS frequently includes more sentences and tokens, with higher lexical density in nearly half of the cases. While LS generally favors shorter sentence lengths, it occasionally employs longer sentences and clauses. The syntactic complexity metrics further illustrate LS's balance between simplification and elaboration, as evidenced by the tokens per clause, and subordinate chain length.

## 4.2 Stadt Köln

In terms of sentence count, LS exhibits a higher number of sentences in 131 instances, corresponding to 91.6 % of the analyzed cases. For tokens, LS exceeds SG in 127 cases (88.8 %). On average, LS features 188.05 % more sentences and 110.93 % more tokens per text. These results may indicate that LS texts include examples or explanations, making them more extensive. However, it is also clear that LS texts prioritize shorter sentences overall, as they only have longer sentences than their SG counterparts in 26 cases (18.2 %). In those occasions, LS sentences are 21.57 tokens longer than their SG counterparts.

There are only two instances in which LS texts surpass SG texts in characters per token. On average, the tokens in SG texts have 6.19 characters and the ones in LS texts 5.04.

TTR analysis shows that SG texts have higher lemma TTR[13] in 118 cases (82.51 %), with an average increase of 26.1 %.

Lexical density is, on average, 5.71 % higher in SG in 95 instances (66.43 % of the cases). On the other hand, LS texts have higher lexical density in 48 instances (33.56 %). In these cases, their lexical density is 4.25 % higher on average.

Syntactic features reveal that SG exhibits a higher number of verbal heads per sentence in 98 cases (68.53 %). On average, SG includes 25.57 % more verbal heads. In spite of this, it is worth highlighting that LS includes 31.07 % more verbal heads when exceeding SG. This might indicate that LS has specific contexts or sentence types where it allows or necessitates a higher density of verbs, perhaps for emphasis or particular stylistic choices.

SG employs more tokens per clause on 125 occasions (87.41 %), increasing the clause length by 32.33 %.

79.09 % of the propositions in LS texts and 71.05 % in SG texts are principal propositions. Only in 23.07 % do LS texts have more subordinate propositions than SG texts.

Regarding the subordinate chain length, LS features longer subordinate chains in 65 cases (45.5 %), with an average increase of 11.42. SG has longer subordinate chains in 31 cases (21.67 %), with a 15.87 % increase and there are 47 instances (32.86 %) in which both text versions have the same subordinate chain length.

---

[13] The table shows the TTR calculated with respect to the lemmata in the first 100 tokens of a text.

As in the case of MDR, the LS texts in *Stadt Köln* also have a higher number of sentences, these being shorter than their SG counterparts. LS texts are longer in the majority of the cases; this might be due to the addition of explanations in LS texts. SG uses longer words, as evidenced by the number of characters per token. However, the subordinate clauses have similar lengths in both LS and SG texts.

| *Stadt Köln* – LS exceeds SG | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tokens | Sentences | Tokens per sentence | Characters per token | TTR | Lexical density | Verbal heads | Tokens per clause | Principal propositions | Subordinate propositions | Subordinate chain length |
| Instances | 131 | 127 | 26 | 2 | 23 | 48 | 43 | 18 | 110 | 33 | 65 |
| % of total | 91.61 | 88.81 | 18.18 | 1.40 | 16.08 | 33.57 | 30.07 | 12.59 | 76.92 | 23.08 | 45.45 |
| Average | 66.01 | 846.85 | 13.49 | 5.04 | 0.53 | 0.49 | 1.30 | 10.32 | 79.09 | 20.91 | 1.05 |
| How many more | 188.05 | 110.93 | 21.57 | 0.24 | 6.33 | 4.26 | 31.07 | 8.44 | 23.14 | 72.49 | 11.42 |

Table 4: Instances and mean results where LS exceeds SG in the *Stadt Köln* dataset

| *Stadt Köln* – StandSG excedes LS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tokens | Sentences | Tokens per sentence | Characters per token | TTR | Lexical Density | Verbal Heads | Tokens per clause | Principal Propositions | Subordinate Propositions | Subordinate chain length |
| Instances | 10 | 16 | 117 | 141 | 118 | 95 | 98 | 125 | 33 | 110 | 31 |
| % of total | 6.99 | 11.19 | 81.82 | 98.60 | 82.52 | 66.43 | 68.53 | 87.41 | 23.08 | 76.92 | 21.68 |
| Average | 30.82 | 537.85 | 17.91 | 6.19 | 0.60 | 0.50 | 1.39 | 12.99 | 71.06 | 28.94 | 1.02 |
| How many more | 33.28 | 37.56 | 53.35 | 23.53 | 26.11 | 5.71 | 25.57 | 32.34 | 20.40 | 174.90 | 15.88 |

Table 5: Instances and mean results where SG exceeds LS in the *Stadt Köln* dataset

| Stadt Köln – Equal values for LS and SG | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tokens | Sentences | Tokens per sentence | Characters per token | TTR | Lexical density | Verbal heads | Tokens per clause | Principal propositions | Subordinate propositions | Subordinate chain length |
| Instances | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 47 |
| % of total | 1.40 | 0 | 0 | 0 | 1.40 | 0. | 1.40 | 0 | 0 | 0 | 32.87 |
| Average | 19 | – | – | – | 0.56 | – | 1 | – | – | – | 1 |

Table 6: Instances and mean results where LS and SG have equal values in the *Stadt Köln* dataset

### 4.3 Comparison of analyses: MDR vs. Stadt Köln

In both datasets, LS consistently employs shorter sentences and shorter tokens. This reflects the general trend of LS to segment information into smaller units of information. The MDR dataset shows a lower percentage of cases where LS exceeds SG in terms of sentences and tokens compared to the *Stadt Köln* dataset. For *Stadt Köln*, LS exceeds SG in 91.6 % of cases for sentences and 88.8 % for tokens, whereas for MDR, these percentages drop to 33.2 % and 20.4 %, respectively. These segmentation tendencies of LS may vary based on the source text. LS texts consistently show a lower TTR than their SG counterparts in both datasets; this percentage is greater in Stadt Köln (16.1 %) compared to MDR (4.8 %). LS exhibits higher lexical density in a significant portion of texts in both datasets. For *Stadt Köln*, this occurs in 33.6 % of cases, and for MDR, in 49.5 %. This demonstrates LS's use of content-rich vocabulary to make ideas clearer while remaining accessible. SG shows a tendency to include more verbal heads per sentence in both datasets. The difference between SG and LS in terms of tokens per clause is much more pronounced in the *Stadt Köln* dataset than in the MDR dataset. Both datasets opt for the use of main rather than subordinate sentences in a large number of cases. LS exceeds SG in subordinate chain length more frequently in the Stadt Köln dataset (45.45 %) compared to MDR (16.61 %).

### 4.4 Generalization and structural distinctions

The findings from both datasets reveal some consistent structural and linguistic trends that distinguish LS from SG. It has been seen that LS consistently employs shorter, simpler sentences, and minimal subordinate propositions. LS also has fewer verbal heads per sentence, avoiding complex sentence structures with multiple clauses. While the analyses suggest consistent trends, there are moderate differences across datasets that limit full generalization. For example, the MDR dataset shows less pronounced differences in sentence count and clause length compared to *Stadt Köln*, possibly due to variations in the source material or editorial guidelines for LS adaptation. We could say that while some structural and linguistic distinctions between SG and LS are identifiable, their specific implementations are context-dependent, suggesting that LS is a flexible framework rather than a rigid set of rules. A tendency is observable; however, the results are too ambiguous to definitively extract structural linguistic differences. The main challenge lies in the considerable variability within the data. The violin plots (Fig. 1, Fig. 2, Fig. 3 and Fig. 4) illustrate this variability by showing the distribution of the percentage of additional tokens and sentences in SG and LS texts. The shape and spread of the plots indicate that while LS texts are generally shorter, the extent of simplification varies. For instance, when comparing the SG versions across datasets, MDR SG texts (blue plots) exhibit a wider and more spread-out distribution of additional tokens and sentences. This indicates a high variability in the percentage of additional tokens and sentences in SG texts; that is, some MDR LS texts have been extremely shortened. In the case of *Stadt Köln* SG texts, the distribution of additional tokens and sentences is much more compact compared to MDR SG texts. The range is smaller, meaning that the number of additional tokens and sentences in SG texts is less extreme in this database. As for the LS texts (orange plots), the plot for MDR LS texts is narrower than the Stadt Köln LS one. This means that whenever the LS texts outnumber their SG counterparts, there is less variability in MDR LS texts than in Stadt Köln LS texts. The asymmetry in the plots also highlights the LS does not scale proportionally with SG text length; instead, it appears to fluctuate randomly and its application depends on editorial choices.

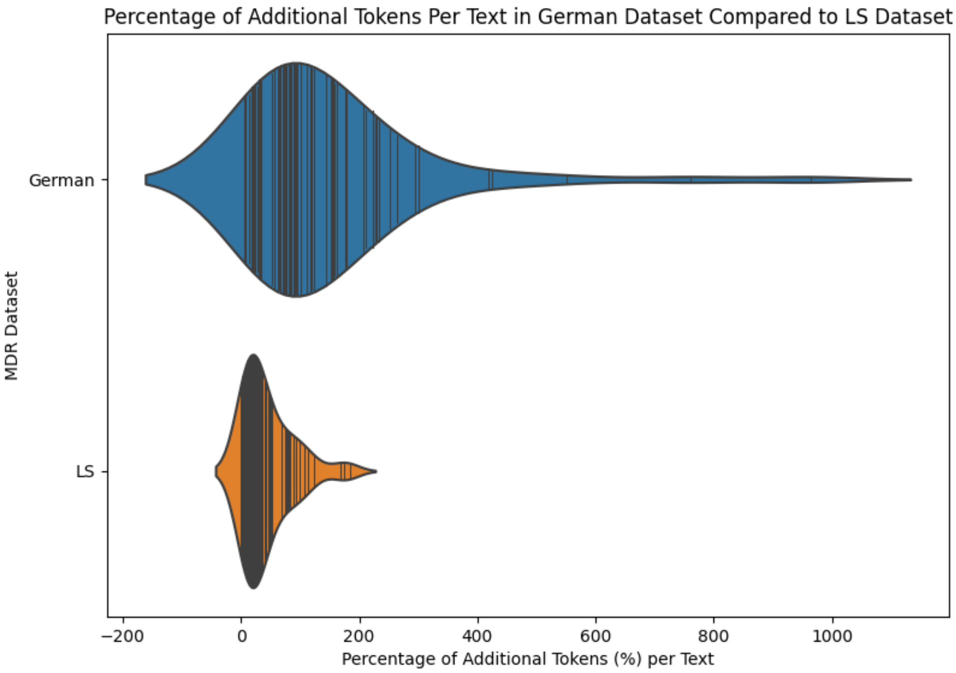


Fig. 1: Percentage of additional tokens per text in SG compared to LS in MDR dataset

**trans-kom 18** [1] (2025): 330–354


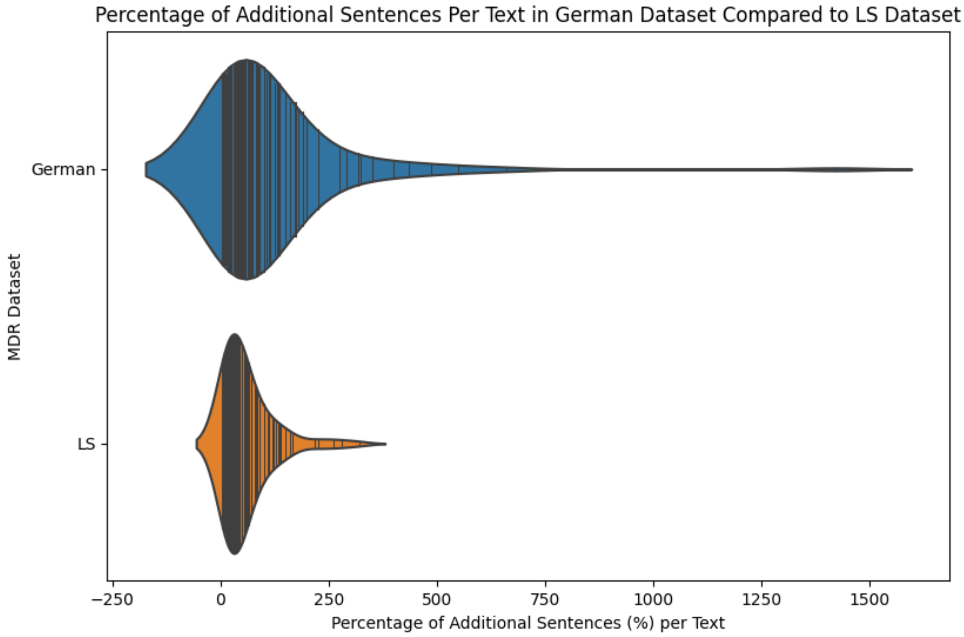


Fig. 2: percentage of additional sentences per text in SG compared to LS in MDR dataset

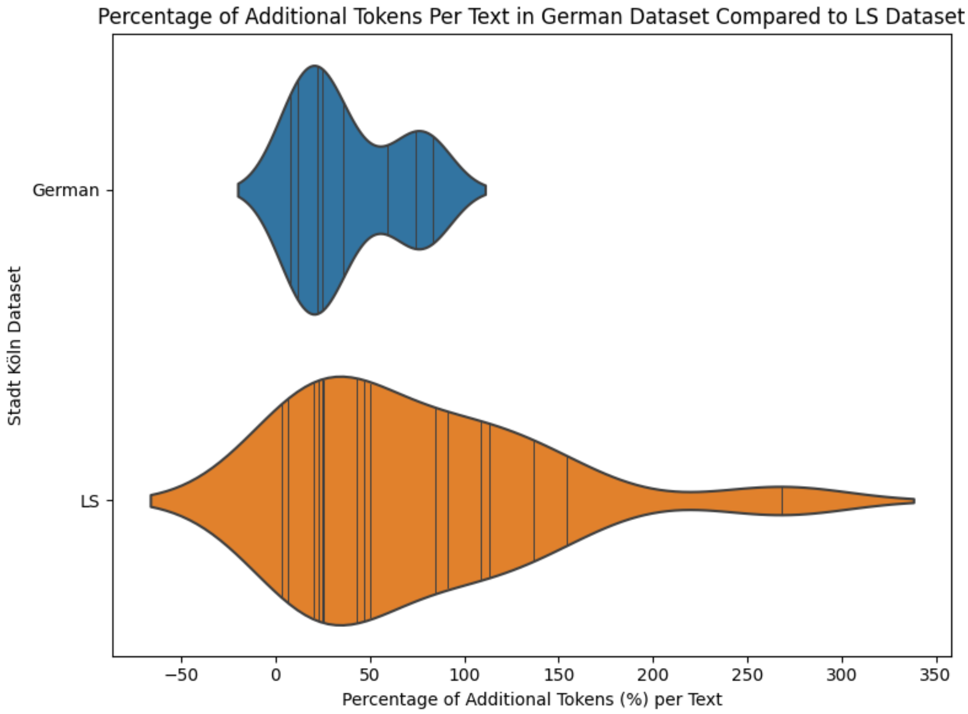


Fig. 3: percentage of additional tokens per text in SG compared to LS in *Stadt Köln* dataset

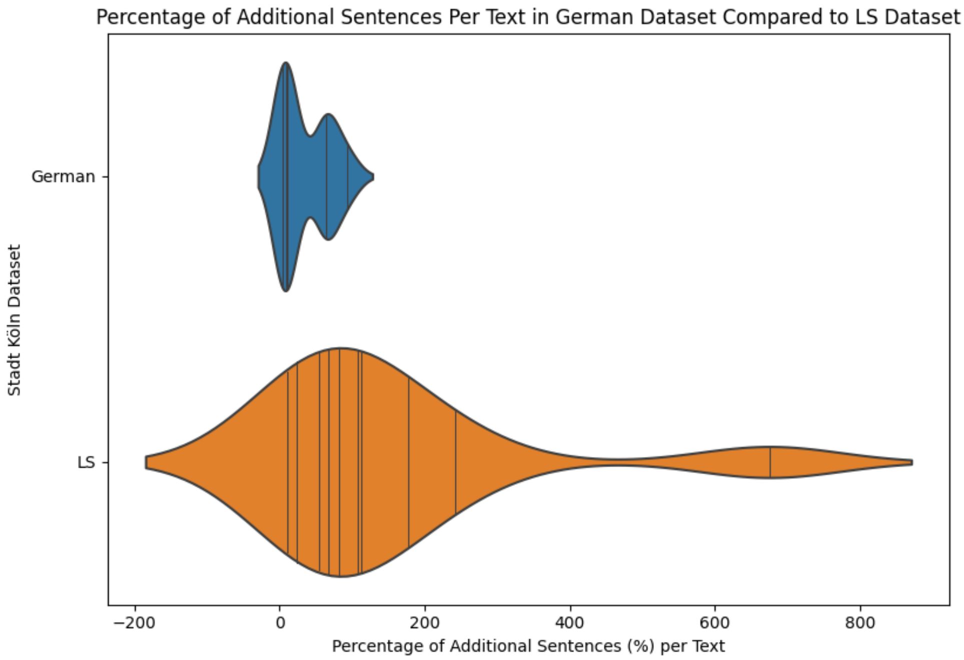


Fig. 4: percentage of additional sentences per text in SG compared to LS in *Stadt Köln* dataset

We also investigated potential relationships among different linguistic features. For instance, we examined whether texts with more sentences tend to use shorter sentences, or whether texts with fewer tokens feature longer sentences. Our analysis revealed some weak negative and positive correlations. For example, in the MDR LS dataset, a correlation of -0.21 suggests that "tokens per sentence" and "number of sentences" are not strongly linked, though there is some variability around this trend (see Fig. 6). While this represents a weak inverse relationship, it is far from a perfect inverse correlation, which would have a value closer to -1. A similar pattern is observed in the Stadt Köln dataset, where the LS texts exhibit a correlation of -0.28 between "tokens per sentence" and the "number of sentences" (see Fig. 8). Interestingly, this negative correlation persists in the SG portion of the dataset (see Fig. 7), although at a lower magnitude (-0.16).

Certain correlations; however, are more pronounced in the LS datasets. For instance, the relationship between "verbal heads per sentence" and "principal proposition distribution" shows a weak correlation in the standard German texts of the *Stadt Köln* dataset (-0.40), but a strong correlation in their LS counterparts (-0.85). Conversely, in the MDR dataset, the correlation behaves differently: the LS texts exhibit a weaker correlation (-0.57), while the SG texts show a stronger correlation (-0.81).

These findings suggest that not only are clear, consistent correlations difficult to identify and attribute exclusively to either standard German or LS texts, but also that these correlations vary depending on the specific LS texts under analysis. This variability underscores the complexity of linguistic patterns across different datasets.

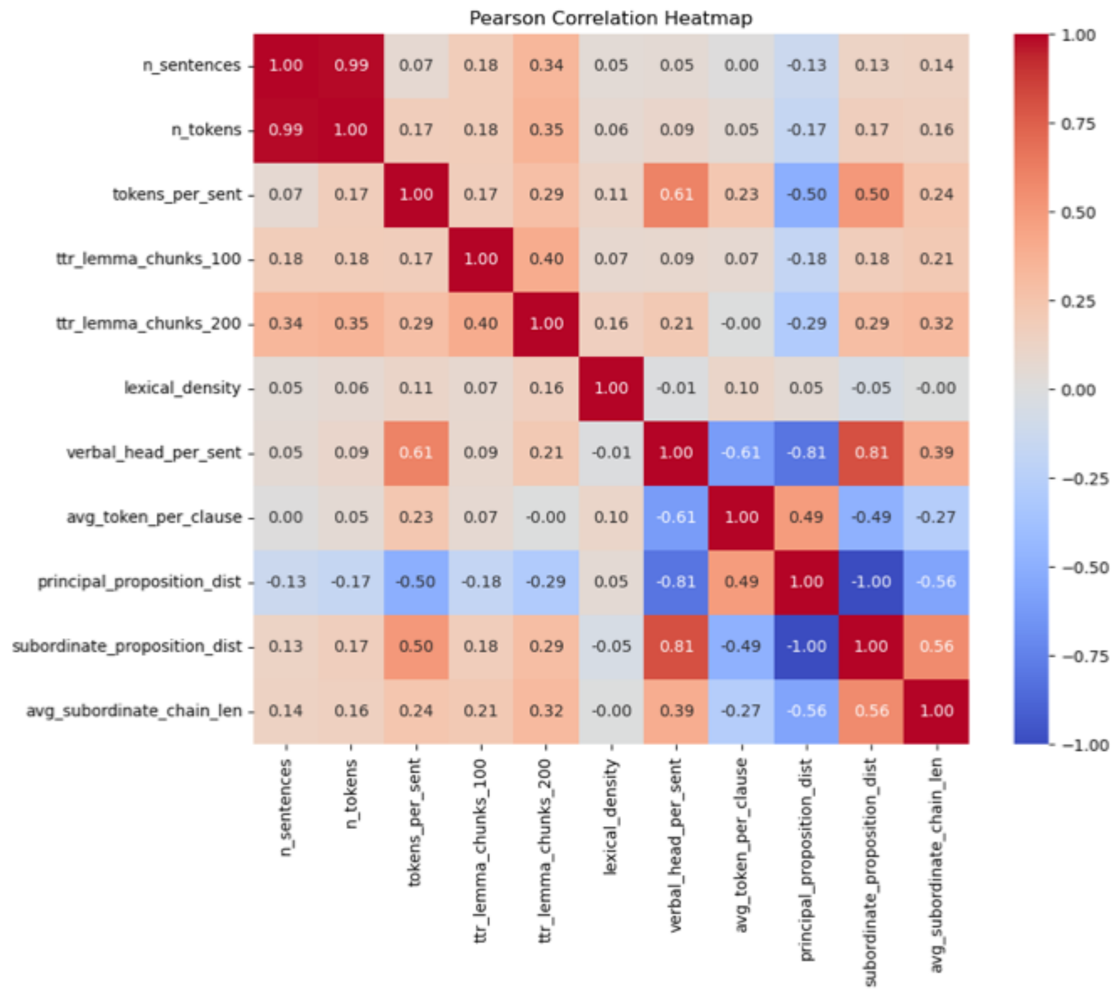


Fig. 5: SG correlations MDR dataset

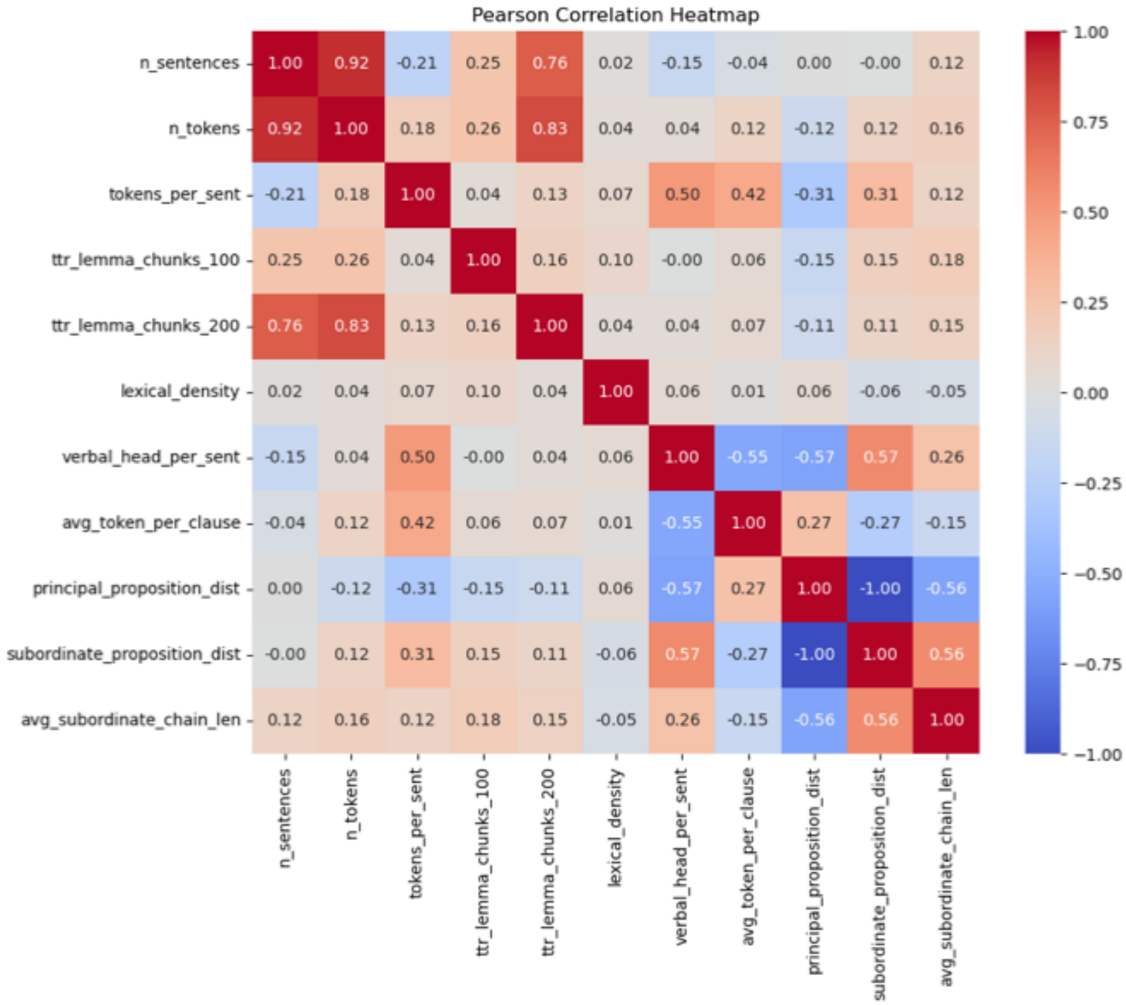


Fig. 6: LS correlations MDR dataset

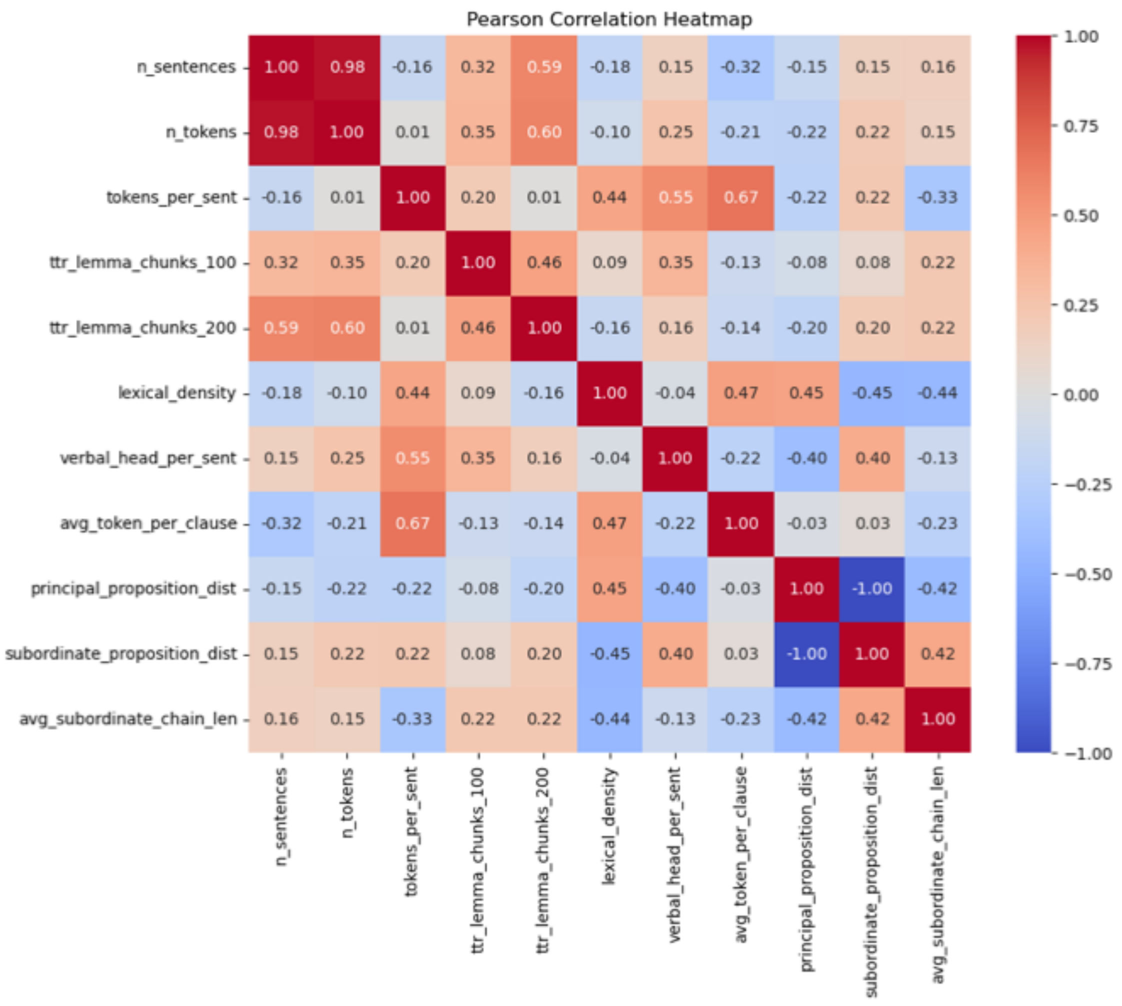


Fig. 7: SG correlations *Stadt Köln* dataset

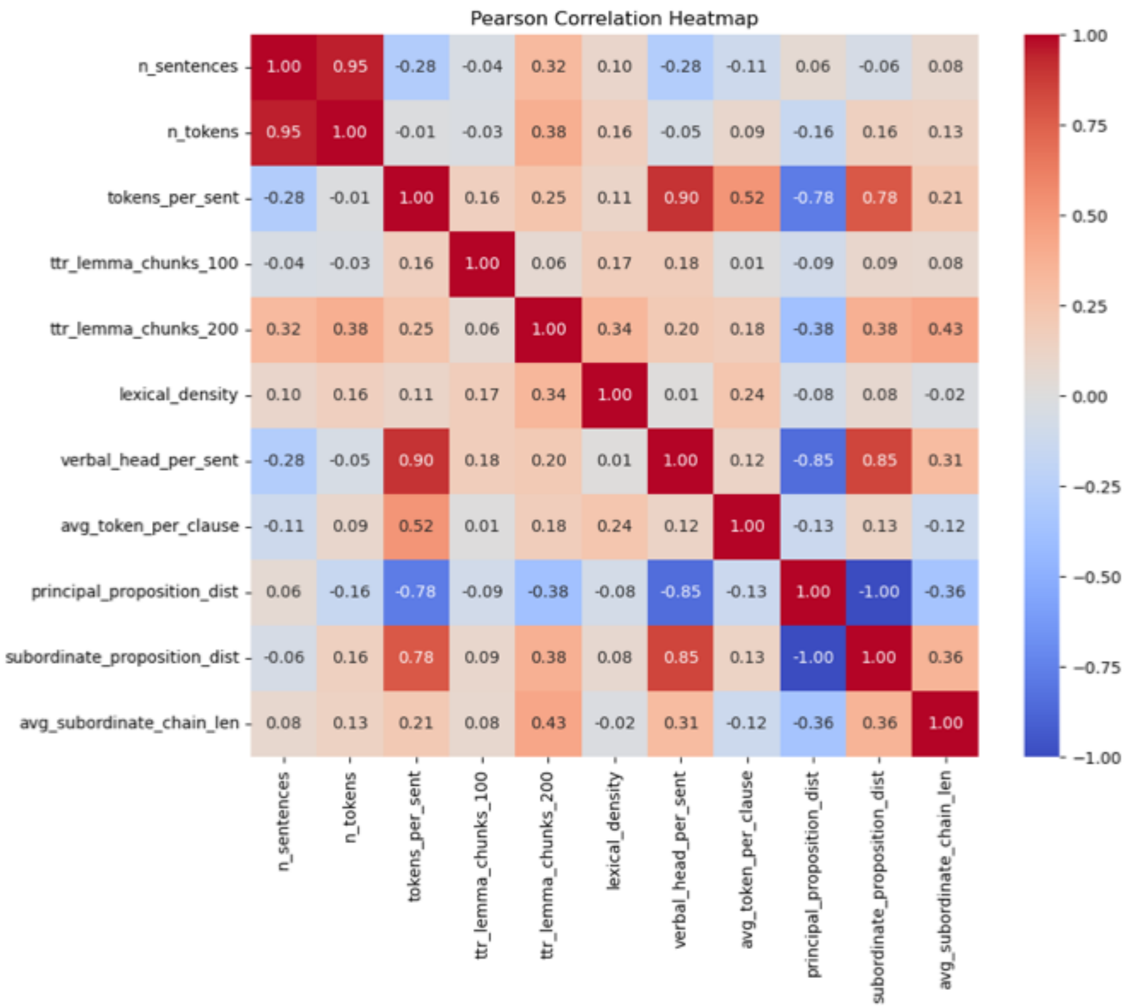


Fig. 8: LS correlations *Stadt Köln* dataset

## 5 Conclusions and future work

The analyses of Stadt Köln and MDR datasets reveal some consistent structural and linguistic adaptations in LS texts compared to SG, but there is a lot of variability. While it is possible to identify general trends (e. g., shorter sentences, higher lexical density, explicit syntactic structures), the extent of these changes can vary by context. This makes LS a dynamic and adaptive form of communication, rather than a fixed one.

In line with the work of Madina, Gonzalez-Dios and Siegel (2024), we explored the feasibility of extracting structural linguistic features that distinguish LS from SG as a foundation for developing an evaluation method based on these differences. Our findings suggest that while some correlations exist, the variability between datasets is substantial. The extent of these differences indicates that LS adaptation is highly context-dependent.

Exploring additional datasets may provide further insights and help clarify the patterns that emerge across different settings.

We would also like to investigate whether these correlations hold consistent across more datasets and genres, as this could reveal whether certain linguistic features are universally associated with LS texts or whether they vary significantly by context.

The flexibility in adapting texts presents significant challenges in developing objective and reliable evaluation systems for LS. This is similar to the situation with Machine Translation, where multiple valid outputs exist, making evaluation inherently subjective. Further exploration of correlations between linguistic features, particularly across larger and more varied datasets, could yield insights into patterns or consistencies that remain unclear due to variability. Moreover, it may be beneficial to investigate how different user groups perceive and interact with different LS texts. Understanding user-centric responses could inform the development of more effective LS guidelines tailored to diverse audiences. This might also help understand the existing differences and variability in different LS datasets.

## References

Agrawal, Sweta; Marine Carpuat (2024): "Do text simplification systems preserve meaning? A human evaluation via reading comprehension." *Transactions of the Association for Computational Linguistics* 12: 432–448

Alva-Manchego, Fernando; Carolina Scarton, Lucia Specia (2020): "Data-driven sentence simplification: Survey and benchmark." *Computational Linguistics* 46 [1]: 135–187

Alva-Manchego, Fernando; Carolina Scarton; Lucia Specia (2021): "The (un)suitability of automatic evaluation metrics for text simplification." *Computational Linguistics* 47 [4]: 861–889

Amstad, Toni (1978): Wie verständlich sind unsere Zeitungen? Doctoral dissertation. Zürich: Universität Zürich

BITV 2.0 (2011): *Verordnung zur Schaffung barrierefreier Informationstechnik nach dem Behindertengleichstellungsgesetz (Barrierefreie-Informationstechnik-Verordnung – BITV 2.0)* – https://www.gesetze-im-internet.de/bitv_2_0/BJNR184300011.html (20.02.2025)

Borghardt, Liv; Silvana Deilen, Julia Fuchs, Anne-Kathrin Gros, Silvia Hansen-Schirra, Arne Nagels, Laura Schiffl, Johanna Sommer (2021): "Neuroscientific research on the processing of Easy Language." *Frontiers in Communication* 6: article 698044 – https://www.frontiersin.org/journals/communication/articles/10.3389/fcomm.2021.698044/full (16.04.2025)

Bredel, Ursula; Christiane Maaß (2016a): *Arbeitsbuch Leichte Sprache: Übungen für die Praxis mit Lösungen*. Berlin: Dudenverlag

Bredel, Ursula; Christiane Maaß (2016b): *Leichte Sprache: Theoretische Grundlagen? Orienterung für die Praxis.* Berlin: Dudenverlag

Brunato, Dominique; Andrea Cimino, Felice Dell'Orletta, Giulia Venturi, Simonetta Montemagni (2020): "Profiling-UD: A tool for linguistic profiling of texts." Nicoletta Calzolari, Frédéric Béchet, Philippe Blache, Khalid Choukri, Christopher Cieri, Thierry Declerck, Sara Goggi, Hitoshi Isahara, Bente Maegaard, Joseph Mariani, Hélène Mazo, Asunción Moreno, Jan Odijk, Stelios Piperidis (eds): *Proceedings of the Twelfth Language Resources and Evalua-*

*tion Conference*. Marseille, France: European Language Resources Association, 7145–7151 – https://aclanthology.org/2020.lrec-1.883/ (16.04.2025)

Cumbicus-Pineda, Oscar M.; Itziar Gonzalez-Dios, Aitor Soroa (2021): "Linguistic capabilities for a checklist-based evaluation in automatic text simplification." Horacio Saggion, Sanja Štajner, Daniel Ferrés (eds): *Proceedings of the First Workshop on Current Trends in Text Simplification (CTTS 2021), co-located with SEPLN 2021*. CEUR Workshop Proceedings, 70–83 – https://ceur-ws.org/Vol-2944/paper5.pdf (16.04.2025)

Deilen, Silvana (2020): "Visual segmentation of compounds in Easy Language: Eye movement studies on the effects of visual, morphological, and semantic factors on the processing of German noun-noun compounds." Silvia Hansen-Schirra, Christiane Maaß (eds): *Easy Language research: Text and user perspectives*. Berlin: Frank & Timme, 241–256

Deilen, Silvana; Silvia Hansen-Schirra, Arne Nagels (2021): "How the use of segmentation signs in compound reading affects reading behavior: An eye-tracking study." *PsyArXiv* 22 September – https://osf.io/preprints/psyarxiv/unyts_v1 (16.04.2025)

DIN ISO 24495-1 (2023): *Einfache Sprache.* Teil 1: *Grundsätze und Leitlinien (ISO 24495-1:2023)* – https://www.din.de/de/mitwirken/normenausschuesse/nat/veroeffentlichungen/wdc-beuth:din21:375008622 (20.02.2025)

DIN SPEC 33429:2023-04 (2023): *Empfehlungen für Deutsche Leichte Sprache* – https://www.dinmedia.de/de/technische-regel-entwurf/din-spec-33429/364785446 (20.02.2025)

Grabar, Natalia; Horacio Saggion (2022): "Evaluation of automatic text simplification: Where are we now, where should we go from here." Yannick Estève, Tania Jiménez, Titouan Parcollet, Marcely Zanon Boito (eds): *Actes de la 29e Conférence sur le Traitement Automatique des Langues Naturelles.* Vol. 1: *Conférence principale*, Avignon: ATALA, 453–463 – https://aclanthology.org/2022.jeptalnrecital-taln.47/ (16.04.2025)

Inclusion Europe (ed.) (2009): *Informationen für alle. Europäische Regeln, wie man Informationen leicht lesbar und leicht verständlich macht*. Brussels: Inclusion Europe – https://www.inclusion-europe.eu/wp-content/uploads/2017/06/DE_Information_for_all.pdf (20.02.2025)

**trans-kom** **ISSN 1867-4844**

**trans-kom** ist eine wissenschaftliche Zeitschrift für Translation und Fachkommunikation.

**trans-kom** veröffentlicht Forschungsergebnisse und wissenschaftliche Diskussionsbeiträge zu Themen des Übersetzens und Dolmetschens, der Fachkommunikation, der Technikkommunikation, der Fachsprachen, der Terminologie und verwandter Gebiete.

Beiträge können in deutscher, englischer, französischer oder spanischer Sprache eingereicht werden. Sie müssen nach den Publikationsrichtlinien der Zeitschrift gestaltet sein. Diese Richtlinien können von der **trans-kom**-Website heruntergeladen werden. Alle Beiträge werden vor der Veröffentlichung anonym begutachtet.

**trans-kom** wird ausschließlich im Internet publiziert: https://www.trans-kom.eu

Jindal, Pranay; Joy C. MacDermid (2017): "Assessing reading levels of health information: Uses and limitations of Flesch formula." *Education for Health* 30 [1]: 84–88

Kapnas, Dimitros; Silvia Hansen-Schirra (2024): "Status of professionalization of Easy Language translation in Germany." Georgios Floros, Konstantinos Kritsis, Rafaella Athanasiadi (eds): *'Unstated' mediation: On the ethical aspects of non-professional interpreting and translation.* Nicosia: University of Cyprus, 53–76 – https://www.researchgate.net/profile/Georgios-Floros-4/publication/383456698_'Unstated'_mediation_On_the_ethical_aspects_of_non-professional_interpreting_and_translation/links/66ce1ef5b1606e24c2a3c6da/Unstated-mediation-On-the-ethical-aspects-of-non-professional-interpreting-and-translation.pdf (16.04.2025)

Levenshtein, Vladimir I. (1966): "Binary codes capable of correcting deletions, insertions, and reversals." *Soviet physics – Doklady* 10 [8]: 707–710

Lieske, Christian; Melanie Siegel (2014): "Verstehen leicht gemacht." *technische kommunikation* [1]: 44–49 – https://www.researchgate.net/publication/267574075_Verstehen_leicht_gemacht (16.04.2025)

Lin, Chin-Yew (2004): "ROUGE: A package for automatic evaluation of summaries." *Text summarization branches out*. Barcelona: Association for Computational Linguistics, 74–81 – https://aclanthology.org/W04-1013/ (16.04.2025)

Lin, Chin-Yew; Eduard Hovy (2003): "Automatic evaluation of summaries using n-gram co-occurrence statistics." *Proceedings of the 2003 Human Language Technology Conference of the North American Chapter of the Association for Computational Linguistics*, 150–157 – https://aclanthology.org/N03-1020/ (16.04.2025)

Maaß, Christiane; Ursula Bredel (2017): *Ratgeber Leichte Sprache: Die wichtigsten Regeln und Empfehlungen für die Praxis.* Berlin: Dudenverlag

Maaß, Christiane (2020): *Easy Language – Plain Language – Easy Language Plus*. (Easy – Plain – Accessible 3.) Berlin: Frank & Timme – https://www.frank-timme.de/en/programme/product/easy_language-plain_language-easy_language_plus?file=/site/assets/files/4582/easy_language_-_plain_language_-_easy_language_plus.pdf (16.04.2025)

Madina, Margot; Itziar Gonzalez-Dios, Melanie Siegel (2024): "Towards reliable E2R texts: A proposal for standardized evaluation practices." *International Conference on Computers Helping People with Special Needs.* Cham: Springer Nature Switzerland, 224–231

MDR (2023): Wie wird Leichte Sprache geschrieben? – https://www.mdr.de/barrierefreiheit/video-724780.html (06.03.2025)

MDR (n. d.) – https://www.mdr.de/nachrichten/index.html (08.01.2025)

Netzwerk Leichte Sprache (n. d.) – https://www.netzwerk-leichte-sprache.de/ls/ (20.02.2025)

Nivre, Joakim (2015): "Towards a universal grammar for natural language processing." *International conference on intelligent text processing and computational linguistics.* Cham: Springer International Publishing, 3–16

Papineni, Kishore; Salim Roukos, Todd Ward, Wei-Jing Zhu (2002): "BLEU: A method for automatic evaluation of machine translation." Pierre Isabelle, Eugene Charniak, Dekang Lin (eds): *Proceedings of the 40th Annual Meeting of the Association for Computational Linguistics*. Philadelphia: Association for Computational Linguistics, 311–318 – https://aclanthology.org/P02-1040/ (16.04.2025)

Säuberli, Andreas; Franz Holzknecht, Patrick Haller, Silvana Deilen, Laura Schiffl, Silvia Hansen-Schirra, Sarah Ebling (2024): "Digital comprehensibility assessment of simplified texts among persons with intellectual disabilities." Florian Floyd Mueller, Penny Kyburz, Julie R. Williamson, Corina Sas, Max L. Willson, Phoebe Toups Dugas, Irina Shklovski (eds): *Proceedings of the*

*2024 CHI Conference on Human Factors in Computing Systems.* Honolulu: Association for Computing Machinery, article 527, 1–11 – https://dl.acm.org/doi/10.1145/3613904.3642570 (16.04.2025)

Schiffl, Laura (2022): Lexikalische Komplexität in der Leichten Sprache: Effekte von Länge, Frequenz und Wiederholung auf die visuelle Wortverarbeitung einer heterogenen Zielgruppe*.* Doctoral dissertation. Mainz: Johannes Gutenberg-Universität Mainz

Siddharthan, Advaith (2014): "A survey of research on text simplification." *ITL – International Journal of Applied Linguistics* [165/2]: 259–298

Siegel, Melanie; Christian Lieske (2015): "Beitrag der Sprachtechnologie zur Barrierefreiheit: Unterstützung für Leichte Sprache." *trans-kom* 8 [1]: 40–78 – https://www.trans-kom.eu/bd08nr01/trans-kom_08_01_03_Siegel_Lieske_Barrierefrei.20150717.pdf (19.03.2025)

SIMBA (Intelligent Text Simplification for a More Inclusive Internet) (n. d.) – https://www.hiig.de/en/simba-intelligent-text-simplification/ (21.02.2025)

Stadt Köln (n. d.) – http://www.stadt-koeln.de/ (08.01.2025)

Steinmetz, Ina; Karin Harbusch (2020): "Enabling fast and correct typing in 'Leichte Sprache' (Easy Language)." Rossana Cunha, Samira Shaikh, Erika Varis, Ryan Georgi, Alicia Tsai, Antonios Anastasopoulos, Khyathi Raghavi Chandu (eds): *Proceedings of the Fourth Widening Natural Language Processing Workshop*. Seattle: Association for Computational Linguistics, 64–67 – https://aclanthology.org/2020.winlp-1.17/ (16.04.2025)

Steinmetz, Ina; Karin Harbusch (2022): "A text-writing system for Easy-to-Read German evaluated with low-literate users with cognitive impairment." Ting-Hao 'Kenneth' Huang, Vipul Raheja, Dongyeop Kang, John Joon Young Chung, Daniel Gissin, Mina Lee, Katy Ilonka Gero (eds): *Proceedings of the First Workshop on Intelligent and Interactive Writing Assistants (In2Writing 2022)*. Dublin: Association for Computational Linguistics, 27–38 – https://aclanthology.org/2022.in2writing-1.4/ (16.04.2025)

Sulem, Elior; Omri Abend, Ari Rappoport (2018a): "BLEU is not suitable for the evaluation of text simplification." Ellen Riloff, David Chiang, Julia Hockenmaier, Jun'ichi Tsujii (eds): *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing*. Brussels: Association for Computational Linguistics, 738–744 – https://aclanthology.org/D18-1081/ (16.04.2025)

Sulem, Elior; Omri Abend, Ari Rappoport (2018b): "Semantic structural evaluation for text simplification." Marilyn Walker, Heng Ji, Amanda Stent (eds): *Proceedings of the 2018 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*. Vol. 1: *Long Papers*. New Orleans: Association for Computational Linguistics, 685–696 – https://aclanthology.org/N18-1063/ (16.04.2025)

SUMM AI (n. d.) – https://summ-ai.com/en/ (21.02.2025)

Toborek, Vanessa; Moritz Busch, Malte Boßert, Christian Bauckhage, Pascal Welke (2023): "A new aligned Simple German corpus." Anna Rogers, Jordan Boyd-Graber, Naoaki Okazaki (eds): *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics.* Vol. 1: *Long Papers.* Toronto: Association for Computational Linguistics, 11393–11412 – https://aclanthology.org/2023.acl-long.638/ (16.04.2025)

Universal Dependencies contributors (2014–2024): *Universal dependencies* – https://universaldependencies.org/introduction.html (16.04.2025)

Vásquez-Rodríguez, Laura; Matthew Shardlow, Piotr Przybyła, Sophia Ananiadou (2021): "The role of text simplification operations in evaluation." Horacio Saggion, Sanja Štajner, Daniel Ferrés (eds): *Proceedings of the First Workshop on Current Trends in Text Simplification (CTTS 2021), co-located with SEPLN 2021*. CEUR Workshop Proceedings, 57–69 – https://ceur-ws.org/Vol-2944/paper4.pdf (16.04.2025)

Wubben, Sander; Antal van den Bosch, Emiel Krahmer (2012): "Sentence simplification by monolingual machine translation." Haizhou Li, Chin-Yew Lin, Miles Osborne, Gary Geunbae Lee, Jong C. Park (eds): *Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics.* Vol. 1: *Long Papers.* Jeju Island: Association for Computational Linguistics, 1015–1024 – https://aclanthology.org/P12-1107/ (16.04.2025)

Xu, Wei; Courtney Napoles, Ellie Pavlick, Quanze Chen, Chris Callison-Burch (2016): "Optimizing statistical machine translation for text simplification." *Transactions of the Association for Computational Linguistics* 4: 401–415

Yamanaka, Hikaru; Takenobu Tokunaga (2024): "SIERA: An evaluation metric for text simplification using the ranking model and data augmentation by edit operations." Rodrigo Wilkens, Rémi Cardon, Amalia Todirascu, Núria Gala (eds): *Proceedings of the 3rd Workshop on Tools and Resources for People with REAding DIfficulties (READI) @ LREC-COLING 2024.* Torino: ELRA / ICCL, 47–58 – https://aclanthology.org/2024.readi-1.5/ (16.04.2025)

## *Authors*

Margot Madina (Darmstadt University of Applied Sciences – Hochschule Darmstadt) is a PhD candidate in Computational Linguistics, focusing on Easy-to-Read language for Spanish and German. She obtained her M. Sc. in Language Analysis and Processing (Computational Linguistics) at the University of the Basque Country (UPV/EHU) in 2020. Before that, she obtained her B.A. in English Philology in 2018, also at the UPV/EHU. She has taught the seminar in Machine Translation and has collaborated in teaching Semantics at the Faculty of Media in Hochschule Darmstadt. Her main research interests focus on accessibility, readability and text simplification. She has also been a reviewer in NLP-related conferences and workshops.
E-mail: margot.madina-gonzalez@h-da.de

Itziar Gonzalez-Dios received her PhD on Language Analysis and Processing (computational linguistics) in 2016, her M.A. on the same topic in 2011 and her B.A. on German Philology in 2010, all of them at the University of the Basque Country (UPV/EHU). She is an associate professor in the department of Basque Language and Communication teaching Basque for Specific Purposes in the Faculty of Economics and Business of the UPV/EHU. She has been a member of the Ixa group since 2010 and of the HiTZ center since its creation in 2019. She has published over 70 international peer-reviewed articles and conference papers in NLP, mainly in the areas of readability assessment and automatic text simplification. Her research is also focused on developing language resources and the evaluation of large language models. She has also been a reviewer and area chair in various journals and conferences and has experience on organisation of scientific workshops. She speaks fluently Spanish, Basque, English, German, French and Italian.
E-mail: itziar.gonzalezd@ehu.eus
ORCID: 0000-0003-1048-5403

Melanie Siegel is Professor for Semantic Technologies at Darmstadt University of Applied Sciences. She holds a PhD and a habilitation from Bielefeld University in computational linguistics and language technology. She has worked for ten years at the German Research Centre for Artificial Intelligence (DFKI) in the language technology research lab and six years in a language technology software company. Her research interests include machine translation, information extraction, syntax and semantics for language technology, Japanese and German language technology, sentiment analysis, and easy-to-read language.
E-mail: melanie.siegel@h-da.de
Website: http://www.melaniesiegel.de/publications.html and on Researchgate.

# Empfehlungen

## TRANSÜD. Arbeiten zur Theorie und Praxis des Übersetzens und Dolmetschens

Herausgegeben von Hartwig Kalverkämper und Sylvia Reinart

Vlasta Kučiš / Natalia Kaloh Vid (eds./Hg.): **Dynamics of Translation Studies – Digitization, Training, and Evaluation / Potenziale der Translationswissenschaft – Digitalisierung, Ausbildung und Qualitätssicherung.** ISBN 978-3-7329-1137-0

Elisabeth Gibbels (ed.): **Translating Women in Germany in the 19th Century. A Biographical Lexicon.** ISBN 978-3-7329-1093-9

Hervé Delplanque / Stephanie Schwerter (dir.): **L'incompréhension culturelle à l'épreuve du droit.** ISBN 978-3-7329-1071-7

Dominique Dias / Nadine Rentel / Stephanie Schwerter (dir.): **Les incompréhensions culturelles: problèmes, défis, opportunités.** ISBN 978-3-7329-1072-4

Stefan Felber: **Toward a Science of Translating? Eugene A. Nida and His Theory of Dynamic Equivalence.** ISBN 978-3-7329-1121-9

## Theoretische Translationsforschung

Herausgegeben von Dilek Dizdar und Tomasz Rozmysłowicz

Anastasia Schachoff: **Wandernde Theorien in translationswissenschaftlichen Diskursen.** ISBN 978-3-7329-1125-7

## DaF/DaZ in Forschung und Lehre

Herausgegeben von Christina Maria Ersch und Marion Grein

Luisa Baum / Gülsüm Günay (Hg.): **Künstliche Intelligenz in DaF/DaZ.** ISBN 978-3-7329-1166-0

## Transkulturalität – Translation – Transfer

Herausgegeben von Martina Behr, Larisa Schippel und Julia Richter

Stefanie Kremmel: **Der Lebenslauf der Übersetzung. Die Transkulturalität des Kommunistischen Manifests.** ISBN 978-3-7329-1118-9

Miriam Gamauf: **Afrikanische Dolmetscher im französischen Kolonialreich in Westafrika. Rollenverständnis und Machtposition im Kontext.** ISBN 978-3-7329-1124-0

## Forum für Fachsprachen-Forschung

Herausgegeben von Hartwig Kalverkämper

Ursula Wienen: **Translation von Fachsprache in literarischen Texten.** ISBN 978-3-7329-1142-4

Nadja Capus / Cornelia Griebel / Ivana Havelka: **Sprachmittlung in der geheimen Kommunikationsüberwachung.** ISBN 978-3-7329-1095-3

Margarete Flöter-Durr: **Sens et pertinence en traduction juridique. Fondements théoriques et applications pratiques.** ISBN 978-3-7329-1112-7

## Easy – Plain – Accessible

Herausgegeben von Silvia Hansen-Schirra und Christiane Maaß

Anke Radinger: **Researching Subtitling Processes. Methodological considerations for the investigation of AI-assisted subtitling workflows.** ISBN 978-3-7329-1029-8

Sarah Ahrens: **Einfache Sprache in der Gesundheitskommunikation. Patientinnenaufklärung für Frauen mit Deutsch als Zweitsprache.** ISBN 978-3-7329-1132-5

Werner Creutziger: **Ein langes Leben in Deutschland.** ISBN 978-3-7329-1116-5

Alle Bücher sind auch als E-Books erhältlich.

Frank & Timme

Wittelsbacherstraße 27a, 10707 Berlin • Telefon +49 (0)30 88 66 79 11 • info@frank-timme.de • www.frank-timme.de