Gauging Language Gain during Study Abroad through Writing Samples

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This study suggests a way to gauge the linguistic gain during a semester abroad in Germany by analyzing student writing samples that were produced at two benchmarks during the semester. The data revealed statistically significant increases in the measures of average sentence and clause length and use of less common verbs over the course of the semester. The use of inferential statistics and L2 specific effect size interpretation allows for meaningful conclusions and reliable comparisons with potential future studies. The results also point to a myriad of possibilities for replication studies and modifications in project design.

1. Introduction, Background and Research Question

Study abroad programs are generally considered highlights of students’ academic careers and seen as beneficial for students who want to improve their (inter)cultural awareness and L2 proficiency. While much previous research has explored the effects and benefits of study abroad (cf. Ecke 2014 for a comprehensive review of research on study abroad in German-speaking countries), findings cannot be easily generalized from one program to another. Consequently, the effectiveness of individual programs is often still based on learners' self-assessments or instructors' observations, rather than structured studies that actually measure and thus prove the suspected gains. This might be at least partially due to the assumed infeasibility of such studies in terms of time and effort. However, even small-scale studies like the one discussed here can contribute to program evaluation as well as add data to the research corpus on the topic and encourage replication studies.

More than 60% of University of Wisconsin-Eau Claire (UWEC) German majors and minors take part in a semester-long study abroad program in Marburg, Germany. During the program, students participate in courses specifically designed for exchange students and, as a result, do not share classrooms with their German peers. They also live in dormitories with other international students, so their interaction with native speakers of German can be quite limited without self-initiative to seek out such opportunities. As a
result, student comments in earlier rotations of the program overwhelmingly lamented a lack of interaction with the host culture. In order to remedy this undesirable situation, faculty designed a series of tasks (based on Cadd 2012) to facilitate experiential learning situations (Lindseth & Brown 2014). Each of the tasks provides a chance for students to meaningfully engage with the host culture (e.g., by attending a community festival or university function; visiting a landmark or museum that is representative of the host culture). For each task students also need to talk to at least two members of the host culture and then write a reflection following a series of guiding questions (Lindseth & Brown 2014):

What did you learn? Was it the same as you expected? Was it difficult to talk about this topic? If so, why? Did you learn anything meaningful about the culture? If so, what? Did you notice any differences between your style of communication and theirs when talking about the topic? If so, what were they? Did you have problems understanding them? If so, what did you do about it?

Written reports are completed in the target language at two benchmarks during the semester. Students receive feedback after the first submission to facilitate their language development and foster their critical reflection abilities.

According to recent program evaluations administered by the UWEC Center for International Education, one immediate benefit of these tasks was that the vast majority of students agreed with the statement that they “really experienced the host culture in Germany” (83% in 2014 and 100% in 2015, compared to only 37% in 2013). Additionally, in an internal post-program survey administered by the German department in 2015, all students agreed, many of them strongly, that completing the tasks helped them improve their cultural understanding, examine their own beliefs, expand their willingness to engage with native speakers, and increase their proficiency in German, as shown in Figure 1.
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Fig. 1: Survey Results

Though the improved satisfaction with the program was a success in itself compared to the feedback from earlier student cohorts, the repository of students’ written reports offered an opportunity for further linguistic analysis. Thus, the idea for this project was conceived, leading to the following research question: Can the written reports be used to gauge students' linguistic gains in German?

2. Methods

2.1 Sample Collection

The samples analyzed in this research were not produced explicitly for this project, but rather as a part of the aforementioned task activities. Written reports were collected from a study abroad cohort of nine students who participated in the Marburg program during spring 2015. Prior to the program, all students were within the Intermediate or lower Advanced ranges of proficiency on the scale defined by the American Council on the Teaching of Foreign Languages (ACTFL) and had completed the equivalent of at
least three semesters of university-level German coursework. Each student submitted two written reports: one near the beginning of the program in February 2015 (Benchmark 1) and one closer to the end in May 2015 (Benchmark 2).

2.2 Language Features and Data Selection

Next, specific language features suitable to gauging the gain in writing skills needed to be identified. Particularly, the question of which features might be tokens of more advanced levels needed to be answered. According to the ACTFL guidelines (ACTFL 2012), writers at the Intermediate level typically produce collections of discrete or loosely connected sentences using basic vocabulary and structures. Writers at the Advanced level, on the other hand, produce detailed narratives and descriptions in connected discourse of paragraph length and structure.

Previous research on the development of oral proficiency (Lindseth 2010, 2016; Tschirner 1996) pointed to control of word order, specifically verb placement, as an identifiable token of Advanced proficiency. In German texts, subject-verb inversion (positioning of elements other than the subject in the sentence-initial position) and V-final placement in dependent clauses (resulting from the use of subordinating conjunctions and relative pronouns) support cohesion and strategic sequencing of ideas and information, allowing for a smooth flow of sentences and internal integrity of paragraphs. Analysis of the writing samples in this study showed that verb placement was already controlled above a 90% threshold by the majority of students at the first benchmark, so analyzing the gain in accuracy of inversion and V-final structures in the samples was not suitable for the research question at hand. Though there was a slight

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1 The proficiency ranges refer to both writing and speaking skills and are mostly based on performance in courses that students took before departing on the study abroad program. No official Oral Proficiency Interviews (OPIs) or Writing Proficiency Tests (WPTs) were conducted. However, the judgment seems sufficiently reliable as the instructor who provided the ratings is an ACTFL-certified rater and tester with many years of experience. Several students also completed advisory WPTs and OPIs as part of coursework leading up to the study abroad experience, confirming the same proficiency range. Furthermore, the exact sublevels of individuals have no direct bearing on the study at hand.

2 Correctness refers to grammatically proper usage, with 90% correctness considered the threshold for full control of a language feature. This threshold for mastery is noted with regard to the fact that 100% correctness levels cannot even be expected from native speakers, much less language learners. Tschirner (1996) suggested 80% correctness as threshold for control in spontaneous spoken language. Taking into consideration that the samples in this study were written and not produced spontaneously, the bar was set higher.
overall increase in the number of conjunctions being used at the second benchmark, this quantitative gain is subsumed in the analysis of sentence length outlined below.

Returning to the ACTFL description of the Advanced range of proficiency, the following language features were then identified to provide potential insights into linguistic changes as learners move up the proficiency scale.

- Average sentence and clause length
- Verb usage

In contrast to the idea of control of a structure (i.e., grammatically correct usage), these features will be considered in terms of quantitative change over time.

2.2.1 Sentence Length

Longer sentences presumably correlate to more advanced proficiency levels, because they indicate the presence of a higher number of cohesion-building connectors, such as coordinating, adverbial and subordinating conjunctions and relative pronouns, thus pointing in the direction of “connected discourse of paragraph length and structure” (ACTFL 2012) described in the ACTFL guidelines. Longer sentences also suggest the growing presence of more complex nominal phrases with the attributive use of adjectives, prepositional phrases and Genitive (e.g., *eine sehr nette Frau aus dem ersten Stock unsres Wohnhauses*), thus lending more detail to descriptions and narrations, another hallmark of the Advanced level. German writing samples (provided online by ACTFL) that represent the Intermediate and Advanced levels on the ACTFL scale contain 5.5 and 12.4 words per sentence respectively, therefore supporting the idea that higher proficiency correlates with increased sentence length (cp. ACTFL 2012). It should be emphasized that these numbers are solely based on two short writing samples and that their interpretation as general threshold values for specific levels would by no means be appropriate, nor should we assume that longer sentences per se mean higher text quality. In other words, growing sentence length is a necessary but not sufficient indication of increasing writing competence as learners progress from Intermediate to Advanced.

Analyzing sentence length as a quantitative measure of writing skills has been suggested by many researchers. Sentence length has been defined and calculated in a variety of
ways, including the number of words per sentence, number of words per clause, number of words per T-unit\(^3\) and clauses per T-unit (Best 2006; Beers & Nagy 2011; Hunt 1970; Petersen 2014). In the following brief literature review, the term sentence length subsumes the different definitions.

Many studies on the development of L1 writing included sentence length as a measure of linguistic gain (Beers & Nagy 2011; Best 2006; Feilke 1996a, 1996b; Hunt 1970; Petersen 2014). Best (2006: 45-46) and Feilke (1996a: 201-202) reported that sentence length in L1 development increased steadily and then stabilized when students graduated from high school, resembling the S-shape of a logistic function. While it seems logical that growth in sentence length slows down and stagnates at some point, some researchers observed increases in sentence length to continue into college (Petersen 2014: 168-171). Previous research also showed that average sentence length was dependent on text type (e.g., narration, description, instruction, argumentation, summary; cp. Beers & Nagy 2011; Petersen 2014; Pieper 1979).

Several studies found that, in addition to sentence length, text length (number of words per text) can serve as a measure for assessing writing development (Augst et al. 2007; Feilke 1996a; Petersen 2014). Text routines (Feilke & Lehnen 2012: 121) and “increasing fluency in linguistic processes involved in text production” (McCutchen 2011: 54) were reported to play an important role in writing development and lead to longer text production. This seems especially plausible when writing fluency is measured in terms of the number of words produced under time constraints. Feilke (1996a: 201-202) reported stagnation of text length after high school graduation, while Petersen (2014: 165-168) found an increase of average text length into the college age.

Petersen's (2014) comparative study of monolingual and bilingual adolescents and young adults in Germany found a significant difference in both sentence and text length between age groups but not between monolingual and bilingual individuals. Additionally, several longitudinal L2 studies have used sentence length to analyze writing gains in French and Spanish during study abroad. Some revealed (at least partially) positive results (Godfrey et al. 2014; Larsen-Freeman 2006; Serrano et al. 2012), while others yielded mostly inconclusive results (Baró & Serrano 2011; Freed et al. 2003; Mitchell et al. 2017). Specific studies that investigate the development of

\(^3\) T-unit as defined by Hunt (1970: 4) is “one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it.”
sentence length in L2 writing during a study abroad program in Germany could not be identified. As a matter of fact, there are very few studies on writing gains in general during study abroad in German-speaking countries to date, as pointed out in Ecke’s (2014) comprehensive research review on the effects of study abroad in German-speaking countries.

The current study used two different measures of sentence length: words per sentence and words per clause.\(^4\) A sentence was defined as a unit completed by a period, exclamation mark or question mark, and sentence length as words per sentence. Single-word sentences, as well as run-on or otherwise ill-formed sentences, were excluded from the count, although the number of such cases was very small. Following Petersen (2014: 168), the number of words per clause was calculated by dividing the total number of words per text by the number of finite verbs and infinitive with zu constructions. This measure is an indicator of the growing complexity within clauses. Dependence of sentence and clause length on text type is irrelevant to the current study because the text types produced did not change between the two benchmarks.

### 2.2.2 Verb Usage

Verbs usage was analyzed in terms of variety and specificity. First, the total number of unique verbs was tallied for each writing sample at the two benchmarks. The individual lists of unique verbs were then cross-checked with a list of the top 100 most-used verbs in German, based on A Frequency Dictionary of German: Core Vocabulary for Learners (Jones & Tschirner 2006), thus calculating the number of less common (i.e., non-100) verbs for each sample. The rationale for using this verb analysis process was that less common verbs tend to be more specific, therefore lending themselves to more colorful descriptions and vivid narrations, both important functions of a higher proficiency level. For example, the verb sagen is ranked #6 on the list of most common verbs. On the other hand, more nuanced verbs like schelten, missbilligen, murmeln, äußern fall outside the top 100 list and their usage would indicate that the learner is starting to use more sophisticated, diverse vocabulary.

\(^4\) The measure of text length proved unsuitable for this study. There was no discernable difference in text length between the two benchmarks. Writing of the samples did not occur under time constraints and allowed access to aids. Text length seemed sensitive to a variety of factors, including writer motivation.
2.3 Analysis

Inferential statistics tests were performed based on the descriptive data gathered at the two benchmarks. Due to a small sample size, the non-parametric Wilcoxon Signed-Rank was chosen (instead of the paired-\( t \) test) to calculate the confidence interval values \( p \). The \( p \)-value represents the probability of a difference occurring by chance. This study assumes the widely accepted \( p \)-value in L2 studies for the difference to be statistically significant at \( p \leq .05 \), which means that the results would occur by chance fewer than five times in 100 trials.

Effect sizes were also calculated. The effect size is an index of the magnitude of results. Effect size values are not sensitive to sample size and allow for conclusions that are more meaningful in terms of the significance of differences than traditional tests that only provide a confidence interval value \( p \). Additionally, effect size values allow for more reliable comparisons between different studies, as discussed by Plonsky (2015). Differences can be statistically significant in terms of \( p \), but still have a very small effect size. On the other hand, a \( p \) value might indicate lack of statistical significance, assuming the traditional yet arbitrary cut-off point of \( p \leq .05 \), which does not necessarily mean that the two samples are equal. \( r \)-value effect sizes that resulted from the Wilcoxon Signed-Rank test were converted into \( d \) and then interpreted according to an L2 field-specific scale proposed by Plonsky and Oswald (2014) for within-group pre/post comparisons:

<table>
<thead>
<tr>
<th>Effect size</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>( d=0.6 )</td>
<td>( d=1.0 )</td>
<td>( d=1.4 )</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: L2 field-specific effect size scale according to Plonsky and Oswald (2014: 889)

3. Results

3.1 Average Sentence and Clause Length

When comparing students’ average sentence lengths at the two benchmarks, the group average increased from 10.6 to 12.7 words per sentence; all nine students saw an increase in average sentence length, with the growth appearing to be quite uniform
within the group, as illustrated in Figure 2.

![Average Sentence Length](image)

**Fig. 2: Average Sentence Length**

A Wilcoxon Signed-Rank test used as a non-parametric equivalent of the paired t-test implied that there was a significant difference between the scores at the first and second benchmark at $p \leq .05$ ($z=2.66, p=0.004$). The magnitude of the difference between the first and second sample scores was $d=1.614$, which indicated a large effect size in favor of the second benchmark based on the L2 field-specific scale.

When comparing students’ average clause lengths at the two benchmarks the group average increased from 6.3 to 7.2 words per clause; eight of the nine students saw an increase in average clause length, as illustrated in Figure 3.
Fig. 3: Average Clause Length

A Wilcoxon Signed-Rank test used as a non-parametric equivalent of the paired $t$-test implied that there was a significant difference between the scores at the first and second benchmark at $p \leq 0.05$ ($z=2.31, p=0.01$). The magnitude of the difference between the first and second sample scores was $d=1.3$, which indicated a not quite large effect size in favor of the second benchmark.

### 3.2 Verb Usage

Figure 4 shows the total number of unique non-100 verbs for each student at the two benchmarks.
The overall group average of unique verbs outside of the top 100 verbs increased from 3.9 to 7.4. Most students used more specific verbs in the second sample, but there were also three individuals (S3, S5, S6) who showed the opposite trend. In contrast, S2, S8, and S9 more than tripled their numbers. A Wilcoxon Signed-Rank test implied that the difference between the scores of the first and second benchmark was not quite significant at $p \leq 0.05$ ($z=1.305$, $p=0.095$). The magnitude of the difference between the first and second sample scores was $d=0.65$, which indicated a small effect size in favor of the second benchmark.

A similar picture emerged when the percentage of unique non-100 verbs out of the total number of unique verbs in the sample was calculated, as shown in Figure 5.

Fig. 4: Number of Unique Non-100 Verbs
Fig. 5: Percentage of Non-100 Verbs out of Total Number of Unique Verbs

The overall group average of the percentage of less common verbs in the sample increased from 14.2% to 29.6%. Most students showed a higher percentage in the second sample, but again, there were also three individuals (S4, S5, S6) who showed the opposite trend. As before, S2, S8, and S9 showed the highest increase. A Wilcoxon Signed-Rank test implied that the difference between the percentage scores at the first and second benchmark was significant at $p \leq 0.05$ ($z = 1.718, p = 0.043$). The effect size between the first and second sample scores was $d = 0.88$, which indicated an almost medium effect size in favor of the second benchmark.

4. Discussion and Caveats

The data revealed statistically significant increases over the course of the semester in the measures of average sentence length, average clause length and verb usage in terms of percentage of non-100 verbs. The change in sentence length was evident for all members of the group, very consistent in size within the group, and also quite considerable in magnitude, as implied by the large effect size. The gain in clause length was significant with an almost large effect size. By comparison, the change in verb usage was less consistent: The overall group averages of the number of non-100 verbs
and the percentage of these verbs (almost) doubled, but only two-thirds of the students showed an actual increase in scores, and individual change scores were much more variable than those found for sentence length. On the other hand, the growth in terms of percentage of non-100 verbs used at the second benchmark was statistically significant.

One might speculate that in comparison to verb usage, sentence and clause length are more reliable measures of underlying changes, as they seem less dependent on the effort and time that individuals spend on their reflective writing assignments. In other words, it seems plausible that when completing written reflections, motivated learners can compensate for lack of vocabulary by the skillful use of dictionaries and thesauruses, thus using more varied and precise vocabulary, which could account for the variance within the group with regard to verb usage.

Currently, the question of whether the tasks and associated writing assignments actually accelerated the observed growth remains unaddressed due to the descriptive, non-experimental study design. Furthermore, at this point, any correlation between the observed changes and an actual progression toward a higher proficiency is speculative in nature. Similarly, no statements about the degree of increase, if any, in overall writing proficiency, should be made based on the findings.

ACTFL ratings are based on the holistic assessment of a larger writing sample in terms of the consistent fulfillment of four assessment criteria defined for each proficiency level, given here with examples for the Advanced level: task types (narrations, descriptions), text type (paragraphs), vocabulary and content/context area (topics of personal and community interest), and accuracy/comprehensibility (sufficient enough control of structures to be understood without problems by native speakers of the language). Official ratings are based on formalized Writing Proficiency Tests and assigned by highly qualified professionals that have been trained and certified by ACTFL. Importantly, each individual proficiency level subsumes a wide range of quantitative and qualitative performances. Official proficiency ratings therefore often cannot do justice to the smaller changes that take place as one slowly progresses through the same overall level. On a positive note, this study does imply that a closer look inside the writing samples can discern incremental progress toward a higher level, thus providing actual evidence of the language gain that otherwise, without this kind of structured approach, would be purely speculative.
5. Conclusions and Outlook

This study aimed to find a way to gauge linguistic gains during a semester abroad in Germany by analyzing writing samples that were produced at two benchmarks during the semester. The results imply that average sentence and clause length as well as verb usage may be suitable measures to show language gain in students’ German writing skills. The small sample size of the current study might warrant some caution with respect to the interpretation of the findings. However, the use of non-parametric inferential statistics and concurrent use of effect sizes instead of reliance on $p$ values alone does allow for some meaningful conclusions.

The results of this analysis should encourage researchers to test the generalizability of the findings by conducting similar projects and expanding the approach to different instructional settings and proficiency levels. Future studies could also identify additional measures and target structures to be included in such analyses. As the next project, the authors plan to track the relationship between official proficiency ratings based on ACTFL Writing Proficiency Tests and concurrent sentence length and verb usage data.

The current inquiry also invites research projects of experimental design with study and control groups, e.g., to determine to what extent the implementation of a program component like the tasks described here or any specific instructional strategy can foster accelerated development of writing skills. Furthermore, the same features might be used to conduct research on the relationship between evolving skills in the spontaneous/interpersonal and reflective/presentational modes of writing. More studies are also needed to shed light on the interaction and potential correlation between oral and writing skills.

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**Key Words**

linguistic gain, L2 writing skills, study abroad, ACTFL guidelines, linguistic features