



# *Subtle aspectual difference in the L2 acquisition of German: the case of pseudo-progressives AM+infinitive versus BEIM+infinitive*

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# Subtle aspectual differences in the L2 acquisition of German: The case of the present tense and pseudo-progressive *am*+infinitive and *beim*+infinitive constructions

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## Abstract

We examine the acquisition of progressivity in the German simple present tense (GPT) and related constructions by English natives of L2 German, under the guise of the Feature Reassembly Hypothesis. German lacks an explicit gerundial form; the AM+infinitive (*am*) and BEIM+infinitive (*beim*) constructions express progressivity, along with the GPT. Although semantically the *am* and *beim* constructions map to the English copula+gerund, their unique syntax creates grammaticality differences. We employ three experiments testing (1) the acquisition of the aspectual properties of the GPT, and knowledge of the (2) semantic distribution of, and (3) syntax of *am* and *beim*. Data from a control group ( $n = 25$ ) and adult L2s ( $n = 20$ ) suggest adult L2 feature reassembly is possible, albeit complicated.

**Keywords:** Aspect, Feature Reassembly, *Verlaufsform*, progressivity

## 1. Introduction

There is little question that adult second language (L2) and child first language (L1) acquisition are distinct, at least to some extent. In fact, the developmental and outcome patterns of each can be comparatively very different. Child L1 acquisition is most typically characterized by conformity across individuals in developmental sequencing and successful convergence on the adult grammar to which the child is exposed. Alternatively, adult L2 acquisition is often typified by variation in developmental paths and ultimate attainment across individuals as well as some degree of non-convergence on the target grammar at the ultimate L2 state. What is less than clear, however, are the factors or the relative weight of factors that ultimately explain these differences. After more than 40 years of investigating L2 acquisition with a scientific research approach, it is ever more clear that simple answers to complex questions do not suffice. No one denies that the most accurate answer to the general query of why children and adult language acquirers differ must involve the simultaneous consideration of a multitude of variables: linguistic, cognitive, social and other.

Formal linguistic approaches to acquisition place a research onus on linguistic and—increasingly so over the past decade—cognitive factors, including their interfaces. It is reasonable to state that two questions have historically dominated the field until recent years (see Slabakova, 2016; White, 2003 for reviews), these being “*Do adults have access to the same*

*linguistic/cognitive mechanisms used in childhood to acquire language?” and “What is the role previous linguistic experience (transfer) plays in delimiting L2 acquisition in adulthood?”*

Although there is still no definitive consensus on answers to these foundational questions, most L2 acquisition researchers would agree that these questions are overly simplistic. That is, even if we could agree on whether or not adult learners have access to Universal Grammar irrespective of age and exactly what shape, if any, L1 transfer takes at the initial state of L2 acquisition, as well as its consequences for interlanguage development over time, such knowledge could not possibly explain the full gamut of observable facts related to adult L2 acquisition, even limiting ourselves to the ones within the narrow foci of formal linguistic questions.

Since the late 1990s, there has been no shortage of theories offered that go well beyond the canonical questions of the 1980s and/or take a more nuanced approach to the two canonical questions above. Such theories offer a more sophisticated method of understanding the dynamic nature of the variables that factor into the adult L2 acquisition process, attempting to capture the complexities of the L2 learning experiments for specific L2 acquirers with insights from advances in formal linguistic theory happening simultaneously. Differences are no longer understood in binary terms. Thus, answers to questions like, “*Is there a critical period for syntax?*” can no longer be understood in binary terms. Alongside widely documented instances of problems in L2 syntactic acquisition (see e.g., Long, 2007), there are plenty of examples that show successes in L2 acquisition of highly complex syntax (see e.g., Rothman, 2008). Moreover, much of the recently available neurolinguistic evidence points to the fact that adult L2 learners can process late acquired L2s in much the same ways as natives process their L1 and that the same areas of the brain are implicated for L1/L2 processing, even when the same learners make errors offline and/or in production (see Roberts, Gonzalez Alonso, Pliatsikas & Rothman, 2016). Newer theories take very seriously the decades of conflicting facts reflected in the empirical literature, acknowledging that more fine-grained distinctions are needed to determine what child L1 vs. adult L2 differences really reflect.

Of several such theories that could be discussed, we focus herein on Lardiere’s (2009) Feature Reassembly Hypothesis (FRH). The FRH highlights that the experience of acquiring adult L2 syntax is not one simply of acquiring new properties, but equally involves the re-distribution or bundling of features associated with L2-specific lexical items. Language learning is not an easy experience for anyone, child or adult alike. However, acquiring a language once one has previous language-specific experience is arguably more complex in some ways as the FRH reminds us. To the extent that there is L1 influence on L2 learning, we must keep in mind that acquiring L2 property X can require the unlearning of some features associated with the same L1 domain, the addition of features present in the L1 associated with lexical items from another domain (re-mapping) and/or the acquisition of completely new L2 features unattested anywhere in the L1 grammar but part of the feature bundle of the L2 target. For example, acquiring the aspectual properties of the present tense in L2 Spanish or L2 German by natives of English requires that aspectual features be re-assembled from L1 feature bundles associated with particular morphological realizations to new ones acquired in the L2. Interestingly, the packaging

of feature bundles might differ only slightly or quite significantly between two languages, even when the same features exist somewhere in both systems. The FRH capitalizes on this fact claiming that the reassembly of features is itself a source of complexity that might explain individual differences across learners as well as predict what would be more or less difficult for certain groups of L2 learners to acquire, relative to others, depending on the linguistic facts of the languages involved.

Using the FRH as a lens, the present study examines the acquisition of progressive aspect in German as an L2 by native speakers of English. Despite the fact that both English and German have the necessary formal aspectual features encoded within their grammars, looking at progressive aspect is particularly illuminating because the compositionality of features on language specific lexical forms varies considerably. Several studies have examined progressive aspect in relation to potential L1 transfer in a variety of language combinations (e.g., Andersen & Shirai, 1994; Gabriele et al., 2015; Geeslin & Fafulas, 2012; Shirai & Kurono, 1998, 2007 among others). A handful of them have examined this in the acquisition of German as an L2 (e.g., Flecken, 2011), although to our knowledge not with English L1 natives where the specific language differences in feature assembly is much greater. Others have examined this in German learners of L2 English (e.g., Housen, 2000; Roberts & Liszka, 2013), where the opposite feature reassembly to what we address in our empirical study pertains. The present study examines the acquisition of progressive aspect as it pertains to the simple present tense in German as well as two specific syntactic constructions that have superficial similarities to the English semantic equivalent, Copula + Gerund construction, namely the so-called *Verlaufsform* constructions formed by the Copula + *am/beim* (PPs) + Infinitive. To this end, we discuss evidence from three experiments, all of which indicate that at high levels of L2 proficiency feature re-assembly in this domain is possible to a native-like level, however, some of our data also suggest, in line with the FRH, that more complex feature bundles do affect and potentially delimit ultimate attainment in adult L2 acquisition.

## **2. Progressive Aspect in German and English present tense**

As is well known, the (simple) present tense in English is rather limited in terms of its aspectual expressions as compared to other Germanic languages. In the default case, the English simple present tense with lexical verbs can only readily take a [+habitual] interpretation (Dürich, 2005). The morphological simple present tense in other Germanic languages, however, allows for the typologically unmarked expression of [+habitual], [+progressive] and [+futurate] meanings, as seen in (1-3).

- |                     |    |                                      |           |
|---------------------|----|--------------------------------------|-----------|
| (1) <b>Habitual</b> | a. | Every week, I go to the cinema       | (English) |
|                     | b. | Varje vecka, går jag till biografen. | (Swedish) |
|                     | c. | Jede Woche gehe ich ins Kino.        | (German)  |

- |                        |    |                                 |           |
|------------------------|----|---------------------------------|-----------|
| (2) <b>Progressive</b> | a. | *Right now, I go to the cinema. | (English) |
|                        | b. | Nu går jag till biografen.      | (Swedish) |
|                        | c. | Jetzt gehe ich ins Kino         | (German)  |
| <br>                   |    |                                 |           |
| (3) <b>Futurate</b>    | a. | Tomorrow, I go to the cinema.   | (English) |
|                        | b. | Imorgon går jag till biografen. | (Swedish) |
|                        | c. | Morgen gehe ich ins Kino.       | (German)  |

English is able to express the meanings captured in (2) and (3); however, it does so using the Copula + Gerund constructions (e.g. *Right now, I am going to the cinema, What are you doing tomorrow?*) Interestingly, German does not have a true gerund form like English (e.g., Barrie & Spreng, 2009b; Duden, 2005), though it does have alternative structures that express progressive aspect that capture the meaning in (2) above, beyond the simple present tense. The focus of the present study is to investigate how English L1 learners of L2 German acquire the German present tense and other properties related to expressing progressivity without having recourse to an L1 equivalent at the lexical-syntactic level, that is, true gerundial constructions. In the remainder of this section, we detail further differences between German and English in this domain, focusing on the meanings and constructions relevant to this study.

As mentioned above, the German simple present morphology is able to encode progressivity, as well as futurate and habitual readings. Since the same morphology is able to encode various aspectual meanings, time adverbials are typically used with the present tense to disambiguate a progressive action, such as *gerade* (right now) and *momentan* (at the moment) (Krause, 1997). Time adverbials are, strictly speaking, optional and used most naturally when the context is not rich enough to delimit the aspectual meaning intended by the speaker (Bárta, 2014; Scott & Pierce, 2015). As seen in example 4, *Ich schwimme* can in principle take any available aspectual meaning; however, the reading is disambiguated by the addition of *gerade* (4a) *jeden Tag* (4b) or *morgen* (4c) (brackets denote optionality):

- |     |    |   |
|-----|----|---|
| (4) | a. | <i>Ich schwimme (gerade)</i><br>I swim (right now).<br>'I am swimming.'                     |
|     | b. | <i>Ich schwimme (jeden Tag)</i> .<br>I swim (every day).<br>'I swim (every day).'           |
|     | c. | <i>Ich schwimme (morgen)</i> .<br>I swim (tomorrow).<br>'I will/am going to swim tomorrow.' |

Although the Copula + Gerund construction does not exist in German, beyond the simple present there are other ways in which progressive aspect can be conveyed, via the so-called *Verlaufsform* (i.e., progressive aspect), more specifically the progressive *am* and *beim* constructions (Duden, 2007). The *am* and *beim* constructions are formed by combining the conjugated copula *sein* ‘to be’ with the contractions made up of the prepositional phrases *an* ‘at/on’ or *bei* ‘at/by’ with the Dative article *dem* (*an* + *dem* contract to *am* and *bei* + *dem* contract to *beim*) plus a nominalized lexical verb in its infinitive form (meaning the verb has a [+nominal] feature), as in (5a,b). Note that the relevant featural difference across the superficially similar constructions in English and German is that the verb in the English construction has [+non-finite, +verb] whereas the so-called verb in the German construction does not have canonical verbal features, but rather a [+nominal] feature, resulting in crucial differences in grammaticality.

- (5) a. sein+ Am + Infinitive:  
*Thomas ist am Schwimmen.*  
Thomas is (at/on the) swimming.  
‘Thomas is swimming’
- b. sein+ Beim + Infinitive:  
*Thomas ist beim Schwimmen.*  
Thomas is (by the) swimming.  
‘Thomas is swimming’ or ‘Thomas is currently in the vicinity where swimming is taking place’

Different from the German simple present, these constructions can only be interpreted with a progressive meaning. Although the semantics are ostensible equivalents to the English ‘To BE+ V-ing’ construction, they are not always interchangeable amongst themselves. That is, their feature bundles are not exactly the same. For verbs of high dynamicity<sup>1</sup>, *am* and *beim* are in an

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<sup>1</sup> Herein, we use the terms high and low dynamicity, relating to a further sub-distinction between dynamic verbs as argued by Ebert (1996). We assume a standard definition of verbal dynamicity, that is, verbs whose inherent lexical meaning entails a continued or progressive action on the part of the subject, in contrast for example, to stative verbs. That is, a durative verb has duration over time without necessarily having a fixed endpoint. Ebert (1996) noticed that the “more or less dynamic” the lexical meaning of a verb is, or high and low dynamicity in her terms, correlates to differences in appropriateness of either form (*am* vs. *beim*). Such a distinction is not necessarily standard in the sense that most linguists take verbs to be non-gradient in terms of dynamicity, either [+ or – dynamic]. For our purposes, it does not matter if Ebert’s distinction is overall correct or just a proxy explanation for the patterns noted in these constructions. We have simply used the description she provided to choose the lexical verbs accordingly. That is, in the case of a so-called low dynamic verb in our experiment we used her distinction to choose verbs that in her classification meet the criteria and should be problematic with *beim*. Note that this insight is reflected in our native control data. Take for example the “least” dynamic type in our experiment, so-called weather verbs, that have an expletive subject and thus cannot fulfil the remit of subject engagement in a lexically inherent durative action, despite the fact that raining is itself inherently durative. Despite some unexpected behavior with *beim* overall, the natives had no problems rejecting *beim* with such verbs, while highly accepting *am* with these same verbs.

apparent superset-subset relationship because both constructions can be used, yet *am* applies to fewer contexts than *beim* in the way described above. That is, for every situation the *am* construction is applicable—essentially whenever the Copula + Gerund construction applies in English with dynamic verbs (i.e., non-stative verbs) the *beim* construction is also possible, but not vice versa as seen in 5a-b above and 6a-b below. Yet, since *beim* is simply precluded for verbs of low dynamicity, the best description of the overall *am* and *beim* distinction is that they simply share partial semantic overlap (see Ebert, 1996 for discussion). Part of the feature bundle on *beim* in this construction contains a [+locative] feature along with [+progressive], and its use thus applies to all situations in which the subject is in a location where an activity is taking place, whether or not she herself is engaged in the action. Conversely, the feature bundle associated with *am* does not have a [+locative] feature and, therefore, the subject must be engaged in the progressive action. Consider (5) above. Under the context that Thomas is in fact swimming, both the *am* and *beim* constructions are perfectly fine and have essentially the same meaning. However, in the context that Thomas is at a community pool where others are engaged in swimming, but he himself is not, *beim* is the only grammatical option, being understood with its locative function. For verbs of low dynamicity, on the other hand, and non-agentive verbs (e.g., unaccusative) *am* is the only grammatical option as *beim* is excluded for use with such verbs under any context as seen in (6a-b).

6. a. *Es ist am/\*beim Regnen.*  
It is (at/on/\*by-) the raining.  
'It is raining'
- b. *Der Zug ist am/\*beim Ankommen.*  
The train is (at/on/\*by-) the arriving.  
'The train is arriving'

Though at first glance it may seem that the *am* and *beim* constructions are structurally equivalent to the English Copula + Gerund progressive, their syntax is indeed quite different. In English, the copula is clearly an auxiliary verb with the main verb having gerundial morphology, which itself encodes the [+progressive] feature. In German, however, the copula is the main verb, the prepositional contraction head of the PP carries the [+progressive] feature (and the [+locative] feature for *beim*), and the apparent lexical verb is a nominalized complement of the PP, which is not surprising since PPs obligatorily select for nominal complements. German prescriptive rules already indicate this, as the apparent verb, like all nouns, is obligatorily capitalized in writing. Moreover, this is supported linguistically by syntactic restrictions across the two languages. In English, as in (7a), the intransitive verb *eat* takes a DP complement receiving accusative case in the canonical post verbal position. Alternatively, as in (7b), *am/beim* disallow an accusative DP complement as the apparent lexical verb is, in fact, a noun. A DP modifier can appear before the nominalized Verb, as in (7c), in much the same way that DPs can



modify DPs in English with the same semantic implications (He is eating the sandwich vs He is sandwich-eating). Furthermore, (7d) highlights that the German structure is a nominalized verb where genitive case is used to denote a partitive meaning, roughly “the eating of the sandwiches”, that is, Owen is eating sandwiches.

- (7)
- a. Owen is eating the sandwich.
  - b. \**Owen ist am Essen das Sandwich.*
  - c. *Owen ist am Sandwichessen.*
  - d. *Owen ist am Essen des Sandwiches.*

In the present study, we capitalize on the cross-linguistic differences between English and German as they have been described in this section in the design of the experiments described below.

### **3. Methods**

#### *3.1 Participants and Procedure*

Forty-three subjects participated in the study, 25 native speakers of German (mean age = 32.9 years) and 20 L2 speakers of German (mean age = 33.2 years). All native speakers of German were recruited and tested in Germany. All non-native speakers of German were native L1 speakers of English. The participants completed a proficiency test provided by the Goethe Institute that has been used in previous L2 German research (e.g., Hopp, 2007). Out of a possible total score of 30, the average L2 proficiency score was 24.3 (range of 11-30). We elected not to remove the low scoring outliers performing below 20 on the proficiency score (scores = 11, 16, 17, and 18) because proficiency, run as an independent variable in a mixed effects logistic regression model, did not prove to be a significant factor in all three experiments, details of which are discussed in the discussion section. On this same test, the native speakers scored an average of 28.7 (with a range of 26-30).

All participants completed a language history questionnaire and three experiments. The questionnaire gathered data detailing the participants’ linguistic history. For example, use of German in daily life, as well as time of residence in German speaking environments. The format of this questionnaire is based on the Language Experience and Proficiency Questionnaire (LEAP-Q) (Marian, Blumenfeld, & Kaushanskaya, 2007).

#### *3.2 Experiment 1*

Experiment 1 was a context matching judgment task designed to test knowledge of the simple present in German, that is the aspectual meanings that German has and English lacks.

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Participants were presented with a short context in German. The contextual story was always followed by the question *Ist der folgende Satz wahr?* ‘Is the following sentence true?’, after which a target sentence in the present tense was presented. Participants made judgments with either *ja* ‘yes’ or *nein* ‘no’ as related to the acceptability of the target sentence in consideration of the context which set up a habitual, progressive or futurate reading. Each of the target sentences was also accompanied by a time adverbial, common in spoken German, to reinforce the meaning described in the context. For each of the three aspectual readings, there were two context-sentence matching types: those where *ja* was expected and those where *nein* was expected. In other words, in the *ja* conditions, the provided target sentences appropriately matched the context whereas in the *nein* conditions there is an acceptability mismatch between the aspectual reading set up by the context and the target sentence provided, essentially the incompatibility of the context with the temporal adverb. The purpose of this experiment was to investigate whether learners were able to expand the feature set associated with the present tense in their L1, allowing for unique readings of the present tense in their L2 (see 1-3 below). The instructions for this experiment did not guide participants to focus on either the form or the meaning of the target sentences, rather they asked participants to use their intuitions of whether the target was an acceptable response within the greater context. A comprehension question appeared every 10 trials to ensure that the participant was engaged throughout the experiment.

### *Progressive*

#### (1a) Progressive context-target sentence matched

##### Context

*David hat eine kleine Familie und ein neugeborenes Baby. Das Baby braucht ständig frische Windeln. Er geht jeden Dienstag und Donnerstag um 10 Uhr morgens für eine Stunde einkaufen. Jetzt ist es Dienstag 10:30 Uhr.*

David has a small family and a baby. The baby needs new diapers regularly. He [David] goes grocery shopping every Tuesday and Thursday at 10am for one hour. Now it's Tuesday 10:30am.

##### Question

*Ist der folgende Satz wahr?*  
Is the following sentence true?

##### Target Sentence

*David kauft jetzt ein.*  
David is grocery shopping.

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(1b) Progressive context-target sentence mismatched

Context

*Tina schwimmt gerne. Sie ist im Urlaub in Spanien. Gestern war sie eine Weile schwimmen und heute schaut sie sich Museen an.*

Tina likes swimming. She is on vacation in Spain. Yesterday, she went swimming and today she is visiting museums.

Question

*Ist der folgende Satz wahr?*

Is the following sentence true?

Target Sentence

*Tina schwimmt heute.*

Tina is swimming today.

*Habitual*

(2a) Habitual context-target sentence matched

*Andreas kocht normalerweise das Abendessen für seine Familie. Heute aber ist Andreas' Geburtstag und sein Sohn Martin macht zur Abwechslung das Abendessen.*

Andreas usually cooks dinner for his family, but today it is his birthday and his son Martin is making dinner.

*Ist der folgende Satz wahr?*

Is the following sentence true?

*Normalerweise, kocht Andreas.*

Normally, Andreas cooks.

(2b) Habitual context-target sentence mismatched<sup>2</sup>

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<sup>2</sup> As pointed out by a reviewer, the counterbalance in (2) is different from the counterbalance in (1) and (3) whereby the verb was changed to mark the “mismatch” or untrue condition only in (2b). This was an oversight in the methodology. It is actually not the case that this was always done, but upon checking roughly half the target sentences indeed swapped the verb to condition the truth value. As a result, the data across the three counterbalance sets are not maximally comparable. However, we wish to point out that condition (2) relates to the habitual reading, the only one that is present in the L1, making it the least interesting and informative for our research questions.

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*Denny ist ein professioneller Schwimmer und mag seinen Beruf. Er schwimmt 2 Stunden jeden Tag, 7 Tage die Woche.*

Denny is a professional swimmer and loves his job. He swims 2 hours a day every day, 7 days a week.

*Ist der folgende Satz wahr?*

Is the following sentence true?

*Für seinen Beruf kocht Denny.*

As a profession, Denny cooks.

*Futurate*

(3a) context-target sentence matched

*Britta ist Studentin. Es ist Mittwoch und sie hat an einer Hausarbeit gearbeitet. Nun macht sie Pause und geht Abendessen mit Freunden. Sie schreibt heute nicht mehr und entscheidet morgen weiterzuarbeiten.*

Britta is a student. It is Wednesday and she has been writing a school project. At the moment, she decides to take a break and go to dinner with friends. She decides to continue to write for school tomorrow.

*Ist der folgende Satz wahr?*

Is the following sentence true?

*Britta schreibt morgen.*

Britta will write tomorrow.

(3b) context-target sentence mismatched

*Laura tendiert dazu vor der Arbeit eine Zigarette zu rauchen. Sie hat gerade ihre Zigarette geraucht und geht ins Büro um ihre Arbeit zu beginnen.*

Laura tends to smoke a cigarette before work. She has just finished her cigarette and is walking into the office to start work.

---

Crucially, there is nothing askew with the counterbalance comparisons for the progressive and futurate, which differs from the L1, and thus the data reliably support our discussion and conclusions. The data for (2a) and (2b) can stand alone and as such are informative, just not maximally comparable.

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*Ist der folgende Satz wahr?*

Is the following sentence true?

*Laura raucht in ein paar Minuten.*

Laura is going to smoke in a few minutes.

Acceptance of the context-target sentence matched progressive and futurate trials by the L2 group would demonstrate an expansion of the feature bundle associated with the present tense in English, that is, convergence on the German target. The mismatched conditions serve as counter balances to the target conditions and also serve to ensure that the methodology is viable in the first place such that participants accept and reject items to avoid a yes bias. There were six items for each condition outlined above. In addition to the 18 *ja* and 18 *nein* targets, there were an additional 18 fillers, nine of which were acceptable and nine unacceptable for a total of 54 unrepeated context-target sentence pairings. The presentation of the trials was randomized across all participants.

### *3.2.1 Experiment 2*

The goal of experiment 2 is to test the participant's knowledge of the *am + infinitive* and *beim + infinitive* constructions as potential alternatives to the simple present to express progressive aspect, inclusive of the differences in their distribution as discussed in detail in section 2 above. The experiment consisted of short video clips (n=58; n=7 per condition and n=16 fillers) that portrayed activities in progress being carried out by the subject of the target sentence, as in (Figure 1a) and (Figure 1b) - where both forms should be acceptable - activities in which the subjects of the target sentence were in close proximity to a progressive event but not engaged in the activity themselves, as in (Figure 2a) and (Figure 2b), where only *beim* is acceptable, and finally clips with verbs of low dynamicity, such as 'to rain' as in (Figure 3a) and (Figure 3b), because *beim* is not grammatical in these contexts. Participants were asked to give their intuition of the truth value of each video clip and sentence combination, rating the sentence with *perfekt* 'perfect', *OK* 'ok', *seltsam* 'strange' and *schrecklich* 'horrible'. For the statistics, we collapsed the four potential answers into binary values, where *perfekt* 'perfect' and *OK* 'ok' was equivalent to accept and *seltsam* 'strange' and *schrecklich* 'horrible' was equivalent to reject.

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Figure 1: Example stimuli from Experiment 2



For verbs of high dynamicity (e.g., to run), corresponding to Figures 1a - 3b, *am* and *beim* are in a subset/superset relationship, that is, for every situation in which *am* is acceptable *beim* is also acceptable, as in 1a and 1b, but not vice versa, as seen in 2a and 2b where only *beim* is acceptable because of its [+locative feature]. Fillers were created in which there was a truth-value error between the context of the video clip and the sentence provided. The stimuli were created such that no sentence was repeated, but each video clip appeared twice (once with *am* and again with *beim*). Trials were randomized across all participants.

### 3.2.2 Experiment 3

All items in experiment 3 were designed (n=50 total, n=10 per target conditions with an additional 20 fillers), when coupled together, to test participants' knowledge of the syntax of the *am* construction, that is, the extent to which the learners have not superficially mapped the

German constructions onto the syntax of its apparent English counterpart, the *copula + gerund* progressive form. Though a post-verbal DP is grammatical with transitive verbs in gerundial constructions in English, a DP complement is ungrammatical in the *am* and *beim* constructions. Whereas the [+ progressive] feature is associated with main lexical verb (the gerund) in the English construction, it is the preposition *am* and *beim* that has the aspectual feature in German. The infinitive in the German construction has a [+nominal] feature and, in acting as a noun, it cannot take a DP complement as Case could not be assigned to the accusative object. Therefore, if the L2 learners have the German syntax, they should reject sentences that have DP complements and at most accept sentences in which what would be the DP complement is inserted before the [+nominal] infinitive as a modifier.

This was investigated via a Grammaticality Judgment task. Control sentences were presented in either the present tense (conveying progressive aspect) accompanied by a temporal adverb such as *gerade* ‘right now’ as in (10) or with the *am* + Infinitive to express progressive aspect unambiguously as in (11).

(10) *Er isst gerade das Brot.*

‘He is eating the bread now.’

(11) *Sie ist am Brotessen.*

‘She is eating the bread.’

In order to probe knowledge of the syntactic differences described above, participants were presented with conditions in which the syntax of English gerundials was presented in German sentences with an expressed post-verbal DP as in (12).

(12) *\*Daniel ist am Essen das Brot.*

‘Daniel is eating the bread.’

As shown in (12), the ungrammaticality arises when the syntax of English is used word-for-word to create the same sentence in German. As with experiments 1 and 2, all items in experiment 3 were created such that there was equal distribution of accept and reject conditions. Filler conditions were either subject-verb agreement errors or errors in the use of auxiliary verbs.

#### **4. Results**

To get the overall view of how the control and L2 groups performed on each experiment we first offer a discussion based on descriptive statistics. This is followed up by inferential statistical analyses using a mixed-effects logistic regression model and pairwise contrasts with Bonferroni correction when appropriate. The dependent variable for the experiment was

participant response ('accept' or 'reject'), and the threshold for statistical significance was set at  $p \leq .05$ .

The statistical model for Experiments 1 and 2 included fixed effects of Group (Native, L2), Lexical Item (Experiment 1- accept/reject, Experiment 2- *am* vs. *beim*), Context (Experiment 1 – Habitual, Progressive, Futurate, Experiment 2 - Progressive action WITH/WITHOUT subject engagement and verbs of low dynamicity), and all higher order interactions of these variables. The model for Experiment 3 included fixed effects of Group (Native, L2), and Condition (simple present, *am* construction, *am* construction with English syntax), and all higher-order interactions of those variables. Random slopes and intercepts for subjects, and random intercepts for items were also included in the model. Filler items were not included in the statistical analyses for any of the experiments.

#### *4.1 Experiment 1*

**Descriptive Statistics:** As detailed above in section 3, the focus of this experiment was to determine the extent to which the L2 groups had knowledge of the aspectual readings available under the simple present tense of German. To this end, we focused on 6 target conditions, the first 6 conditions in Table 1 below. As can be seen in Table 1, both the controls and the L2 learners accept the use of the simple present in habitual, progressive and futurate readings as supported by the context (conditions 1, 3, and 5) and reject these readings when not supported by the context (conditions 2, 4, and 6). The filler conditions also yield similar results, that is, both the native and L2 groups reject and accept appropriately. There is minimal variation across learners as captured by the standard error values reported in Table 1. Averages for the experiment showed that both natives and L2s both accepted and rejected conditions in line with the formal descriptions of the German simple present.

*Table 1: Experiment 1 average acceptance per group (given in percentage values).*

Condition	Native	Std. Error	L2	Std. Error
1 Habitual Accept	80.6%	3.2%	78.0%	3.8%
2 Habitual Reject	4.8%	1.8%	3.3%	1.6%
3 Progressive Accept	83.5%	2.8%	95.6%	1.8%
4 Progressive Reject	4.7%	1.9%	9.1%	2.6%
5 Futurate Accept	92.1%	2.2%	93.8%	2.8%
6 Futurate Reject	4.2%	1.4%	2.9%	1.5%
7 Fillers Accept	94.2%	2.6%	94.1%	3.0%
8 Fillers (Reject)	8.3%	3.1%	15.7%	4.0%



Inferential Statistics: The model showed that none of the main effects or higher-order interactions reached significance: Context ( $F(3, 2252) = .577, p = .630$ ), Lexical Item ( $F(1, 2252) = 0.012, p = .913$ ), Language Group ( $F(1, 2252) < .001, p = .984$ ), Language Group\*Context ( $F(3, 2252) = 1.195, p = .310$ ), Language Group\*Lexical Item ( $F(1, 2252) = .001, p = .981$ ), Context\*Lexical Item ( $F(3, 2252) = .071, p = .976$ ), Language Group\*Context\*Lexical Item ( $F(3, 2252) = .422, p = .737$ ). This confirms what we noted in the descriptive statistics, that is, each of the groups made the appropriate expected distinctions.

To verify whether the distinctions made in each context by each language group were significant, post-hoc analyses were run on the three-way interaction of language group\*context\*lexical item. These confirmed that both the native and L2 groups made significant distinctions between the accept and reject conditions for each context. As indicated by the odds ratios (ORs), the odds that natives would accept an item in the accept condition (compared to the reject condition) increased in each context: by 573 times in habitual contexts ( $p < .001$ ; OR = 573.15), by 17501 times in progressive contexts ( $p < .001$ ; OR = 17501), and by 2828 times in futurate contexts ( $p < .001$ ; OR = 2828.38). The L2 group also saw an increase in the odds of acceptance when comparing these conditions: by 1125 times in habitual contexts ( $p < .001$ ; OR = 1124.72), by 722 times in progressive contexts ( $p < .001$ ; OR = 722.00), and by 1257 times in futurate contexts ( $p < .001$ ; OR = 1257.16).

### *Experiment 1 discussion*

To summarize, Experiment 1 suggests that the acquisition (remapping of appropriate features) of the aspectual properties of the German simple present tense was accomplished by the L2 group.

### *4.2 Experiment 2*

Descriptive Statistics: This experiment assesses the extent to which the control and L2 groups accept *am* and *beim* constructions as conditioned by the specific contexts as detailed in section 3. To this end we focused on three condition pairs: acceptability of *am* and *beim* where both are described as appropriate in the literature, for example, where the subject is engaged in the progressive activity (conditions 1 and 2), contexts of low-dynamicity verbs (conditions 3 and 4) where only *am* is appropriate, and locative contexts where the subject is not engaged in the progressive action himself, but is in its vicinity (conditions 5 and 6) and only *beim* should be appropriate.

As seen in Table 2, in condition 1, the controls and the L2 speakers accepted the use of *am*+ infinitive roughly 70% of the time, which is well above chance. In condition 2, only the L2 learners accepted *beim* above chance levels. In condition 3, both the control and L2 group accepted at a rate above chance levels. In condition 4, acceptance is well below chance, as

expected, for the native group but above chance for the L2 group. For condition 5, both groups are significantly below chance in terms of acceptance, as expected. For condition 6, both groups are marginally below chance in acceptance.

*Table 2: Experiment 2 average acceptance per group (given in percentage values).*

Condition	Native	Std. Error	L2	Std. Error
1 Progressive action with subject engagement (+ <i>am</i> expected: accept)	70.0%	5.4%	73.1%	5.6%
2 Progressive action with subject engagement (+ <i>beim</i> expected: accept)	51.2%	6.3%	72.6%	5.8%
3 Verbs of low dynamicity (+ <i>am</i> expected: accept)	75.5%	4.8%	55.5%	6.8%
4 Verbs of low dynamicity (+ <i>beim</i> expected: reject)	11.4%	2.9%	65.6%	6.3%
5 Progressive action without subject engagement (+ <i>am</i> expected: reject)	13.3%	3.5%	24.5%	5.5%
6 Progressive action without subject engagement (+ <i>beim</i> a expected: accept)	44.2%	6.4%	47.4%	7.3%
7 Fillers (expected: reject)	9.2%	2.1%	6.4%	1.9%

Inferential Statistics: The statistical model revealed significant interactions of Language Group\*Am vs Beim ( $F(1, 1,752) = 19.108, p < .001$ ; Context\*Am vs. Beim ( $F(2, 1,752) = 7.140, p = .001$ ; and Language Group\*Context\*Am vs. Beim ( $F(2, 1,752) = 5.979, p = .003$ ).

Intergroup pairwise comparisons showed significant differences between the native and L2 group in Condition 2 (*beim* accept), in which the native speakers' odds of acceptance were five times accept than those of the L2 group ( $p = .003$ ; OR = .19), and Condition 4 (low-dynamicity with *beim* (reject)) which the native speakers' odds of rejection were 15 times greater than those of the L2 group ( $p < .001$ ; OR = 15.48).

Intragroup pairwise contrasts showed that the native group also distinguished between the use of *am* and *beim* in connection to verbs of low dynamicity, as odds of acceptance of *am* were 39 times greater than *beim* (conditions 3 and 4,  $p < .001$ ; OR = 38.98). In contrast to the native group, the L2 group did not significantly distinguish between contexts with verbs of low dynamicity (conditions 3 and 4), accepting *beim* slightly more than *am* in these contexts ( $p = .878, OR = 1.11$ ).

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Note that both the counterbalance distinctions (e.g. conditions 1 compared to 2, 3 to 4 and 5 to 6 as seen above), as well as a comparison of all three *beim* conditions and all three *am* conditions, are what are crucial to the full understanding of the groups' performances. Thus, we will begin by discussing the native group's performance in the *am* and *beim* conditions separately, followed by a discussion of the L2 group's performance in the *am* and *beim* conditions separately.

### *Natives*

While the natives show no difference in acceptability between the conditions in which *beim* is grammatical (conditions 2 to 6:  $p = .371$ ; OR = .57), they do show a clear difference in acceptability between the grammatical condition 2 compared to the ungrammatical condition 4 ( $p = .001$ ; OR = 10.87), as well as the grammatical condition 6 compared to the ungrammatical condition 4 ( $p = .035$ ; 6.19). In other words, though they appear to be at or slightly above chance in their acceptance of *beim* in grammatical conditions overall, which seemingly runs in contrast to the description in the literature, they make a significant and crucial distinction between conditions in which *beim* is grammatical and others in which it is unambiguously ungrammatical. Thus, though they show a general preference for *am* even where both *am* and *beim* are acceptable, their usage of *beim* is not random. No other contrasts proved significant.

Next, an analysis of *am* conditions among the native group reveals that they make a significant distinction between contexts in which the subject referent is engaged in the progressive action and those in which the subject referent is not engaged in the progressive action (conditions 1 to 5:  $p < .001$ ; OR = .07), reliably rejecting the use of *am* when the subject referent is not engaged in the progressive action (Table 2). Moreover, as expected, the native group showed a significant difference between the use of *am* with verbs of low dynamicity and its use in contexts in which the subject referent is not engaged ( $p < .001$ ; OR = .05), indicating that the difference between their expected acceptance of *am* with verbs of low dynamicity and their expected rejection of *am* when the subject referent is not engaged in the progressive action is significant. No other contrasts proved significant.

### *L2ers*

The L2 group, unlike the native group, did show a significant difference between the conditions in which *beim* is grammatical (conditions 2 to 6:  $p = .035$ ; OR = .16). Additionally, they do not show a difference in acceptability between the grammatical condition 2 compared to the ungrammatical condition 4 ( $p = .113$ ; OR = 3.79). As a reviewer pointed out, the absence of an effect in the L2 group could come from the smaller sample size within the group... In other words, though they appear to be above chance in their acceptance of *beim* in grammatical conditions overall, they make no crucial distinction between conditions in which *beim* is grammatical and others in which it is ungrammatical, showing no dispreference for *beim* with

verbs of low dynamicity. This indicates that their use of *beim* does not pattern with that of the native group. No other contrasts proved significant.

Finally, an analysis of *am* conditions among the L2 group reveals that they make a significant distinction between contexts in which the subject referent is engaged in the progressive action and those in which the subject referent is not engaged in the progressive action (conditions 1 to 5:  $p < .001$ ; OR = .10), showing that they reliably reject the use of *am* when the subject referent is not engaged in the progressive action. This pattern is similar to that of the native group. Moreover, also in line with the native group, the L2 groups also showed a significant difference between the use of *am* with verbs of low dynamicity and its use in contexts in which the subject referent is not engaged ( $p = .020$ ; OR = 1.97), indicating that the difference between their expected acceptance of *am* with verbs of low dynamicity and their expected rejection of *am* when the subject referent is not engaged in the progressive action is significant. No other contrasts proved significant.

### *Experiment 2 Discussion*

The overall results of Experiment 2 are interesting in several ways, that is, there were some unexpected results at first glance and the inferential statistics revealed interactions and distinctions that are not appreciated by simply looking at the raw numbers, which we unpack now. To start, the natives in general did not perform like we might have expected given the descriptions in the literature, most significantly pertaining to *beim* contexts. Whereas the expectation was that they should accept *beim* in condition 2 and 6, they were more or less at chance. However, the three-way comparison between conditions 2 and 6 on the one hand, and condition 4 on the other revealed that the natives make a highly significant distinction between the *beim* contexts that are purported to be grammatical conditions (2 and 6) versus when it is ungrammatical (condition 4). Crucially, they treat the grammatical conditions and ungrammatical condition differently, accepting *beim* four to five times as much when it is described as grammatical in the literature than when described as patently ungrammatical. And so, this comparison reveals that they do in fact intuit the ungrammaticality when appropriate and their responses in the so-called grammatical conditions could reflect a dispreference for the *beim* form overall. *Beim* seems to be more colloquial in its nature as opposed to *am* (e.g., Barrie & Spreng, 2009), that is, varying in preference/acceptability depending on the German dialect and the particular speaker. It seems that this could be explanatory for the native data we have.

The same three-way comparison discussed above also revealed that the L2 learners have more difficulty with *beim*, despite at first glance appearing to perform in conditions 2 and 6 in greater accord to claims of grammaticality in the literature. Since they also accept *beim* in condition 4 where it is patently ungrammatical, their high levels of acceptance overall indicate they do not distinguish between acceptable versus ungrammatical uses of *beim*. Crucially, however, we know that they do not have an overall tendency towards a 'yes' bias as revealed by comparison across the three *am* constructions, where they appropriately accept *am* in conditions

1 and 3 and reject it in condition 5. That is, they make a significant distinction between the grammatical and ungrammatical uses of *am* in accord with the literature and to the same degree as the native control. In other words, the ‘yes’ bias only exists for *beim* and not *am*.

The results of experiment 1 already showed that remapping of features in an L2 is possible. As it relates to the Feature Reassembly Hypothesis (FRH), such data are neutral since the FRH does not preclude successful remapping. The FRH merely states that more complex mappings might take longer in L2 acquisition or prove insurmountable. The evidence of experiment 2, showing successful remapping of the [+progressive] feature to the *am* + infinitive and even the *beim* + infinitive construction (as seen in comparing conditions 1 and 2, the L2 learners accept both *am* and *beim* to the same degree) juxtaposed against their difficulty with the remapping of the [+locative] feature relevant for conditions 4 and 6, nicely support the general tenets of the FRH. In other words, the more complex the feature bundle (as is the case with *beim*) the less likely the L2 learners make the proper distinctions to indicate they have acquired/mapped convergently. This might simply reflect timing of acquisition as opposed to ability for convergence in ultimate attainment, that is- given more time and exposure to German these same L2 learners might remap the feature bundle of *beim* to arrive at a grammar that makes the proper counter-balance distinctions.

### *4.3 Experiment 3*

**Descriptive Statistics:** The purpose of Experiment 3 was to probe learners’ knowledge of the syntax of the *am* construction. Recall that while a post-verbal DP is grammatical with transitive verbs in gerundial constructions in English, a DP complement is ungrammatical in the *am* construction in German due to a [+nominal] feature associated with the nominalized infinitive. As such, it cannot take a DP complement as Case could not be assigned to the accusative object. To this end, we focused on 3 target conditions, which are the first 3 conditions presented in Table 3 below. As can be seen, both the controls and the L2 learners accept the first condition, which conveys a progressive reading through the simple present tense and the use of a temporal adverb, and the second condition, which conveys a progressive reading via the *am* construction. Crucially, however, both groups also reject condition 3, which examines trials in which the syntax of English gerundials was presented in German sentences with an expressed post-verbal DP. In other words, the learners are not superficially remapping the feature bundles associated with the English *copula* + *Gerund* onto the German *am* construction. The filler conditions show similar results in that both groups reject and accept appropriately. Again, there is minimal variation across learners as captured by the standard error values reported in Table 3.

*Table 3: Experiment 3 average acceptance per group (given in percentage values)*

Condition	Native	Std. Error	L2	Std. Error
1 Simple present with <i>gerade</i> (accept)	99.9%	0.1%	99.3%	0.5%

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2	<i>am</i> -construction (accept)	69.0%	7.8%	73.8%	7.7%
3	<i>am</i> with English syntax (reject)	0.9%	0.5%	8.3%	3.3%
4	Filler: subject-verb agreement error (reject)	1.4%	0.7%	1.9%	1.0%
5	Filler: Subject verb auxiliary error (reject)	3.4%	1.6%	4.6%	2.4%
6	Fillers (accept)	99.5%	0.4%	98.5%	1.1%

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Inferential statistics: There was a main effect of Condition ( $F(5,2238) = 112.994$ ,  $p < .001$ ) and a significant interaction of Language Group\*Condition ( $F(5,2238) = 3.686$ ,  $p < .003$ ). Pairwise comparisons showed a small but significant difference in Condition 3 (English syntax) in which the native speakers rejected the prompt more than the L2 ( $p = .024$ ; OR = 1.5); however, this difference reflects more the utter lack of variation in the native group as compared to the low, yet present variation in the L2 group.

Comparisons across conditions 1-3 and across groups show that each group makes a significant distinction between contexts in which the *am* construction reflects grammatical readings (1 and 2) and when the additional DP complement of the nominalized verb renders the sentence ungrammatical (condition 3). A breakdown of these results can be found below.

The native group distinguished between the use of the simple present with a time adverbial such as *gerade* ('right now') to convey progressive aspect and the ungrammatical *am* construction (conditions 1 and 3) ( $p < .001$ ; OR = 490.49). Furthermore, there is a significant contrast between the use of the *am* construction and the ungrammatical *am* construction ( $p < .001$ ; OR = 2.10), whereby the natives consistently accept the *am* construction and reject the ungrammatical *am* condition.

As it relates to the L2 group, results show a significant difference between the acceptance of the simple present with a time adverbial (condition 1) and the ungrammatical *am* construction (condition 3) ( $p < .001$ ; OR = 68.83). Additionally, the L2 group distinguished between the *am* construction with grammatical (condition 2) and ungrammatical (condition 3) ( $p < .001$ ; OR = 2.3), consistently rejecting the ungrammatical *am* construction and accepting the grammatical *am* construction.

### *Experiment 3 Discussion*

In sum, the learners appear to have native-like command of the syntactic differences between the German *am* construction and the apparent English counterpart realized in the *copula* + *Gerund* construction.

### *4.4 Summary of Results*

Taken together, the data suggest that the native and L2 performances do not differ significantly in 2 of 3 experiments from which we can conclude that the L2 learners have acquired (or remapped features) appropriately in the domain of aspectual features associated with the German present tense and have acquired the *am* + *INF* construction for progressive aspect inclusive of its syntax, which differs from its closest L1 analogous construction. What is equally clear in consideration of experiment 2, is that L2 learners have issues with the *beim* construction. Interestingly, the native speakers also have issues with the *beim* construction, however, the difficulty each group shows with the *beim* construction is of a qualitatively different nature as reviewed in the discussion section of experiment 2 above. In the next section, we address this as well as all the data specifically in the context of our research questions.

## **5. Conclusion**

The goal of this paper was twofold. At a more descriptive level, we asked if the acquisition of aspectual properties related to the present tense in German as well as pseudo-progressive constructions would be possible for native speakers of English given how different these same domains work in their L1. At the more theoretical level, we were interested in testing the predictive power of Lardiere's Feature Reassembly Hypothesis, which claims that L2 acquisition is complicated not by an inaccessibility to universal linguistic properties, but rather by the challenging task of remapping already existent L1 features onto target L2 properties, especially to the extent that relevant feature bundles vary across the L1 and L2 and the relative complexities of the feature bundles themselves. As discussed in the previous section, evidence from all three studies suggests that L2 acquisition of new featural specifications on target L2 structures is possible, however, some are more difficult than others. Experiment 1 showed that English learners of L2 German are able to extend the meanings associated with the simple present, of most relevance to us that they could remap the [+ progressive] feature to the German simple present tense morphology. Experiments 2 and 3 revealed that L2 learners successfully remapped the [+progressive] feature to the PP-head in the *am*+ infinitive construction and converged on its syntax, which means they have acquired/remapped the [+nominal] feature associated with the infinitive in this construction. Interestingly, the L2 learners showed greater difficulty with the acquisition of the *beim* constructions, which itself supports the general tenets of the FRH since there is an additional feature associated with its bundle, that is, the [+locative].

As a whole the present study supports both the idea that L2 acquisition is not inevitably different as pertains to the acquisition of properties that present differently in the L1 and L2; however, if we consider the complexity of the task of feature remapping we might be able to explain the path (timing) and ultimate attainment of L2 acquisition.

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