Prosodic marking of contrastive focus in French learners of German

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Abstract

Challenges in the foreign language acquisition of intonation often result from cross-linguistic differences. While German encodes contrastive focus via intonation (pitch accents), French typically employs a syntactic strategy (clefting). For these reasons, the present study investigates the intonational marking of contrastive focus in German using learners with French as their native language via recordings of read sentences from the IFCASL corpus. Productions of learners (34 beginners and 34 advanced learners) were prosodically analyzed (placement, type, and prominence of the accent), and compared to productions of 40 native speakers of German. Results revealed that though pitch accent *types* differed from those used by native speakers, learners generally succeeded in *placing* pitch accents on the contrastively focused element. However, by far the greatest difficulty for learners at all levels concerned the *deaccentuation* of non-focal elements. In this respect, advanced learners were more successful in reducing prosodic prominence in the pre- and post-focal regions. Our findings are crucial for developing tailored teaching materials that concentrate on non-focused elements to enhance learners' mastery of target-like prosodic marking of contrastive focus.

Index Terms: foreign language learning, contrastive focus marking, prominence, deaccentuation, French, German

1. Introduction

Learning a foreign language (L2) can pose challenges for learners, especially in mastering intonation and timing. Even advanced learners often transfer prosodic patterns from the native language (L1) to their L2 [1-3]. At the same time, the teaching of prosody is still largely neglected in the classroom [4, 5] – although explicit prosodic knowledge [6] and prosodic training [7] would help learners to improve intelligibility and fluency, and to reduce accentedness. Challenges in the L2 acquisition of intonation often result from cross-linguistic differences [1], e.g., in the marking of focus [3, 8].

In the present contribution, we study the intonational realization of contrastive focus (CF), see (1), where the statement in (1a) is corrected by (1b). We consider this kind of correction as an instance of contrastive focus (the new element *Leiden* contrasts with *Amsterdam*); for a discussion of the term *contrast* see [9, 10]. Our understanding of linguistic focus is based on work by [11, 12], but for reasons of space, we do not go further into a semantic definition of focus.

(1a)   Speech Prosody 2024 takes place in Amsterdam?
(1b)   Speech Prosody 2024 takes place in [Leiden]CF.

In addition to *contrastive focus*, two other terms are of importance here: *narrow* focus (e.g., [13]) and *givenness* (e.g., [12, 14]). Narrow focus is evoked by a context that explicitly asks for an argument or verb. In (1b), this is *Leiden*. Givenness, on the other hand, means that an element has already been mentioned before in the discourse (like *Speech Prosody 2024 takes place in* in (1b)).

Here we concentrate on German as a foreign language, which is acquired by learners with French as their native language. L1 speakers of German and French differ in the strategies they use to signal focus: While German strongly relies on prosody (pitch accents) [15, 16], French preferably uses a syntactic strategy (clefting) [17]. Specifically, German is assumed to have a direct focus-to-accent mapping: In German, as in other West-Germanic languages, contrastively focused words, e.g., *Leiden* in (1), are marked by a rising pitch accent (L+H*), an accent type perceived as prominent [18]. They are additionally marked by increased duration and intensity [19]. Elements in the pre- and post-focal region, i.e., given elements, are typically reduced in prominence ("deaccented") [20].

French, by contrast, typically uses cleft sentences as in (2) to mark narrow focus which can also be contrastive [17, 21].

(2a)   [C'est Marie]F qui a donné le livre à Louise.
        [MARIE]F gave the book to Louise.

(2b)   [C'est à Louise]F que Marie a donné le livre.
        Marie gave the book to [LOUISE]F.

The typical cleft sentence has two parts: the first part ("C'est X") comprises the material in focus, the second (starting with *qu-*) contains the presupposed material, i.e., the material which is given or inferable. Clefting is also possible in German [22], but not common. The preference to signal focus syntactically in French does not mean that prosody is irrelevant (cf. [23], [24]).

French also differs from German in the extent to which given referents are deaccented. L1 French speakers are less likely to reduce prominence on given elements [25] (see also [26] for a similar finding for L1 Dutch vs. L1 Italian). Also, French intonation is more constrained than in German [27]. Below the intonational phrase (IP), French intonation follows a pattern of accentual phrases (APs), with each non-IP final AP ending in a rise (H on the prominent syllable) [28].

Such cross-linguistic differences may pose challenges to learners and lead to cross-linguistic influence (CLI). Indeed, research on the L2 acquisition of prosodic marking of focus and information status (i.e. given or new) has revealed CLI with respect to accent placement, prominence, and type, but also with respect to the phonetic implementation of pitch accents such as alignment and scaling [3]. For accent placement a number of studies have reported over-accentuation in non-

native productions, irrespective of the information structure [8], [29, 30], as well as non-target like reduction of prominence [8, 25]. Also, non-target like insertion of pauses after focused constituents has been reported [25], [31]. Only few studies have looked at learners of a West-Germanic language with L1 French: [25], for instance, reported more accents (and a lower proportion of deaccentuation of given elements) for advanced learners of Dutch as compared to L1 Dutch, mirroring the looser link between prosody and information status in French. The role of proficiency in these CLI phenomena observed in L2 research is not entirely clear: Some studies report a decrease in transfer of L1 characteristics with increasing proficiency [8], [32], [33] while others suggest proficiency to play only a marginal role [2]. We here set out to study how learners of German with French as their L1 prosodically realize contrastive focus in L2 German, and whether proficiency modulates the prosodic realization of contrastive focus. We expect learners with French as L1 to produce more prominences on non-focal (given) constituents than L1 German speakers, and to differ from native speakers in accent types. Proficiency is predicted to ease acquisition (advanced learners becoming more target-like [1]).

2. Methods

2.1. Materials

We selected recordings of read sentences in different focus conditions from the IFCASL Corpus [34] (Individualized Feedback in Computer-Assisted Spoken Language Learning <www.ifcasl. org>), a symmetrical French-German phonetic learner corpus that contains both L1 and L2 productions from the same speakers (N = 100). All speakers (balanced for gender) are learners of French and German, respectively: beginners (levels A2 and B1 of the European Framework of Reference for Languages) and advanced learners (B2 and C1). We here used a subset of the corpus, i.e., sentences in *contrastive* focus elicited in question-answer pairs. The declarative questions contained an erroneous (hence overt) alternative of either the subject, verb, or the object to prompt a SVO target sentence, with contrastive focus on either the subject (3a), the verb (3b), or the object (3c). Speakers had time to read the questions to prepare their spoken answers in the different focus conditions.

(3a): Contrastive focus on the subject (CF-subject)
  Q: *Peter* vertraut dem Kamel? 'Peter trusts the camel?'
  A: [Yvonne]$_{CF}$ vertraut dem Kamel. 'Yvonne trusts the camel.'

(3b): Contrastive focus on the verb (CF-verb)
  Q: Yvonne *glaubt* dem Kamel? 'Yvonne believes the camel?'
  A: Yvonne [vertraut]$_{CF}$ dem Kamel. 'Yvonne trusts the camel.'

(3c): Contrastive focus on the object (CF-object)
  Q: Yvonne vertraut dem *Hund*? 'Yvonne trusts the dog?'
  A: Yvonne vertraut dem [Kamel]$_{CF}$. 'Yvonne trusts the camel.'

2.2. Data set and annotation

We compared the German productions of the L2 learners with those of the native speakers. Our dataset comprised 288 utterances, see Table 1 for a breakdown per proficiency group.

Prosodic annotation of SVO sentences (performed by the first author) included labelling of the pitch accent type and phrase breaks following the German ToBI system [35], see Figure 1 for examples. For every pitch accent, we additionally

labelled its prosodic strength (three levels), following DIMA guidelines [36]: Prominence level 1 comprises weak prominences that may be induced by a f0 movement, typical of e.g., phrase accents, post-focal prominences or (partial) deaccentuation, level 2 strong prominences (e.g., fully-fledged pitch accents), and level 3 extra-strong prominences (e.g., emphatic speech). This system allowed us to trace gradual changes in the learning trajectory of prosodic prominence.

Table 1: *Number of data points per speaker group.*

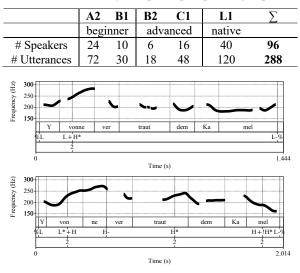|	A2	B1	B2	C1	L1	∑
	beginner		advanced		native	
# Speakers	24	10	6	16	40	**96**
# Utterances	72	30	18	48	120	**288**

Figure 1: *Two utterances in the CF-subject condition with f0 contour in black (sentence (3a)) by two female speakers (upper panel: L1 speaker, lower panel: learner – beginner). Tier 1 shows the annotation on the syllable level, Tier 2 the GToBI labels, and Tier 3 the prominence labels.*

3. Results

3.1. Placement of pitch accents

For each utterance, we analyzed where the pitch accents (nuclear and prenuclear) were placed in the three contrastive focus conditions (CF-subject, CF-verb, CF-object). The nuclear accent was expected to be placed on the subject, the verb, or the object, respectively. Figure 2 shows the percentage of the different accent types for accented constituents (filled bars) and unaccented constituents (unfilled bars) in the three contrastive focus conditions and groups. We will first discuss accentuation in general before turning to the pitch accent types in 3.3.

CF-Subject (Fig. 2, left panel). As expected, L1 speakers placed the nuclear pitch accent on the subject, followed by deaccentuation ("no accent", unfilled bars) of the verb and object. Both learner groups similarly accented the subject (ceiling effect), but additionally placed accents in the post-focal area – a pattern that clearly diverged from L1 speakers. A generalized linear mixed model (glmer) [37] that predicted the presence of an accent (yes/no) on non-focal constituents as a function of speaker group (native, beginner, advanced) and constituent (verb, object) revealed a significant effect of group ($\chi 2 = 15.72$, df = 2, p < 0.001). Both learner groups placed more accents on the post-focal elements than L1 speakers (both p < 0.01), with a trend for beginners to place even more accents than advanced learners (p = 0.06). Hence, the number of non-focal accents tended to decrease with increasing proficiency.
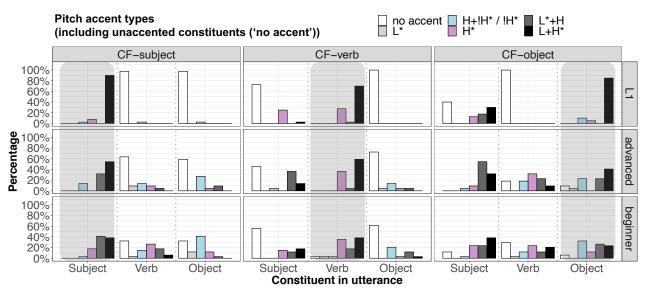
Figure 2: *Distribution of pitch accent types (filled bars) on different constituents across the utterance in different groups (L1 speakers, advanced learners, beginners) and different contrastive focus conditions (CF-subject, CF-verb, CF-object). Unaccented constituents are marked by "no accent" (unfilled bars); the grey shading highlights the contrastively focused constituent.*

CF-Verb (Fig. 2, middle panel). All speaker groups were able to place a pitch accent on the contrastively focused element (filled bars, ceiling effect). For the L1 group, the pre-focal constituent (subject) was accented in around a third of the cases [38], while the post-focal constituent (object) was always deaccented. Learners again showed a different pattern for the non-focused elements such that both groups placed more accents on subject and object than L1 speakers (both p < 0.01). The learner groups did not differ from each other (p = 0.87).

CF-Object (Fig. 2, right panel). Again, all speaker groups succeeded in placing an accent on the contrastively accented object (ceiling effect). Also, the subject was more often accented than the verb (in all speaker groups, p < 0.0001) [38]. Crucially, learners accented the pre-focal region more often than L1 speakers (both p < 0.0001); advanced learners tended to show even more accents than beginners (p = 0.08).

Taken together, learners of German with French as their L1 were able to prosodically mark the contrastively focused element in all conditions (comparable to L1 speakers). Their prosodic strategies differed, however, from those employed by L1 speakers: Learners placed additional accents on pre- and post-focal elements, particularly on the verb and the object, which were almost always deaccented by L1 speakers (Fig. 2). The subject, in turn, often received an accent by all groups when not in focus, probably out of rhythmic or structural reasons [38]. Proficiency modified prosodic marking such deaccentuation tended to become more native-like with higher proficiency ([8, 32, 33]), but the proficiency effect with respect to accentuation was small and only present in the CF-subject condition.

3.2. Prominence strength of pitch accents

Beyond a binary labelling of the presence of accents, we also analyzed the prominence strengths of pitch accents (1 = weak, 2 = strong, 3 = very strong). For L1 speakers, 100% of the non-focal pitch accents in the CF-subject and CF-verb condition, and 91.7% in the CF-object condition were prosodically weak (lev. 1). For the advanced learner group, 41.1% of the non-focal accents showed a weak prominence in the CF-subject, 55.6% in

the CF-verb, and 65.0% in the CF-object; for beginners, 39.1% in the CF-subject, 27.5% in the CF-verb, and 44.4% in the CF-object were weak. Learners thus used more prosodically strong (lev. 2) pitch accents than L1 speakers. Crucially though, more proficient learners placed more weak prominences on non-focal elements, which might suggest that learners gradually work their way towards reducing prominence.

3.3. Type of pitch accents

We now turn to the different types of pitch accents across the utterance (see filled bars in Fig. 2). For the statistical analysis, we concentrate on the contrastively focused elements (grey shading in Fig. 2). With respect to accent types, we again find differences between speaker groups: L1 speakers most often used L+H*, a bitonal high-pitched accent, to mark the contrastively focused constituent (Fig. 2, upper panel) while learners employed a greater variety of accent types (L+H*, L*+H and H*, Fig. 2 middle and lower panel). The *glmer* revealed that L+H* was more frequent for contrastive elements in L1 speakers than in learners (both p < 0.01). Advanced learners tended to use this accent type more often than beginners (p = 0.06). The low-rising accent type L*+H, in turn, was more frequent in learners than in L1 speakers (both p < 0.01); the learner groups did not differ (p = 0.25). Hence, in addition to accent placement, L2 speakers also differed from L1 speakers with respect to accent *type,* with the learner groups showing more low-rising accents (L*+H) than L1 speakers.

3.4. Prosodic phrasing

One explanation for why learners place more pitch accents across the utterance than L1 speaker might be a different phrasing strategy. In fact, additional phrase breaks may favor additional pitch accents. To follow up on this explanation, we analyzed the number of phrase breaks the speaker groups placed after the subject and the verb (after the utterance-final object, there was always a break). The outcome of a *glmer* that predicted the presence of a phrase break as a function of speaker group, focus condition, and constituent (subject vs. verb) is shown in Figure 3. The interaction between focus condition and

element reveals that speakers placed a phrase break more often after the subject than after the verb in the CF-subject and CF-object condition, but not in the CF-verb condition. A phrase break after the subject, especially when in narrow focus, has been reported to be common in German [38]. Most importantly, an effect of speaker group revealed that both learner groups placed more breaks than L1 speakers, who, in turn, did not differ from each other (cf. Fig. 3). We see a tendency for learners to place breaks after focused elements (compare breaks after verb in CF-subject vs. CF-verb), but these differences do not reach significance. Hence, it seems that the higher number of phrase breaks in the learner group as compared to L1 speakers is less evidence of a phrasing strategy for focus marking than of a tendency to make more pauses in general.
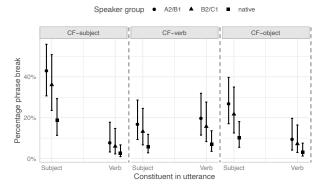

Figure 3: *Predicted probabilities for the presence of a phrase in different speaker groups and contrastive focus conditions.*

4. Discussion

In this contribution, we analyzed the prosodic realization of German utterances with contrastive focus taken from the IFCASL corpus, comparing learners of German with French as their L1 at different proficiency levels to native speakers of German. Our main findings show that learners prosodically marked the contrastively focused constituent by means of pitch accents, just as native speakers of German do. The types of accents differed, however, from the accent types used by L1 speakers (L1 speakers preferred L+H*, learners produced a greater variety of accents, (L+)H* and L*+H). Hence, as far as marking the contrastive focus is concerned, even learners with a basic knowledge of German are able to implement prosodic features of the target language – even if differences to the target realization remain with respect to the type of pitch accents.

Most difficulty for learners (both for beginners and advanced learners), on the other hand, caused the reduction of prosodic prominence on non-focused elements. In particular, both learner groups had difficulty in deaccenting pre- and post-focal constituents, and accordingly placed more pitch accents than native speakers. This finding of "over-accentuation" is in line with previous studies on French learners of Dutch who have also been shown to lack the ability of appropriate deaccentuation [25]. As French shows a looser connection between information structure and prosody than German, cross-linguistic influence might be at play here.

Our study goes beyond a binary coding of accentuation (presence vs. absence), offering a gradual account on prosodic prominence and hence a more nuanced view on the L2 acquisition trajectory. In this regard, our findings reveal proficiency to modulate the degree of prominence, with advanced learners making more use of weak prominences on non-focal elements (for contrastive focus on the subject). Reducing prosodic prominence is hence only mastered late.

The tendency to over-accentuate might straightforwardly be explained by the fact that learners divided the utterances into several smaller phrases, which in turn leads to more accents. The reason for why French learners used a different phrasing strategy is less clear: On the one hand, transfer from French to German could account for this pattern, as French prosodic grouping into accentual phrases differs from German. In this regard, comparing L1 French data on contrastive focus marking with the results of the present study would be a fruitful avenue for future research. On the other hand, learners may have paused more because they spoke less fluently [39] (beginners paused numerically most often). Future studies eventually need to include data from learner with typologically different L1s (at the same proficiency level) to disentangle fluency and transfer. At first glance, the more frequent use of L*+H in learners might speak against transfer (H on the prominent syllable in French [28]). On the other hand, it might illustrate the successful acquisition of initial prominence in German [40], and potentially reflect transfer from the rising (LH) AP-structure in French [28].

Our findings on over-accentuation in L2 contrastive focus marking have implications for the processing of contrast (and focus in general). Relying on prosodic prominence (relations) has been shown to facilitate language processing in the L1 (e.g., [41]). An increased use of prominence (as observed in learners) might disguise prominence relations and hence linguistic contrast in L2 speech, which might reduce learners' comprehension. Future studies will have to show to what extent missing deaccentuation hinders L1 speakers to perceive and process prominence relations and hence linguistic contrast.

From a practical perspective, our findings are crucial for developing tailored teaching materials. The teaching of prosody is still widely neglected at school and teachers have a need for well-prepared materials that are easy to use in everyday school life [42]. Using the example of contrastive focus in German, our study clearly shows that teaching materials should concentrate on how to reduce prominence. Recent studies on the effectiveness of prosodic training are promising [7], [43], but these trainings often include the practicing of prominence marking. The trainings should, however, be extended by demonstrating and practicing deaccentuation of non-focal elements to support learners with French as L1 in mastering target-like prosodic marking of contrastive focus in German.

To conclude, we studied contrastive focus marking in the L2, including a scenario which potentially leads to CLI (learners of German with L1 French), and two proficiency groups (beginners, advanced) to be able to trace the dynamics of L2 acquisition of prosodic focus marking. Our study thus adds to a growing body of literature on L2 prosody, which helps to test predictions of theoretical models on L2 intonation [1]. At the same time, our work is central to practitioners when developing targeted teaching materials, thus reducing the gap between theory and practice to make foreign language teaching and learning more efficient.

5. Acknowledgements

6. References

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