

3.1 Allgemeine Angaben zum Teilprojekt C4

3.1.1 Thema

Prosody and information structure as forms of “input” in second language acquisition

3.1.2 Fachgebiete und Arbeitsrichtung

Sprachwissenschaft; Psycholinguistik; Zweitsprachenwerb; Phonetik;

3.1.3 Leiter/in

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3.2 Zusammenfassung

Dieses Projekt untersucht die Rolle von Fokus und Informationsstruktur beim Erlernen von Wörtern im Zweitspracherwerb. Fokus kann mit prosodischen, syntaktischen und/oder lexiko-semantischen Mitteln realisiert werden. Er hebt bestimmte Teile einer Äußerung hervor. Diese Hervorhebung kann das Erlernen von Wörtern im Zweitspracherwerb vereinfachen, indem die Aufmerksamkeit des Lernenden auf bestimmte Abschnitte des Inputs gelenkt wird.

Wir konzeptualisieren das Erlernen von Wörtern als (i) das Segmentieren eines Wortes (die Aussprache eines morphosyntaktischen und semantischen Wortes) im Sprachfluss, (ii) die Repräsentation der morphosyntaktischen und semantischen Eigenschaften eines Wortes. Fokusmarkierer stellen eine lokale Domäne bereit, in der das *Language Acquisition Device* segmentieren und die Eigenschaften des Wortes darstellen kann. Unser Projekt wird diese Behauptung in fünf Experimentalstudien mit deutschen Erwachsenen (L1), die Niederländisch (L2) und Englisch (L2) lernen, untersuchen und dabei die Rolle der Informationsstruktur als eine Form des Inputs im Spracherwerb betrachten.

Summary

This project examines the role of focus and IS in word learning in second language acquisition (SLA). Focus can be realised through prosodic, syntactic and/or lexico-semantic means. It makes particular parts of an utterance prominent. Prominence may facilitate word learning in SLA by drawing the learner's attention to particular stretches of the input.

We conceptualise word learning as (i) the segmentation of a formative (the pronunciation of a morphosyntactic and semantic word) from the speech stream, (ii) the representation of a word's morphosyntactic and semantic properties. Markers of focus provide a local domain in which the language acquisition device (LAD) can segment and represent properties of the word. Our project will investigate this claim in five experimental studies of adult German (L1) learners of Dutch and English (L2), looking at the role of IS as a form of input to language acquisition.

3.3 Stand der Forschung/Prior research on the question

3.3.1 Gegenstand des Projekts/Focus of enquiry

Word learning in SLA exhibits certain common patterns despite considerable differences among learners, learning contexts or the L1/L2 languages involved. Thus, "content words" ("open class" words) routinely appear in interlanguage before functional categories ("closed class" words). This fact might be explained by properties of L2 discourse: semantically important parts of a message may be made prominent through repetition and being pronounced in isolation; content words may thus be focussed in L2 input while functional categories will not be (Hatch 1983). Prominent parts of the input will draw the learner's attention (Long 1996). Making sense of claims about focus and word learning requires looking at results of studies from several disciplines. We discuss first relevant studies in speech perception and language processing, proceeding to a review of relevant first language acquisition (FLA) research, and ending with studies of SLA.

3.3.2 **Speech perception and language processing in competent adults:**

Focus accent has been claimed to draw a listener's attention to a particular part of a sentence during speech perception and sentence parsing and to play an important role in the disambiguation of ambiguous strings of words during a morphosyntactic parse (Warren 1996). Attention itself is not well-defined, but it might lead to more detailed processing of the signal (Jackendoff 1987). This might lead to faster word recognition (see Fowler & Housum 1987; Cutler, Dahan & von Donselaar 1997).

Word recognition may require explicit word segmentation strategies. Cross-linguistic research suggests that word segmentation strategies are language specific (Cutler, Mehler, Norris & Segui 1992; Cutler 1996). For example, Anglophones adopt a Metrical Segmentation Strategy, segmenting speech at strong syllable onsets (Cutler & Norris 1988; Cutler 1990). This strategy reflects both the stress-timed nature of English rhythm and statistical properties of the English lexicon (Kelly 1992). French and Japanese have quite different rhythmic properties and speakers of these languages adopt different segmentation strategies (Cutler, Mehler, Norris & Segui 1986; Otake, Hatano, Cutler & Mehler 1993; Cutler & Otake 1994). This literature deals with monolingual adults. Only recently have psycholinguists begun to explore bilingual speech processing. Bilingual listeners may apply a single type of strategy to both L1 and L2 stimuli (Cutler, Mehler, Norris & Segui 1992).

To sum up: focus accent is assumed to draw the listener's attention to a particular part of the sentence where it can interact with acquired word segmentation strategies and may speed up word recognition. Monolingual adults display segmentation strategies tuned to phonological and statistical characteristics of their language's lexicon. Bilinguals appear to use one strategy only, transferring that strategy to the processing of the other language.

3.3.3 **Monolingual first language acquisition:**

SLA research draws explicit comparisons between FLA and SLA, looking for parallels in learning processes, paths and results. We have just seen that adults exhibit segmentation strategies which reflect both the prosodic and statistical properties of the L1 lexicon. FLA research has sought the origins of segmentation in a precocious sensitivity to rhythm. Indeed, infants do exhibit preferences in the first year to the most common rhythmic properties of words in the ambient language (Jusczyk, Cutler & Redanz 1993; Goodsitt, Morgan & Kuhl 1993; Morgan 1994; Jusczyk, Friederici, Wessels, Svenkerud & Jusczyk 1993; Mehler, Dupoux, Nazzi & Dehaene-Lambertz 1996; Jusczyk 1997; Höhle 2002; Höhle & Weissenborn, in press). These studies, however, do not tell us what the developmental connection is between rhythmic properties of the input and the resulting segmentation of input into phonological word-size units (formatives), they do not make clear how infants map formatives onto morphosyntactic words, nor do they say anything about the role of focus in these processes. For example, Mehler, Dupoux, Nazzi & Dehaene-Lambertz (1996) have proposed that infants can extract from the signal an initial speech representation which captures the periodicity of duration and amplitude of vowel sequences – the Time and Intensity Grid Representation (TIGRE). While an important proposal, the TIGRE hypothesis makes it as likely that an infant would segment an utterance-internal part of the signal as one occurring at the beginning or at the end of an utterance. Aslin, Woodward, LaMendola & Bever (1996: 117) have instead proposed that constraints on auditory processing (seen in primacy and recency effects in recall) may lead infants to initially attend to just the initial and final portions of utterances until they control their developing systems more proficiently. Such

psycholinguistic constraints would then lead them to initially segment portions of the signal in these positions. Aslin, Woodward, LaMendola & Bever (1996: 119) mention as well “simplifications” of the input involving the presentation of words in isolation (i.e. surrounded by pauses), and pronouncing words with what they term “emphatic stress”. In both cases, the words would be associated with focus accent. This brings us back to the role of focus in speech processing and the connection to language learning.

We mentioned above that focus can be linked via attention to a more detailed processing of the signal. We hypothesise that such detailed processing is required to encode new aspects of the signal. Moreover, investigations of child-directed speech (CDS) in the FLA literature have suggested that segments in focus accented forms are more clearly articulated while segments in strings consisting of background information are “underarticulated” (Bard & Anderson 1983, 1994; Bernstein Ratner 1996). Canonical pronunciation of a given formative would reduce contextually-related variability and facilitate word recognition. Repeated canonical pronunciation of the same word with focus accent would permit the child to segment a form on the basis of recurrent acoustic properties of word onsets and offsets. Bernstein Ratner suggests that CDS may involve just such pronunciations. Focus, constraints on processing and properties of the input to children might, therefore, “conspire” to help children segment words which are focussed and focussable, viz. “content words”.

To sum up: Focus accent might help the infant segment words from the signal. Yet little is known about the infant’s initial sensitivity to the phonetic realisation of focus. A growing literature does show the infant’s sensitivity to rhythmic properties of the signal and may permit a link to studies of adult segmentation strategies. Still the connection to focus accent and segmentation remains to be made. This makes it impossible to evaluate the claim that focus accent helps the infant segment words from the signal. Corpus studies of child directed speech suggest that IS has an interesting effect on the input in that focused items tend to be canonically articulated while words expressing background information are underarticulated.

3.3.4 Second language acquisition:

SLA research has not directly investigated any of the issues discussed above. Thus, Hatch (1983) has argued that prominence facilitates word segmentation in SLA, citing only early FLA studies on child directed speech. SLA researchers have not in the intervening years attempted to address this empirical gap, taking for granted the relevance of FLA research for SLA, an assumption which must be questioned in the light of the processing literature.

A substantial literature does exist on the topic of input in SLA, but almost all of it is dedicated to demonstrating that L2-learner-directed speech is “simplified” (Gass 1997). None of the input studies provide phonetic analyses of potential acoustic parameters of focus (phrase final lengthening, intonation movement, pitch range, loudness peak); none show that L2 learners are sensitive to these acoustic parameters; none demonstrate how formatives are segmented by L2 learners; none show how formatives are mapped onto word classes. Consequently, no claims can be made about properties of the input and word learning in SLA. No input studies have counted even the length and stress patterns of words in the input to adults in the way Bernstein Ratner (1996) has done for FLA input.

What else can be said? Pause is sometimes said to be a phonetic property to which all learners are sensitive. Wakefield, Doughtie & Yom (1974) and Pilon (1981) looked at the role of pauses in an unfamiliar language (Korean) to signal syntactic phrase boundaries. Anglophone subjects were asked to indicate whether stimuli with pauses artificially inserted at

the ends of phrases sounded more natural than stimuli with phrase internal pauses. Subjects tended to prefer the stimuli in which the pauses coincided with phrase boundaries but the validity of the conclusions has been questioned (Fernald & McRoberts 1996: 373). Henderson & Nelms (1980) also studied the role of pauses to signal syntactic units in an unfamiliar language (Czech as L2, English as L1). Subjects listened to stimuli containing an artificially placed tone and had to mark its location on a written version of the sentence. Their results led them to conclude that pauses were not an effective cue to syntactic boundaries. Henderson & Nelms also looked at the relative salience of intonation movement to cue the same units. In this case, they found that when the tone coincided with a fall in intonation, subjects accurately located it at the phrase boundary. Finally, two studies investigated stress perception and sentence position among L2 learners using Spanish stimuli. Barcroft & VanPatten (1997) and Rosa & O'Neill (1998) show positional sensitivities in processing, arguing that sentence initial position is more salient than either sentence final position or sentence medial position. VanPatten couches their results as the "Sentence Location Principle" (VanPatten, in press: 10): "Learners tend to process items in sentence initial position before those in final position and those in medial position" meaning: learners will be able to segment, learn, and recognise items in sentence initial position before they can do so in sentence-final position or sentence-medial position. See Klein (1986: 68) too. Unfortunately, these locations are not well-defined in the research in question, and cannot be defined independently of the phonological and syntactic properties of given sentences. In addition, the authors treat stress as if it were directly instantiated in the signal, rather than resulting from a phonological analysis of the signal. This research, therefore, fails to link the phonetic realisation of words in particular positions to the resulting phonological representations.

Perhaps we should not be surprised by this state of affairs. Most L2 research looks at the outcomes of acquisition as measured in speech production data and provides grammatical descriptions of it (e.g. Klein & Dittmar 1979; Clahsen, Meisel & Pienemann 1983). Phonological studies are rare; phonetic studies rarer. Isolated studies of the L2 acquisition of relevant prosodic variables reveal difficulties in perception and production of rhythm, tone and pitch accent (Voss 1977; Henrichsen 1984; Pittam & Ingram 1992; Juffs 1990; Shen 1990; Eliasson 1997), including problems in using pitch rises to express new information (Wennerstrom 1994). Little more can be said with certainty. The entire area of prosody is underresearched even in the standard production-based paradigm (cf., Adams 1979; Ioup & Weinberger 1987; James 1988; Flege 1995; Archibald 1998).

The role of IS *has* been addressed in this tradition by the members of the ESF Project on Learner Varieties (Klein & Perdue 1992; Becker 1996; Dimroth & Klein 1995; Perdue 2000; M. Carroll 1990; M. Carroll & Lambert, in press). Klein & Perdue (1992: 302) argue that IS plays an important role in the linearisation of the learners' utterances in a "Basic Variety". Output is thus organised by pragmatic constraints: "Focus last"; "Controller first". The IS-guided linearisation precedes the acquisition of grammatical principles of linearisation based on mappings of semantic roles like Agent or Patient to subject or direct object positions or to nominative or accusative case markings. Such research certainly demonstrates that adult L2 learners do not need to acquire the semantic and pragmatic aspects of IS: they are expressed from the earliest moments of L2 production. What is lacking in learner's interlanguage are the phonological, lexical or syntactic markers of IS. Whether the pragmatic constraints "Focus last" and "Controller first" apply in analysing the input, or whether they might play a role in word learning is unclear.

To sum up: Two studies looking at the pair English L1/Korean L2 and English L1/Czech L2 suggest insensitivity to pauses as cues to syntactic boundaries; one study suggests sensitivity to pitch movement as a cue to syntactic boundaries. Nothing else can be said for certain about what phonetic parameters of the input L2 learners use to segment units from the signal. Nothing can be said specifically about how formatives are segmented or how formatives are mapped onto word classes.

3.4 Eigene Vorarbeiten/Prior relevant work by the investigators

Carroll has worked for many years on the question of input to L2 acquisition. Carroll (1999a) is an experimental study of adult Anglophones' sensitivity to phonological, morphological and semantic cues to gender in French. Carroll (1999b, 2002a,b) elaborate a theory of input for SLA. With Merrill Swain and Yves Roberge, she has published studies on the effectiveness of correction and negative evidence as types of input in L2 learning. She has conducted analyses of the interpretation of correction. This research is summarised in Carroll (2001). This body of work provides the acquisition theory serving as background to the project. In addition, Carroll (1981) analysed the syntax and semantics of dislocations and cleft constructions in Quebec French – two syntactic constructions which encode IS.

Van de Vijver has been working on issues in the acquisition of FLA phonology, in particular, matters of representation, perception and process. With Jeannine Gies, he has worked on the importance of steep F₀ rises as a cue for the perception of stress and intonation. With Kügler, Féry, Ladd and Gussenhoven he is working on a comparison of pitch realisations in German, Dutch and English. Together with Clara Levelt he has worked on the relation between typology and the order of acquisition (Levelt & van de Vijver, in press). With Barbara Höhle, he is investigating the phonological nature of early lexical representations. With Anja van Kampen and Barbara Höhle he is investigating whether Turkish children use vowel harmony as a word boundary cue that is more important than stress, and whether German children use vowel harmony as a word boundary cue.

Since July of 2001, we have been piloting our planned experiments with German students of English. Our pilot study shows that even advanced L2 learners have problems perceiving novel words in auditory stimuli in English.

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Carroll, Susanne (1999a) Adults Sensitivity to Different Sorts of Input. *Language Learning* 49(1), 37-92.

Carroll, Susanne (1999b) Putting "Input" in its Proper Place. *Second Language Research* 15(4), 337-88.

Carroll, Susanne (2001) *Input and Evidence: The Raw Material of Second Language Acquisition*. Amsterdam: Benjamins.

Carroll, Susanne (2002a) Learning. In: S. Foster-Cohen (ed.) *Papers from Eurosla 11*. Amsterdam: Benjamins.

Carroll, Susanne (2002b) Induction in a Modular Learner. *Second Language Research* 18(3), 224-49.

Levelt, Clara & Ruben van de Vijver (in press) Syllable-Types in Cross-Linguistic and Developmental Grammars. In: René Kager, Joseph Pater & Wim Zonneveld (eds.) *Fixing*

Priorities: Constraints in Phonological Acquisition. Cambridge: Cambridge University Press.

3.5 **Arbeitsprogramm (Ziele, Methoden, Zeitplan)/Schedule (Goals, Methodology, Timeframe)**

3.5.1 **Ziele/Goals**

Our project has three basic goals. One goal is to test the hypothesis that focussed words are easier to learn. Our project assumes that word learning consists of coming to represent grammatical properties of words and this will be based on multiple inputs which are phonetic, phonological, syntactic and semantic in nature. We hope to show an explicit relationship between IS and SLA. A second goal is to investigate the effects of proficiency in the hypothesised relationship between focus and word learning. Proficiency can be treated as consisting of two parts: accurate representations of grammatical knowledge; automatic activation and deployment of perceptual and processing strategies. We regard only the first aspect as an issue of *learning*. The second is a matter of the *control* of psycholinguistic resources. However, they interact in linguistic behaviour and their respective roles can only be studied through appropriate psycholinguistic methods. We hypothesise that L2 learners will show variable sensitivity to different kinds of input at various proficiency levels due to (i) differences in their grammatical representations, and (ii) limitations of processing capacity resulting from the functioning of the processing system. We shall investigate the kinds of sensitivities present. A third goal is to investigate the role of transfer in the processing of input.

We plan to conduct five connected sets of experiments, collecting quantitative data which will be subjected to ANOVAs and planned comparisons of the variables studied. The main source of data will be L2 learners with German as L1 and English or Dutch as L2. Comparison data will be collected from monolingual Anglophones. Comparison data will also be collected from the L2 learners in their L1 (German) to tease out issues of processing efficiency and control.

Our choice of languages is based partly on theoretical considerations, partly to seek a good integration with other projects in the SFB, and partly for reasons of practicality. Thus, for theoretical reasons we want languages that are structurally and typologically close since we hypothesise that transfer of grammatical knowledge occurs when L1 parsing procedures “fit” the input to be analysed. The more typologically disparate two languages are, the less can be transferred from the L1 grammar in processing input. In addition, we know a great deal about these populations of learners and these languages, which should make interpreting our results easier, even in the absence of prior research on the precise questions under study. Thirdly, we want to be able to draw on the phonetic and phonological research of projects A1 and D3 and create a data base potentially useful for project C3 which deals with the L1 acquisition of German. Finally, we need access to large numbers of subjects of variable levels of proficiency as each study will be conducted with a different group of subjects. Our subject pool will be students at the Universität Potsdam.

The questions to be answered by these studies are the following:

- (i) Are L2 learners initially sensitive to phonetic realisations of focus and do they use them in segmenting formatives from the signal?
 - If yes, are they sensitive only to coalitions of cues, or are some cues “control parameters” in that they are critical, e.g. F0 movement, while the others are merely present, e.g. pause (Hirsh-Pasek, Tucker & Golinkoff 1996: 462)?

- (ii) Do L2 learners learn new words which are prosodically marked for focus (prominent) faster and more accurately than new words which are not so prosodically marked?
 - If yes, are they more accurate in learning such words in the L1 than in the L2 as shown by their accuracy of recall? Are they faster at learning such new words in the L1 than in the L2?
 - Are they nonetheless worse than monolingual Anglophones who are more efficient processors of English?
 - Do they get better at learning prominent new words as they become more proficient in the L2?
- (iii) Do L2 learners learn new words which are syntactically marked for focus faster and more accurately than new words which are not so syntactically marked?
 - If yes, are the observed effects over and above the contribution made by prosody alone?
 - Are learners more accurate in learning such words in the L1 than in the L2? Are they faster at learning such words in the L1 than in the L2?
 - Are they worse at learning such words than the native speakers?
 - Do they get better at learning such words as their proficiency increases?
- (iv) Do L2 learners learn new words which are lexically marked for focus faster and more accurately than new words which are not so lexically marked?
 - Are the observed effects over and above the contribution made by prosody alone?
 - Are they more accurate in the L1 than in the L2? Are they faster at it in the L1 than in the L2?
 - Are they worse than the native speakers?
 - Do they get better at it as proficiency in the L2 increases?

3.5.2 The role of prosodic, syntactic and lexical markers of information structure in facilitating word learning

Focus is said to help learners learn words. Behind this claim are several hypotheses, each of which must be empirically verified. First of all, we understand this claim to mean that L2 learners are sensitive to the phonetic parameters of focus and can use them to segment some phonetic unit from the signal, e.g. a syllable or string of syllables realising the relevant phonetic parameters. Secondly, the claim must mean that learners treat the segmented entity as a phonological formative and automatically map it onto the morphosyntactic and semantic properties of a word. Thirdly, since focus can be realised through syntactic and lexical markers, it must be the case that syntactic and lexical representations also provide contexts for learning properties of words and that the role of focus does not merely consist in facilitating segmentation.

Our studies consist of an *experiment set*. In the *segmentation* study (3.5.2.1), we will collect two types of data: (i) a standardised auditory test of Dutch proficiency, (ii) an oral discrimination task conducted in Dutch. In the word learning studies (3.5.2.2 – 3.5.2.5), we will collect three kinds of data: (i) proficiency testing in English (using the listening and grammar parts of the Oxford English Placement Tests (Allan 1992), (ii) data collection conducted in English, (iii) data collection conducted in German.

Proficiency testing with standardised tests is essential for grouping our subjects and for extrapolating from our results to other learners. It is customary in SLA to compare the behaviour of L2 learners to that of monolingual native speakers to see how close the L2 learners get to the expected “ultimate attainment”. This practice, however, does not control for the bilingualism of the L2 learners, a necessary aspect of studies looking at processing. Therefore, German learners of English will perform comparable tasks in German, serving as their own controls, on tasks in which we assume they will use highly automated perceptual and parsing procedures. All studies will use a variant of the speeded up classification task.

3.5.2.1 Study 1: Sensitivity to the phonetic parameters of focus

In this study we ask if adults who have no previous exposure to Dutch are actually sensitive to the phonetic features instantiating focus. Our interest in this study is on the question of learners’ initial sensitivities to individual phonetic realisations of prominence. Are some phonetic realisations of focus “control parameters” (Hirsh-Pasek, Tucker & Golinkoff 1996: 462), to which learners are sensitive even when they appear alone? Or, are learners sensitive only to clusters of variables, i.e. to multiple cues? Is focus useful because the phonetic realisations of prominence make a syllable or some larger prosodic unit segmentable?

Although logically a first step in our systematic study of focus and word learning, we will run this study in the final year of the first phase of the SFB, in order to draw on the results of the D3 project (Pompino-Marschall), in particular, its investigation of the phonetics of prominence. At the moment, we plan to investigate some of the variables discussed in Wells (1986) shown to correlate with focus in English (maximum pitch range, kinetic tone or intonation movement, loudness peak), but the final selection of phonetic variables will be made after appropriate consultation with the D3 researchers.

Method:

We will adapt a methodology used by Cutler & Norris (1988) to study the role of strong syllables in segmentation. With this methodology, listeners were asked to find real words in a spoken nonsense sequence. We use square brackets to indicate the morphosyntactic unit while parentheses indicate prosodic boundaries. Thus, listeners had to locate e.g. *mint* in either ([mɪnt]əf) or ([mɪn](t)ɛf). Finding *mint* in the second example was difficult because listeners had to recombine the syllable onset /t/ across a foot boundary to recognise the word. Our subjects will be asked to listen for target formatives in Dutch utterances. Stimuli will be manipulated so that selected phonetic realisations of focus, e.g. intonation movement, will be instantiated on the first or second syllable of the target formatives. We hypothesise that segmenting a formative like *even* ‘a little while’ in a sequence like *evenaar* will be easier when the phonetic realisation of focus is aligned with *even* rather than with *naar*, e.g. ([even])_{acoustic marker of focus}(aar) vs. ([eve])_{acoustic marker of focus}(naar).

Target words:

2 and 3-syllable words of Dutch.

(1)	<i>even</i>	‘a little while’	<i>evenaar</i>	‘equator’
	<i>trooster</i>	‘comforter’	<i>broodrooster</i>	/bro tro ster/ ‘toaster’
	<i>ram</i>	‘ram’	<i>boterham</i>	/bot er am/ ‘sandwich’

Presentation of stimuli:

All stimuli will be carefully controlled through digital manipulation of the acoustic parameters and based on recordings of a native speaker of Dutch. They will be presented in digitalised

form via computer. Target formatives will be first heard in isolation with a German translation. Following presentation in isolation, subjects will hear an utterance which contains one of the target forms. They will respond to each stimulus by pressing a computer key when they detect a target. Reaction time and accuracy measures will be collected.

Language pair: German L1/Dutch L2

Subjects:

We will collect data from 30 adult German native speakers (university students) with no previous exposure to Dutch.

3.5.2.2 Study 2: Learning new words which are prosodically marked for broad focus

Study 2 will determine if adult L2 learners learn new words faster and more accurately if they are prosodically prominent. We will also investigate the extent to which prosodic prominence interacts with the Sentence Location Principle of VanPatten (in press). Recall that it says that learners learn to identify words in sentence initial position before they learn to identify words in sentence final position or in sentence medial position. Our hypothesis is, in contrast to VanPatten, that learners will be most sensitive to words which are prosodically marked for focus regardless of their location in the sentence.

Method:

This study will use a word learning paradigm in which subjects are exposed to digitalised auditory stimuli containing target words to be learnt. All stimuli will be presented and all data collected via a computer. In this experiment set subjects will hear sentences in blocks. After hearing 4 sentences in a learning trial, the learner will perform a recognition task. The recognition task will consist of hearing a word pronounced in isolation and indicating whether that word was contained in the stimulus set. Reaction time data will be gathered and accuracy of response will be assessed as well.

Language pair German L1/English L2:

The study will be run in both German and English with the L2 learners and in English with the native speaker comparison group.

Target words:

Target words in this experiment will consist of low frequency names of birds, such as *loon*. The type of target word has been chosen because we want words which are conceptually simple (which nonce words seldom are) and because we need lots of low frequency words which our subjects (even the native speakers) are unlikely to know. These words will vary in length, being 1-, 2- or 3-syllabled, in order to be able to vary the location of primary stress.

(2)	Syllable length:	1 [σ]	2 [σσ]	3 [σσσ]
	Target word:	<i>loon</i>	<i>wigeon</i>	<i>garganey</i>

Stimuli:

All target items will be recorded both in isolation and in a sentence to create the auditory stimuli. These stimuli will be carefully controlled through digital manipulation of the acoustic parameters. They will be phonetically analysed, and independent assessment by native speakers of the naturalness of the stimuli will be carried out. All stimulus material will be read by a native speaker (a speaker of standard British English for the English-language experiment, a speaker of Hochdeutsch for the German-language experiment).

IS will be operationalised as a focus/background opposition. Sentences in Studies 2-5 must create either a broad or a narrow focus. We do not know if this variable will affect our results so we must control for it. Stimuli in this study will all consist of question-answer pairs embedded in a larger situation which will create contexts of broad focus. (The next study creates contexts of narrow focus.) A “broad focus” context is created as an answer to the question *What happened?* as in (3-5) below. In each broad focus context, various nouns can be accented to create prominence. Accented constituents are in capital letters. All sentences will be controlled for syllable length and syntactic complexity. Stimuli of this sort will allow us to vary the position of the target word, which may appear in sentence initial position, as in (3A), sentence medial position, as in (4A), or sentence final position, as in (5A). Target words will be either focus accented, as in (3Ai), (4Ai) and (5Ai), or not, as in (3Aii), (4Aii) or (5Aii).

Examples of stimuli in broad focus context:

(3) target words in sentence initial position

Q: What happened?

Ai: WIGEONS picked the raspberry bushes of all their fruit.

Aii: Wigeons picked the raspberry bushes of all their FRUIT.

(4) target words in sentence medial position

Q: What happened?

Ai: Somebody saw a wounded GARGANEY in a tree.

Aii: Somebody saw a wounded garganey in a TREE.

(5) target words in sentence final position

Q: What happened?

Ai: Some hunters down by the lake shot a REDSHANK.

Aii: Some hunters down by the LAKE shot a redshank.

Subjects:

80 adult German native speakers of L1 German and L2 English, drawn from 4 levels of proficiency (20 beginner - 20 intermediate - 20 advanced - 20 near-native-like) will be tested. We will collect monolingual comparison data in Great Britain (20 subjects). Total n = 100.

3.5.2.3 Study 3: Learning new words which are prosodically marked for focus in interaction with topic and narrow focus

Sentence initial position in a language like English is frequently occupied by the subject of a sentence, as in (3-5) above. Subjects may be new information as in these examples or topics. Subjects may also appear in the context of narrow focus sentences. In this study, we examine the Sentence Location Principle again, this time examining how it might interact with focus context and topic status. We hypothesise that learners will be sensitive to initial position when it coincides with prominence and narrow focus.

Method: See 3.5.2.2

Target words: Target words will be exactly the same as in the previous experiment set.

Stimuli:

Stimuli will be created in a fashion similar to that in the previous study. Here, however, IS will be operationalised as question-answer pairs creating contexts of narrow focus involving either a subject in focus, in which case the subject will be new information and in initial position, or an object in focus, in which case the subject will be a topic (old information) and in initial

position. Thus in (6A) we see a subject as narrow focus and which is prosodically prominent. In (7A), the object is both in narrow focus and in sentence initial position (a “topicalised” direct object). In (8A), the subject is now the topic with the object made prominent and in narrow focus. In (9A), the subject is in narrow focus and prominent but the first constituent of the sentence is now an object as topic.

Examples of stimuli in narrow focus context

(6) Narrow focus subject context

Q: Which animals are eating raspberries under the bushes?

A: WIGEONS are eating raspberries under the bushes.

(7) Narrow focus object context

Q: What bird was it the hunters shot down at the lake?

A: A SHEARWATER, the hunters shot down at the lake.

(8) Subject as topic with object in narrow focus

Q: What is it the wigeons are eating under the bushes?

A: The wigeons are eating RASPBERRIES under the bushes

(9) Object as topic (in a dislocation) with subject in narrow focus

Q: Some animal is eating those raspberries under the bushes. Which one is it?

A: The raspberries under the bushes, the WIGEONS are eating them.

Subjects: Subjects will be selected as in experiment set 2. Total n = 100.

3.5.2.4 Study 4: Learning new words which are syntactically marked for focus

In this study, we will determine if adult L2 learners learn new words faster and more accurately if they are made prominent through syntactic marking of focus. The experiment set will be run in German and in English with the L2 learners, and in English with the monolingual native speakers.

Method: We will use the same method and similar procedures to that of the previous study.

Target words: The target words will be the same as those of the experiment sets in Studies 2 and 3.

Stimuli:

Stimuli will be created in a similar fashion as the stimuli of the two previous experiment sets with the difference that target words will be found in either cleft sentences or wide focus sentences. Because words occurring in clefted position in English are also prosodically prominent, we will digitally manipulate a subset of the stimuli so that the clefted words do not bear focus accent. If learners learn clefted words even when they do not instantiate prosodic prominence, we may conclude that it is the syntactic marking itself which is facilitating word learning.

Examples of stimuli:

(10) Q: What animal chased the minnow out from the rocks?

A: It was the scaup that chased the minnow out from the rocks.

(11) Q: What happened at the stream?

A: The scaup chased the fat minnow out from the rocks.

Subjects: Subjects will be selected as in Studies 2 and 3. Total n = 100.

3.5.2.5 Study 5: Learning new words which are in the scope of a lexical focus marker

In this study, we will determine if adult L2 learners learn new words faster and more accurately if they are made prominent by being in the scope of a lexical marker of focus. The experiment set will be run in German and in English with the L2 learners, and in English with the monolingual native speakers.

Method: We will use the same method and similar procedures as in the previous study.

Target words: The exact same words will be used as above.

Stimuli:

Stimuli will be created in a fashion similar to that of the previous study with the difference that target words will be found in the scope of a lexical marker of focus or wide focus sentences. We will digitally manipulate a subset of the stimuli so that the target words do not bear focus accent, all other target words will be prosodically prominent. If learners learn the target words even when they do not instantiate prosodic prominence, we may conclude that being in the scope focus particle itself facilitates word learning.

Examples of stimuli:

- (12) Q: Of all the birds at the stream, what chased the minnow?
A: Only the SCAUP chased the minnow at the stream. (subject in narrow focus)
- (13) Q: What happened at the stream?
A: We think that the SCAUP chased the minnow at the stream. (broad focus)

Subjects: Subjects will be selected as in Studies 2-4. Total n = 100.

Zeitplan

- 2003** Piloting of Study 2; training of research assistants in programming, acoustic analysis, and experimental design.
- 2004** Study 2: Programming of experiments; ongoing training of research assistants; phonetic analyses of stimuli, data collection and analysis of results.
Study 3: Piloting, programming of experiments, phonetic analyses of stimuli; data collection.
Dissemination activities.
- 2005** Study 3: Data collection and analysis of results.
Study 4: Piloting, programming of experiments, phonetic analyses of stimuli; data collection.
Dissemination activities.
- 2006** Study 4: Data collection and analysis of results.
Study 5: Piloting, programming of experiments, phonetic analyses of stimuli; data collection and analysis of data.
Dissemination activities.
- 2007** Study 1: Piloting, phonetic analyses of stimuli; data collection and analyses of results.
Consultation with colleagues for experiments for Phase 2 of SFB; dissemination activities; report writing

3.6 Stellung innerhalb des Sonderforschungsbereichs

Contribution to the SFB: This project will undertake the first systematic investigation of the use of markers of IS by L2 adult learners to learn new words and of their sensitivity to particular

phonetic realisations of focus. We hope to show that the integrative approach of the SFB to the problem of IS has especially rich consequences when pursued in the domain of L2 acquisition.

Connection to the rest of the SFB: We will draw heavily on the theoretical analyses of Project A1 (Féry/Fanselow), and on the measurements of the phonetic properties of the prosodic markers of focus in the D3 project (Pompino-Marschall). Our project complements the project C3 (Weissenborn/Höhle) which investigates input issues in first language acquisition. Moreover, in its processing aspects, it links to Project C2 (De Bleser/ Burchert/Villringer).

Later phases of the SFB could involve an investigation of the semantic influences of IS on L2 development. One possibility is suggested by studies which show that Anglophone L2 learners in the early phases of acquisition misparse “reversible” sentences with case-marking and variable order in languages like German. Thus, on reading or hearing sentences such as *Den Peter hat der Hans gesehen*, such learners will interpret the sentence as meaning ‘Peter has seen Hans’. A replication of experiments like those of Project C1 (Kliegl/Fanselow) with this population would be useful. Current research by VanPatten suggests that processing costs cause L2 learners not to notice the relevant cues which would lead to a correct interpretation of the sentence.

3.7 Abgrenzung gegenüber anderen geförderten Projekten:

not applicable

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