

MARCH 25 – 27, 2021 (ONLINE)

# LIR | LAP

Münster Conference  
Linguistic Representations and  
Language Processing



WELCOME!

# WELCOME TO LIR | LAP

Münster Conference  
**Linguistic Representations and  
Language Processing**

The Graduate School of Empirical and Applied Linguistics (GSEAL) at WWU Münster will be hosting a digital conference on Linguistic Representations and Language Processing (LIR-LAP) with a special focus on currently used methods and approaches. Our 3-day conference will take place on March, 25-27, 2021 via Zoom. We highly encourage junior/early stage career researchers interested in psycholinguistics, language acquisition and cognitive linguistics to submit their contributions. Our particular focus is methods currently used (or newly introduced) for studying cognitive processes at different levels of language, from phonological representations and syntactic processing to the processing of pragmatic features and discourse structures. Our research interests include but are not restricted to: *How variational linguistic features are being processed and acquired, the role of context in language processing, including processing of discourse features, language processing and intonation, language processing and language acquisition in multilingual speakers.*

We welcome contributions focusing on the development of stimuli, useful tools and software in research, as well as best practice examples in interdisciplinary studies.

# MARCH 25

## PROGRAMME

08:45

### WELCOME

ANNA KONSTANTINOVA  
DAVID WIRTHMÜLLER

09:00

Fine phonetic detail in the context  
of social variation

KEYNOTE

STEFANIE JANNEDY

10:00

The time course of the adoption  
of novel phonological variation

CESKO C. VOETEN

10:30

The perception of word-initial  
obstruent clusters in Najdi Arabic

RANA ALSABHAN  
JANE SETTER

11:00

### COFFEE BREAK

11:30

The acquisition of reference in a German-Polish  
bilingual child. A longitudinal study on the interaction  
between morpho-syntactic factors and pragmatics

ANNA JACHIMEK

12:00

What day-long audio-recordings can  
tell us about children's vocal development

NATALIA KUZMINYKH

12:30

### LUNCH BREAK

# MARCH 25

## PROGRAMME

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**13:30** Measuring semantic transparency  
in complex verbs **IRENE FALLY**

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**14:00** The recording of eye movements during  
sentence production: Challenges and  
opportunities **JUDITH SCHLENTER**  
**MARTINA PENKE**

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**14:30** Complements vs. adjuncts and  
mouse-controlled reading **ARMINE GARIBYAN**

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**15:00** **COFFEE BREAK**

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**15:30** How does the interaction between task-  
related parameters affect results of cued  
language switching experiments? **HONG LIU**

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**16:00** Syntax-discourse performance  
and pausing behavior in L2 writing:  
A keystroke-logging study **MATHIEU LECOUVET**

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**16:30** **COFFEE BREAK**

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**17:00** Comparing online and offline data in  
different types of language users **KEYNOTE**  
**SARAH SCHIMKE**

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# MARCH 26

## PROGRAMME

**09:00**

Using imitation and meaning tasks to tap into the (phonological) status of pitch accents

**KEYNOTE**

**BETTINA BRAUN**

**10:00**

What does the teddy tell Laila?  
The function of pitch in language acquisition

**ANTONIA GÖTZ**  
**CLARA HUTTENLAUCH**

**10:30**

Towards a cross-linguistic typology of how disjunctive questions are disambiguated

**MOHAMMAD BANI YOUNES**  
**SAM HELLMUTH**

**11:00**

**COFFEE BREAK**

**11:30**

Native language processing of cognates in general academic vocabulary in multilinguals

**VEDRANA GNJIDIĆ**

**12:00**

The role of input modality in L2 learning: The case of English adjective placement

**EVELIN BALOG**

**12:30**

**LUNCH BREAK**

# MARCH 26

## PROGRAMME

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**14:00**

The production and comprehension  
of grammatical gender in Welsh-English  
bilinguals

**TESNI GALVIN**  
**VIVIENNE ROGERS**

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**14:30**

Word recognition in child L2 learners:  
Cross-linguistic activation and the impact  
of cognitive control

**FREYA GASTMANN**  
**GREG POARCH**

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**15:00**

**COFFEE BREAK**

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**15:30**

Cognate facilitation effect and its  
role in second language rule learning

**NOÈLIA SANAHUJA**  
**KEPA ERDOCIA**

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**16:00**

Bilinguals process swearwords differently  
depending on the language, but not across the  
board: The revealing case of swearwords

**MICHAŁ B. PARADOWSKI**  
**MARTA GAWINKOWSKA**

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# MARCH 27

## PROGRAMME

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**09:00**

Neuroimaging and neurophysiological measures for investigating the activation of focus alternatives during language comprehension

**KEYNOTE**

**KATHARINA SPALEK**

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**10:00**

What are the potential and limits of establishing complex dialogue routines in interactive communication?

**RAHEL OPPLIGER**

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**10:30**

The influence of contextual features on the choice of the focus particle “auch” – A case of syntactic priming?

**LAURA REIMER**  
**CHRISTINE DIMROTH**

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**11:00**

**COFFEE BREAK**

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**11:30**

The difference in the vocabulary size of children with and without down syndrome: A meta analysis

**JUDITH BOVELETH**  
**KATIE VON HOLZEN**

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**12:00**

Do participant recall rates distinguish between assertion, implicature and presupposition?

**ELEANOR MILLER**

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**12:30**

**CLOSING**

**ANNA KONSTANTINOVA**  
**DAVID WIRTHMÜLLER**

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**MARCH 25**  
**THURSDAY**



# Fine phonetic detail in the context of social variation

## KEYNOTE

*Kiezdeutsch* may be the far better known term for what might by now be also called urban German or just *STREET*. We have worked on the phonological features and the fine phonetic implementations of them in the Berlin variety of urban German, spoken predominantly by younger multi-ethnic adolescents but also mono-ethnic Germans from different neighborhoods in Berlin. Over the course of our work, we have conducted production studies, perception tests and attitude estimations with a wide variety of participants. The range of work included classic sociolinguistic interviews, categorical perception test and an Implicit Association Tasks (IAT). In this talk, we will give an overview of our questions asked and our methods chosen to answer them. Moreover, we will let you in our very first preliminary insights from our work on *Register*.

### REFERENCES

Jannedy, S. & Weirich, M. (2014) Sound change in an urban setting: Category Instability of the Palatal Fricative in Berlin. *Journal of Laboratory Phonology* 5(1):91-122.

Jannedy, S. & Weirich, M. (2017) Spectral moments vs. discrete cosine transformation coefficients: Evaluation of acoustic measures distinguishing two merging German fricatives. *Journal of the Acoustical Society of America* 142(1):395-405.

Weirich, M., Jannedy, S. & Schlippenhauer, G. (2020) The Social Meaning of Contextualized Sibilant Alternations in Berlin German. *Frontiers in Psychology*, Vol.11:566174. doi: 10.3389/fpsyg.2020.566174

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## The perception of word-initial obstruent clusters in Najdi Arabic

Najdi Arabic (NA), a dialect spoken in central Saudi Arabic, unlike Standard Arabic, allow initial consonant clusters (Alqahani, 2014; Ingham, 1994). None of the past research, to our knowledge, studied the perception of these clusters nor provided a comprehensive acoustical analysis of all the consonant cluster patterns. This paper aims to fill up this gap in the NA phonology by investigating the perception and production of the biconsonantal word-initial obstruent clusters, which are considered the most complex type of the consonant clusters that occur in few languages (Morelli, 1999), by addressing the following questions: (1) Can Najdi Arabic speakers produce word initial obstruent clusters? (2) Can Najdi Arabic speakers perceive word initial obstruent clusters? (3) Are there differences in the production and perception patterns?

A within-subject design was employed in which forty-six Najdi Arabic speakers (33 female- 14 male) aged 18–50 years, participated in the study. Two methods were employed, a shadowing task and an AX discrimination task. The stimuli for the

shadowing task were 66 lexical real words that represented all types of obstruent clusters: Fricative-Fricative, Fricative-Plosive, Plosive-Fricative, and Plosive-Plosive. The AX discrimination task investigated the perceptual distinction of initial obstruent clusters and non-clusters. The same stimuli used in the shadowing task were reemployed in the AX discrimination task. The stimuli were pairs of the same word in two syllable structure: CVCVC and CCVC, for example, /kibar/ and /kbar/. The task involved four possible trial orders (AX, XA, AA, XX), which contained an equal number of same and different trials, totaling  $66 \times 4 = 264$  trials. The experiment was run in PsychoPy V1.82.01 (Peirce et al., 2019). This study will contribute to unveil the phonetic realizations of the initial obstruent clusters based on perceptual stimuli which can be accounted for by theories of perceptual phonology. The study is on-going and a finalized version of the abstract will be forward to colloquium at a later date prior to the colloquium.

### REFERENCES

Alqahani, M. (2014). Syllable structure and related processes in optimality theory: an examination of najdi arabic. (Dissertation/Thesis). ProQuest Dissertations Publishing, United Kingdom.  
Ingham, B. (1994). Najdi Arabic: Central Arabian. Amsterdam; Philadelphia: John Benjamins Publication Company.  
Morelli, F. (1999). The Phonotactics and Phonology of Obstruent Clusters in Optimality Theory. (Dissertation/Thesis). University of Maryland, USA.

Peirce, J., Gray, J. R., Simpson, S., MacAskill, M., Höchenberger, R., Sogo, H., ... Lindeløv, J. K. (2019). PsychoPy2: Experiments in behavior made easy. Behavior research methods, 51(1), 195-203. doi:10.3758/s13428-018-01193-y

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## The acquisition of reference in a German-Polish bilingual child. A longitudinal study on the interaction between morpho-syntax and pragmatics

To realise the referring potential of linguistic expressions, special linguistic means have to be used. German and Polish grammars differ dramatically in this regard. The referential system of German is mainly based on the opposition of definite and indefinite articles while Polish, a language with no articles, does not have a grammaticalized distinction between definite and indefinite NPs. Under specific circumstances, demonstrative or indefinite pronouns can be combined with nouns. Global means, such as aspect opposition and word order also have an impact on the interpretation of referring expressions (Sadziński, 1995).

The aim of this talk is to identify developmental patterns involved in the construction of reference systems in German and Polish as simultaneously acquired first languages. More precisely, we want to investigate and compare form-function associations in both referential systems at a given stage of development and over time. On the basis of a longitudinal corpus consisting of regular video recordings in both languages, we examine the acquisition of referential means in a bilingual child

between age 2;0 to 4;0. We also aim to determine whether the bilingual acquisition of two different reference systems shows traces of cross-linguistic influence. The data of the bilingual child will therefore be compared to data from a monolingual Polish child.

The talk focuses on the expansion of the NP in both languages. The bilingual acquisition of reference starts around the age of 1;5 with deictic pronouns like *das* (G: 'this'), *to* (Pl: 'this') and bare nouns in both languages. Formal reference markers are acquired gradually. At the age of 2;1, definite NPs progressively replace bare nouns in German. Indefinite NPs follow at 2;4. The observation that definiteness occurs before indefiniteness in German is contrary to what is described in the literature on the acquisition of reference in article languages (e.g., Bittner, 1998). In Polish, nouns with determiners equally appear at 2;4, albeit less frequently than in German. Demonstrative determiners (e.g. *ten N*, 'this N') outweigh indefinite pronouns (*jakiś N*, 'some N'). This acquisition pattern shows that definiteness is of particular importance to the bilingual child.

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REFERENCES

Bittner, D. (1998). Entfaltung grammatischer Relationen im NP-Erwerb: Referenz. *Folia Linguistica* XXXI, 255-283

Sadziński, R. (1995). Die Kategorie der Determiniertheit und Indeterminiertheit im Deutschen und Polnischen. *Wydawnictwo WSP*.

## What day-long audio-recordings can tell us about children's vocal development

Although previous work suggests child vocalization changes on a universal maturational schedule, this has been studied in only a handful of languages (Cychosz et al., 2019). Researchers tend to concentrate on samples from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) countries (Henrich et al., 2010), which represent communities with only a very limited range of language families: particularly, out of the 7000 languages in the world, we have data on phonological development for fewer than 30 (Loukatou, 2020). In fact, this lack of linguistic diversity in studies seriously affects our understanding of early language development and possibly leads us in the wrong direction. But it is understandable given that the standard methods to study phonological development require laboratory-level recordings, transcriptions, and a thorough understanding of the language's phonological and linguistic system. Although that would be ideal, we explore here a method that is easy to extrapolate to other communities and cultures, and which does not require heavy investment from the families or the local community, nor a great deal of knowledge about the language itself.

We collected daylong audio-recordings of 111 children (aged 1-40 months) primarily exposed to one of 12 different languages in a naturalistic setting through the use of lightweight portable recording devices that children carried with

them. Data annotation for this audio corpus was carried out in one of two ways: 1) utterances by the child were automatically extracted using the LENA proprietary software (Xu et al., 2009), and annotated by citizen scientists on the Zooniverse platform into canonical (containing speech-like consonant-vowel or vowel-consonant sequences) and non-canonical (including only vowels or weakly articulated consonants; Cychosz et al., 2019). 2) Utterances by the child were detected and categorized by interns trained on these tasks. In both cases, we derived canonical proportion, a crucial index of phonological development (Oller et al., 1998), defined as Canonical/(Canonical+Non-Canonical). Individual languages were classified into low, moderate, and high phonological complexity based on syllable complexity, consonant inventory, and vowel inventory (Maddieson, 2005).

Preliminary data show that the canonical proportion varies with languages' syllable complexity, but not phonological inventory. This effect is compatible with an explanation whereby consistency in syllable structure, rather than simplicity in the phonological inventory, facilitates children's development of canonical syllables. Nonetheless, this work highlights the importance of studying more diverse languages and cultures. Such research is necessary for the field to gain a more objective and universally valid image of child development.

## NOTES

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# Measuring semantic transparency in complex verbs – two measures, two constructs?

Semantic transparency is used in psycholinguistic experiments as a measure of how much the meaning of a complex word overlaps with that of the underlying base word, e.g. how strongly *comporter* ('to behave') is semantically related to *porter* ('to carry') (Rastle et al., 2000; Smolka et al., 2018). A central question that arises when creating stimulus materials for these experiments is how semantic transparency is measured. Although a large number of studies rely on human ratings, where native speakers are asked to rate word pairs on a transparency scale, more recently, computational measures have come into use. Using vector semantic models, semantic transparency is calculated on the basis of large corpora (Marelli & Baroni, 2015). Although both methods are intended to measure the same variable, they are based on two radically different approaches, and recent studies have called into question the interchangeability of the measures (cf. Auch et al., 2020).

The present study sets out to determine to what extent computational measures of semantic transparency are able to reproduce behavioral measures. To this end, two measures of semantic transparency for complex verbs in French, namely

semantic association ratings by native speakers and semantic similarity vectors computed on the basis of vector semantic models (Günther et al., 2015), are compared. A list of 46 base verbs is selected from the Lexique 3.8 database (New et al., 2004). Each base verb is paired up with two to five morphologically related prefix verbs. For the behavioral measure of semantic transparency, native speakers of French are asked to rate how strongly the meaning of the complex verbs is related to the base verbs on a seven-point scale. For the computational measure of semantic transparency, cosine similarities between semantic vectors of the base verbs and the complex verbs are computed from LSA/HAL spaces for French provided by Günther et al (2015).

The results show that the two measures differ across verb pairs and prefixes, strongly suggesting that computational measures cannot be used interchangeably. The aim of this talk is to explore possible explanations for this difference and implications for using these measures for the creation of stimulus materials for psycholinguistic experiments.

### REFERENCES

Auch, L., Gagné, C. L., & Spalding, T. L. (2020). Conceptualizing semantic transparency: A systematic analysis of semantic transparency measures in English compound words. *Methods in Psychology*, 3, 100030. <https://doi.org/10.1016/j.metip.2020.100030>  
Günther, F., Dudschig, C., & Kaup, B. (2015). LSAfun—An R package for computations based on Latent Semantic Analysis. *Behavior Research Methods*, 47(4), 930–944. <https://doi.org/10.3758/s13428-014-0529-0>  
Marelli, M., & Baroni, M. (2015). Affixation in semantic space: Modeling morpheme meanings with compositional distributional semantics. *Psychological Review*, 122(3), 485–515. <https://doi.org/10.1037/a0039267>  
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Rastle, K., Davis, M. H., Marslen-Wilson, W. D., & Tyler, L. K. (2000). Morphological and semantic effects in visual word recognition: A time-course study. *Language and Cognitive Processes*, 15(4–5), 507–537. <https://doi.org/10.1080/01690960050119689>  
Smolka, E., Libben, G., & Dressler, W. U. (2018). When morphological structure overrides meaning: Evidence from German prefix and particle verbs. *Language, Cognition and Neuroscience*, 34(5), 599–614. <https://doi.org/10.1080/23273798.2018.1552006>

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## The recording of eye movements during sentence production: Challenges and opportunities

While the recording of eye movements to study language comprehension has become a well-established method in psycholinguistics (e.g., Huettig, Rommers, & Meyer, 2011), the method of eye-tracking during production has rather been neglected. This seems surprising as research could demonstrate a similar link between eye gaze and processing; see Meyer, Sleiderink and Levelt (1998) for picture naming or, for the description of scenes, Griffin & Bock (2000). We aim to demonstrate that this link between eye gaze and speech provides us with a useful tool to study sentence planning, especially in combination with attention manipulation techniques.

In a series of sentence production studies combined with eye-tracking, we presented German speakers with black-and-white line drawings depicting a transitive event (e.g., vampire hitting cowboy), which they had to describe in one sentence. We controlled that referents did not differ in visual salience and were displayed in equal distance to each other. All nouns used as agents and patients were similar in phonological and morphological complexity and frequency. Prior to scene onset, we cued the patient referent by means of a perceptual cue (a dot), so it became more prominent as opposed to the agent; see Figure 1 (p. 36) for an illustration of the procedure in

Schlentner et al. (under review). After around 200 milliseconds (ms) it takes to initiate a saccade, speakers showed an immediate preference for looking to the agent when producing an active clause. This agent preference was reversed when speakers produced a passive clause. The eye gaze pattern observed in an early time window (200–600 ms after scene onset) indicated that our German speakers planned the sentence lemma by lemma (linear incremental planning). If our speakers had started with the relational encoding of the event (hierarchical incremental planning), they should have been equally likely to fixate the agent and patient (for a recent overview of sentence-planning strategies and analyses windows, see Konopka et al., 2018). We saw evidence for linear incremental planning also in an experiment in which we presented speakers with an informative cue, a picture of the patient (see Figure 1 right side). There we tapped into a later processing stage, that is, after the patient lemma was accessed.

We will discuss how analyses of eye gaze relative to speech onsets can help to differentiate between sentence-planning strategies, what are the challenges and how attention manipulation techniques can be used to unravel the processes underlying sentence production.

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# Complements vs. adjuncts and mouse-controlled reading

The relationship between sentence processing and cognitive demand has received a lot of attention in the past decades. In valency theory, some elements of the sentence are determined by the verb either in terms of their form or by their presence (Herbst & Schüller 2008). It has to be said that little attention has been paid to the processing of such fundamental categories in the theory of syntax. On the one hand, this is remarkable since given the amount of research, we still do not know whether this distinction is psychologically real, or whether it only serves a lexicographic and pedagogical purpose. On the other hand, there is a consensus among linguists about the problematic character of the distinction itself even on a more

theoretical level (Dowty 2000; Hoffmann 2007; Herbst & Schüller 2008). Therefore, this study attempts to explore whether complements and adjuncts are associated with different kinds of processing. To answer the research questions, an experiment consisting in a mouse-controlled reading task has been designed. 15 complement/adjunct pairs were used for the study (The teacher made the girl *sing to the class* yesterday. vs. They often *sing in the church* on Sundays). The target units (complements and adjuncts) were controlled for length and frequency. To the best of our knowledge, this is a new method in psycholinguistic research.

## REFERENCES

Dowty, D. 2000. The dual analysis of adjuncts/complements in categorial grammar. ZAS Papers in Linguistics 17. 53-78.  
 Hoffmann, Th. 2007. Complements versus adjuncts: A construction grammar approach of English prepositional phrases. Occasional Papers in Language and Linguistics (University of Nairobi) 3. 92-119.

Herbst, Th. & Schüller, S. 2008. Introduction to syntactic analysis: A valency approach. Tübingen, Gunter Narr Verlag.

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## How does the interaction between task related parameters affect results of cued language switching experiments?

The inconsistencies in the findings of cued language switching experiments call into the need to examine how the task related parameters affect experiment results (Bobb & Wodniecka, 2013). The contribution of individual factors has been examined separately (for participants' language proficiency, see Costa, Santesteban, & Ivanova, 2006; Schwieter & Sunderman, 2008; for participants' non language cognitive abilities, see Linck, Schwieter, & Sunderman, 2012; for the types of stimuli, see Declerck, Koch, & Philipp, 2012; for the differences in trial intervals, see Verhoef, Roelofs, & Chwilla, 2009), but how the interaction between these factors affects the experiment results remains under studied.

This study investigated how the interaction between stimulus type and cross language typological proximity affects the results of a cued language switching naming experiment. Chinese (L1)-English (L2)-French (L3) trilingual participants switched between two languages to name pictures and digits in mixed blocks. The three possible language combinations were all tested. The results show that (1) switching costs were largest between L2 and L3, two typologically more closely related languages, confirming the previous findings that switching

costs can vary systematically with the language distance (Deibel, 2020). In terms of the pattern of switching costs, asymmetric switching costs into L1 were found between L1 and L3, but between L1 and L2, the asymmetry was larger into L2. The switching costs between L2 and L3 were symmetric. This raises the possibility that different language control mechanisms are applied, depending on language distance and relative language proficiency. The results also show that (2) not only were the different types of experiment stimuli processed differently (i.e., digits were processed faster), they also modulated the switching costs. More specifically, the switching costs between L2 and L3 were significantly bigger with the digits, and the magnitude of the asymmetric switching costs between L1 and L3 was also significantly larger with the digits. Confirming that the difference between digits and pictures can be attributed to phonology (cf. Declerck et al., 2012), such results also suggest that digits are represented qualitatively differently from other verbal responses. The implications of the interactions between stimulus type and cross language typological proximity are discussed in terms of how to put cued language switching experiments in perspective when investigating bilingual language control.

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## Syntax-discourse performance and pausing behavior in L2 writing: A keystroke-logging study

Over the last fifteen years, a large body of evidence has accumulated pointing to L2 learners' difficulty in mastering syntactic phenomena at the interface with discourse constraints. Several studies linked this acquisition challenge to the processing cost inherent in coordinating information from different grammar modules in real time. However, whereas processing effects were identified in on-line studies involving the comprehension of a variety of phenomena (anaphora resolution, scrambling, left-dislocation), little is known with regard to the interplay between learners' performance at the syntax-discourse interface and processing effort in L2 production. To fill this gap, the present study addresses the question whether there is a relationship between indicators of writing fluency and the syntax-discourse make-up of learner written compositions. More concretely, our general aim is to establish whether learners' ability to use a wide range of syntactic structures for enhancing textual coherence translates into a more fluent orchestration of the writing process.

In order to gain insight into learners' cognitive performance while writing, process data were obtained using the keystroke-logging software Inputlog, which has been developed to record all keyboard and mouse activities during text production. Keystroke-logging data were collected from an experiment among

30 intermediate-to-advanced L2 learners of German who wrote an expository text. Focusing on product features, all texts were segmented into clauses, which served as reference units for coding a measure of textual coherence and an index of syntactic diversity. Textual coherence was calculated based on two subsets of cohesive devices: anaphoric reference and discourse connectors. With respect to syntactic diversity, an overall score was derived from seven sublevels: clause type, sub-clause type, finiteness, voice, verb valency, number of adjuncts and constituent order. Turning to process features, fluency was operationalized in terms of pausing behavior and measured based on length and location of pauses (within word, between words and between sentences).

Pearson's correlations were calculated between product and process features, which revealed a significant negative relationship between both measures of textual coherence and syntactic diversity on the one hand and mean length of pause at lower linguistic levels (within word and between words) on the other hand. These findings are in line with previous studies demonstrating that less experienced L2 writers tend to allocate more processing resources to lower-level issues (spelling, lexical retrieval) at the cost of more complex processes such as clause/sentence structure and discourse organization.

### NOTES

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## Comparing online and offline data in different types of language users

Online data, that is, data that reveal insights into language processing while it is taking place, and offline data, that is, data that assess final interpretations, judgments or produced utterances, provide complementary insights into language users' linguistic knowledge. The differences are related to the different reflections of implicit and explicit processes in both types of measures: Online data provide insights into implicit knowledge while it is put to use, while offline data may reflect both implicit and explicit knowledge about language.

Crucially, the relation between online and offline data may be different in different types of language users, as is the relation between implicit and explicit knowledge. I will provide examples from studies with first and second language child and adult language users to illustrate the different possible relations, and discuss how these differences could be taken into account in empirical studies in a systematic way.

### KEYNOTE

#### NOTES

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**MARCH 26**  
**FRIDAY**



# What does the teddy tell Laila? The function of pitch in language acquisition

Infants face several obstacles acquiring language: what are native sounds, words, and the words' relations to objects? Previous studies have shown that during the first year of life, infants' ability to discriminate native sounds increases, while their ability to discriminate non-native sounds decreases. This effect of perceptual narrowing has been shown for consonants (e.g., Werker & Tees, 1984), vowels (e.g., Tsuji & Cristia, 2014), and lexical tones (e.g., Mattock & Burnham, 2006). Lexical tones are characterized by changes in pitch leading to alternation of meaning on the lexical level. In non-tone languages, however, variation in pitch affects the post-lexical level. Pitch is relevant at the linguistic and paralinguistic level, i.e., encoding information about illocutionary type and interactional aspects, such as emotions.

Because of its different functions, pitch provides a basis to study the development from universal to language-specific perceptual abilities. Previous studies have shown that non-tone language-learning infants' perceptual sensitivity to lexical tone decreases during the first year of life (Mattock & Burnham, 2006), but then increases again in the second year of life (Götz et al., 2018, Liu & Kager, 2014). However, this rebound effect

is not reflected in word learning: non-tone language-learning children do not associate pitch lexically (e.g., Burnham et al., 2018). Taken together, these results suggest that lexical tone perception is not affected by perceptual narrowing, but rather by functional narrowing. The following study is intended to deepen the understanding of the function of pitch in the language acquisition process and aims to tackle the particular question: how do young children aged 3 to 4 years interpret pitch differences? To answer this question, we will present children with two auditory stimuli that only differ in pitch contour and with two pictures of the corresponding object that only differ in color (Figure 1, p.36). The task is to choose one of the items. The auditory stimuli are monosyllabic German words and non-words bearing either an H\* L-% (statement) or L\* H-^H% (question) nuclear pitch contour. Contour, color, and position on screen will be counterbalanced. Our hypothesis is that if children identify pitch as a relevant cue, their decision will be influenced by the contour, i.e., they will select items that match the statement contour but not those items with the question contour. At the time of the conference, we hope to be able to present first adult results validating the method.

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## Towards a cross-linguistic typology of how disjunctive questions are disambiguated

Alternative questions (altqs) and disjunctive yes-no questions (dynqs) in English and Arabic are string-identical (Pruitt & Roelofsen, 2013). For example, *do you have a mobile or an iPad?* can be interpreted either as an altq or a dynq in English. These two readings are disambiguated by prosody such as accent distribution and the shape of the final intonation contour; with final falling intonation [ ] the question is perceived by listeners as an altq, but with rising intonation [/], it is considered a dynq. One reason why altqs and dynqs may need to be disambiguated by prosody in English is that there is only one disjunctive element (DE) (*or*), that can be used in both types of questions. Little is known about the disambiguating cues in other languages.

Dayal (2016) suggests that it is only prosody that is responsible for the disambiguation and implies that this is a universal tendency across languages. Meertens (2019), on the other hand, proposed that languages disambiguate altqs and dynqs in one of the three ways: prosody-alone, disjunction-alone, or combination of both. A perception study from four Arabic dialects (74 Jordanian (JA), 52 Egyptian (EA), 70 Kuwaiti (KA), and

48 Syrian (SA) Arabic) showed that Arabic dialects fit three different types. Type 1 includes dialects in which the two disjunctive elements seem each to be specialised to a specific disjunctive question (to one meaning each). Type 2 comprises dialects in which there is an indication that one disjunctive element is specialised to one type of disjunctive question while the other is not (i.e., one disjunctive element is specialised, and one is general). This type could in principle be divided into Type 2A in which the specialised disjunctive element maps to altqs, and Type 2B in which the specialised disjunctive element indicates dynqs. Type 3 includes dialects show no specialisation of disjunctive elements (i.e., both disjunctive elements are general) (see author, 2020). JA, EA, and KA were found to belong to Type 2A, and SA to Type 3. This typology was explored against a literature review of nine languages, including Mandarin, Korean, Turkish, Finnish, Basque, etc., and was able to accommodate all these languages, suggesting universal application. An interesting observation is that there was no language belonging to Type 2B. Additional details about more languages will follow in the presentation.

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## Native language processing of cognates in general academic vocabulary in multilinguals

In my PhD thesis I will be examining L1 processing of form-similar cognates belonging to Croatian general academic vocabulary with unbalanced trilinguals, foreign language learners of two languages (English and German). I would like to present the rationale behind it and the methods I have chosen to use to investigate this topic.

General academic vocabulary includes words with abstract meanings, used across disciplines, not specific to any given scientific field. Despite the abstractness of the register, the processing of form-similar cognates (such as parcijalan/partial/partiell) over non-cognates in that register could be facilitated in late multilinguals, just as it is the case with concrete cognates in various research paradigms (e.g., in L1 word association, van Hell & de Groot 1998; in L1 lexical decision, van Hell & Dijkstra, 2002; or in L1 sentence reading, Lemhöfer, Huestegge, & Mulder 2018). Such a processing advantage could be related to stronger connections within the mental lexicon(s) of multilinguals, or a higher awareness of word root semantics, suffixes, prefixes, etc.

Cognates can be defined as potentials in the lexical material of different languages, i.e., as affordances (Singleton & Aronin, 2012). Otwinowska-Kasztelanic (2011) argues that the perception of cognates as affordances depends on the level of

foreign language proficiency and the number of languages – her results show a higher level of productive cognate awareness in advanced multilinguals than in advanced bilinguals.

Based on the non-selective language activation hypothesis and the notion that multilinguals make use of the features cognates share on different representation levels within the mental lexicon(s), the main hypothesis is that learning foreign languages facilitates processing of cognates in an abstract register of the native language. Also, a higher level of crosslinguistic awareness could additionally influence the activation potential of those shared features during language processing in the native language.

Experimental data in this study will be collected by using EEG and eye tracking methodology, which will enable a more direct approach to semantic processing. The pretesting of the experimental stimuli includes an online semantic categorisation task. The experimental focus is on the influence of L2 knowledge on L1 comprehension in this abstract register. The ability to actively use L1 and L2 knowledge in written cognate production in L1, L2, and L3 is taken as a (pen-and-paper) measure of crosslinguistic awareness. The level of CLA will later be examined as a factor influencing the reduction of the N400 amplitude in L1 cognate processing.

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# The production and comprehension of grammatical gender in Welsh-English bilinguals

Grammatical gender in Welsh is seen as a persistent area of difficulty in child bilingual acquisition as it is not encoded on determiners but with adjectives and various mutations. However, in adult control data from North Wales, the system is well-established (Binks & Thomas, 2019; Gathercole et al., 2001; Gathercole & Thomas, 2005; Thomas, 2001; Sharp, 2012; Thomas & Gathercole, 2005). This study extends these findings to include speakers from other parts of Wales to establish whether grammatical gender is as robust in speakers who are typically exposed to less incidental/environmental Welsh and to consider the effect of various individual differences. Our research questions are:

- 1. Do Welsh speaking adults have productive and receptive command of Welsh grammatical gender?
2. Do the following individual factors; dominance, proficiency and cognitive control affect the productive and receptive command of grammatical gender in Welsh speakers?

A battery of tasks was administered online using Gorilla, including the Bilingual Language Profile (BLP: Gertken et al., 2014), elicited imitation task (Deygers, 2020), comprehension task (Binks & Thomas, 2019), production task (Sharp, 2012), productive vocabulary task, Flanker task (Eriksen & Eriksen,

1974) and two cloze tests (English and Welsh). The comprehension task and production task were included to allow the comparison of results from previous studies carried out in North Wales. Data were collected from 40 self-reported Welsh/English participants (19 females; age: 19-64).

Overall group results show that the Welsh-English bilinguals have good productive command (M=74%, SD=15.6) and good receptive knowledge (M=77%, SD=18) of grammatical gender, but there is a wide range of scores (productive range=35-100%, receptive range=36-100%). In line with previous research, these findings suggest that the bilinguals have knowledge of the formal properties of the gender system in Welsh (Binks & Thomas, 2019; Sharp, 2012). Based on linear regression analyses, we found that language dominance scores predicted more of the variance in the production task (14.5%) and the comprehension task (16.5%) than any other individual factor, suggesting a relationship between language dominance and grammatical gender. A more detailed analysis will be presented, where we will focus on the individual factors that influence the production and comprehension of Welsh grammatical gender. We will discuss the implications of these results for Welsh and future areas of interest.

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Series of horizontal dotted lines for taking notes.







**MARCH 27**  
**SATURDAY**

# Neuroimaging and neurophysiological measures for investigating the activation of focus alternatives during language comprehension

I will present a number of studies looking at the online comprehension of spoken sentences with prosodically marked contrastive focus, for example “The conference takes place in [MARCH]F”. In particular, I will concentrate on whether alternatives to the focused element (e.g., February, April, 2022) become activated in the listeners’ minds and how this can be measured. Both group effects and individual differences will be investigated. Data from neuroimaging, neurophysiological measures (event-related brain potentials) and behavioural data will be presented. I will discuss the respective merits and problems of these different types of data.

## KEYNOTE

### NOTES

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## The influence of contextual features on the choice of the focus particle “auch” – A case of syntactic priming?

Analyses of additive particle like too, also or German *auch* (Krifka 1999, Reis & Rosengren 1997, Dimroth 2004, Sæbø 2004) assume that these particles establish an additive relation between their domain of application (DoA) and contextual alternatives. Thus, there is a close relation between the sentence holding the particle (2) and the context (1). At the same time, a context is necessary to define the particles DoA: The context in 1a) leads to an interpretation where the DoA of *auch* is [Maria] (2a), while the context in 1b) leads to an interpretation where the DoA is [Äpfel] (2b). In 2a), the DoA is the subject and *auch* is stressed. In 2b), the DoA is the object and *auch* is unstressed. There is a preference regarding the choice of the stressed/unstressed *auch* depending on the syntactic function of the DoA.

1. a) *[Peter] isst Äpfel. (Peter is eating apples.)*
- b) *Maria isst [Birnen]. (Maria is eating pears.)*
2. a) *[Maria] isst AUCH Äpfel. (Maria is eating apples, too.)*
- b) *Maria isst auch [Äpfel]. (Maria is also eating apples.)*

Despite this preference, the particle *auch* can be unstressed after the context 1a) is presented, as shown in 3). It is an open question why speaker chose one version over the other.

- 3) *[Peter] isst Äpfel. Auch [MaRIA] isst Äpfel.*

In two puzzle experiments, we examined the influence of contextual features on the choice of stressed/unstressed *auch* (20 participants/ 20 experimental, 40 filler sentences per experiment; DoA=subject). We manipulated the information structural status of the alternative (*Peter*). In Experiment 1, the alternative was the focus of the utterance due to the insertion of the focus particle *nur* (4). In Experiment 2, the alternative was the topic (5). After reading the context (utterance A), participants had to use the given words in order to assemble utterance B (6).

- 4) A: *Peter und Maria hatten Appetit auf Obst. Ich wette, nur Peter hat Äpfel gegessen.*
- 5) A: *Peter und Maria hatten Appetit auf Obst. Ich wette, Peter hat Äpfel gegessen.*
- 6) B: *Ich glaube, dass ÄPFEL, AUCH, GEGESSEN, MARIA, HAT*

The results show a general preference for stressed *auch* (77%). However, there was significant difference between Experiment 1 (alternative=focus) and Experiment 2 (Alternative=topic) ( $X^2=4.1$ ,  $df=1$ ,  $p<0.5$ ): The preference for stressed *auch* is lower when the alternative is the focus (72,6%) than when it is the topic of the utterance (82%). This indicates that contextual features have an influence. We discuss whether this can be explained by syntactic priming or whether the particle *nur* as an alternative to unstressed *auch* influences the choice of the stressed/unstressed *auch*.

## The difference in the vocabulary size of children with and without down syndrome: A meta-analysis

It is reported that language development in children with Down syndrome (DS) is delayed and seems to display syndrome-specific characteristics, such as an expressive deficit compared to receptive language and syntax being more severely impaired than lexical skills. However, language abilities, especially regarding comprehension, seem to be mostly in line with cognitive development, which is usually impaired more or less severely due to the syndrome. This meta-analysis focused on studies investigating vocabulary development in children with DS with the MacArthur Communicative Development Inventories (CDI), a parent report questionnaire, and its international adaptations. The goal was to compare the vocabulary size of children with DS to that of typically developing (TD) children of both the same chronological age (CA) and mental age (MA).

The results show that while children with DS have significantly smaller receptive and expressive vocabularies than TD children of the same CA, the difference in vocabulary size is not that large when comparing children with and without DS of the same MA. Furthermore, the difference was larger concerning vocabulary production than comprehension for both comparison groups. The respective effect sizes for CA-matches were Hedges'  $g = -2.65$  (SE = 0.27,  $p < .0001$ ) for productive and Hedges'  $g =$

$-1.86$  (SE = 0.20,  $p < .0001$ ) for receptive vocabulary. For MA-matches, the effects were notably smaller with Hedges'  $g = -0.45$  (SE = 0.10,  $p < .0001$ ) for vocabulary production and Hedges'  $g = -0.07$  (SE = 0.13,  $p = 0.59$ ) for comprehension. Age only significantly influenced the effect for vocabulary production of groups matched on CA (QM(df = 1) = 13.80,  $p = 0.0002$ ), indicating that the difference in vocabulary size increases with increasing age for that condition and subsample. Exploratory analyses examining a possible effect of language and, therefore, the different CDI adaptations did not render meaningful results since there were not enough data available for each language and subsample.

Altogether, the results support the assumption mentioned in the literature that there is a dissociation between receptive and expressive vocabulary. This has implications for support and intervention programs for children with DS since they should be addressed on their comprehensive rather than productive language level in order to challenge and enhance their receptive language skills adequately. Moreover, it is shown that vocabulary size, especially for comprehension, is nearly in line with general cognitive development.

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## IMAGES & ADDITIONS

Judith Schlenker / Martina Penke  
**The recording of eye movements during sentence production:  
 Challenges and opportunities**

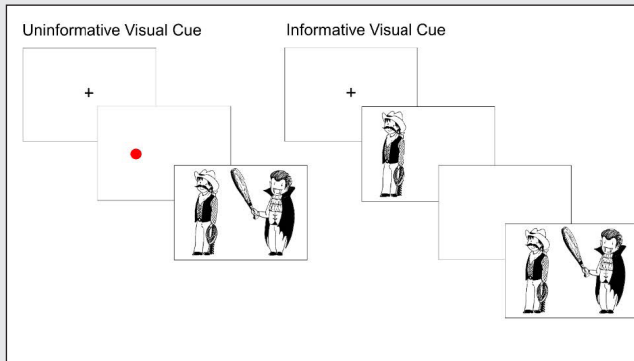


Figure 1. Experimental procedure in Schlenker et al. (under review).

Antonia Götz / Clara Huttenlauch  
**What does the teddy tell Laila? The function of pitch in  
 language acquisition**

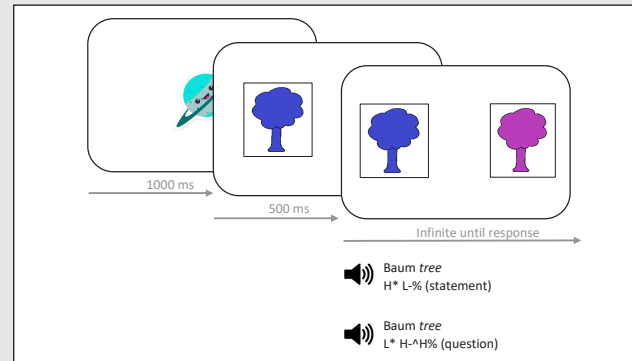


Figure 1. Schematic illustration of the trial sequence for the planned experiment.

Noèlia Sanahuja / Kepa Erdocia  
**The Cognate Facilitation Effect and its Role in Second  
 Language Rule Learning**

**Example of experimental materials**

(1) a. Aktore-ak mediku-a pintatu du (cognate, SOV)  
 a'. Antzezle-ak sendagile-a margotu du (non-cognate, SOV)  
 actor-S doctor-O painted has (V)  
 b. Medik-u aktore-ak pintatu du (cognate, OSV)  
 b'. Sendagile-a antzezle-ak margotu du (non-cognate, OSV)  
 doctor-O actor-S painted has (V)  
 "The actor has painted the doctor".

**Figure 1. Example experimental trial**

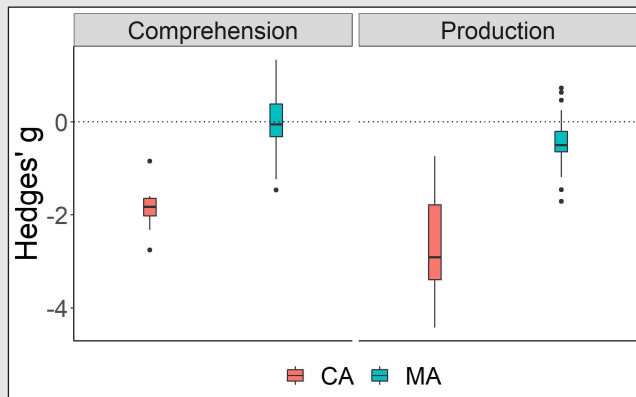
Aktoreak medikua pintatu du

*Note.* Given these two scenes, participants could potentially listen to four different sentences, two referring to the picture on the left —one SOV and one OSV— and the other two referring to the picture on the right —SOV or OSV. Depending on the sentence heard, participants had to choose either the right or the left picture.

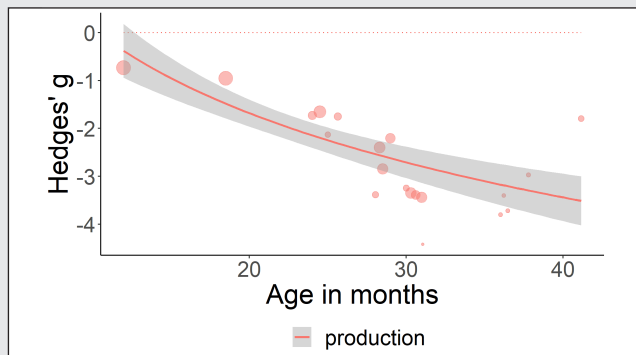
Example of experimental materials, Figure 1. Example experimental trial

IMAGES & ADDITIONS

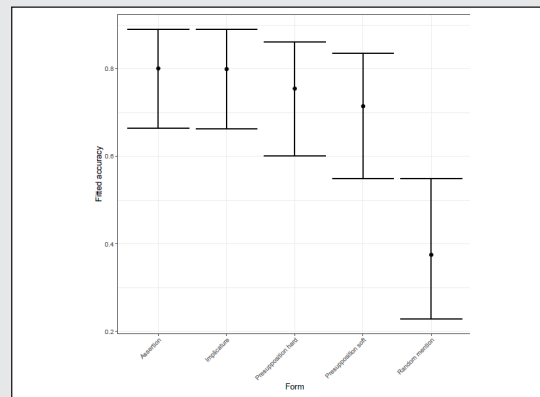
Judith Boveleth / Dr. Katie von Holzen  
**The Difference in the Vocabulary Size of Children with and without Down Syndrome: A Meta-Analysis**



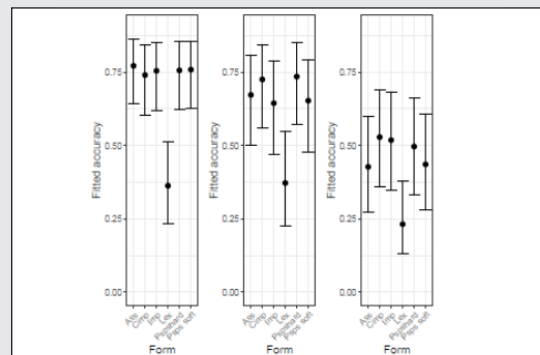
*Boxplot illustrating estimated effect sizes*  
**Figure 1.** Effect size Hedges' g for comprehension and production each matched on both chronological age (CA) and mental age (MA). The dashed line indicates zero (no effect).



Eleanor Miller  
**Do participant recall rates distinguish between assertion, implicature and presupposition?**



**Figure 1** Recall rates per Form (Exp.1); Forms (left to right): assertion, implicature, strong presupposition, weak presupposition, lexical control.



**Figure 2** Exp. 2. Effect of Form on Recall (left to right: assertion, conventional implicature, implicature, control, strong presupposition, weak presupposition); per condition (left to right): neither Distraction nor Delay; with a Distraction; with a Delay



# THANKS LIR | LAP

Münster Conference  
Linguistic Representations and  
Language Processing