Event-related potentials in the study of L2 sentence processing: a scoping review of the decade 2010-2020

Conflict of interest

We have no conflict of interest to declare.

Abstract

Event-related potentials (ERPs) have become widespread in second language acquisition (SLA) research and a growing body of literature has been produced in recent years. We surveyed 61 SLA papers that use ERPs to study L2 sentence processing in healthy late learners. Our main aim was to provide a critical summary of findings from the decade 2010-2020. The qualitative review reveals that proficiency plays a major role in determining ERP components, but its effect is modulated by language similarity and individual differences. The statistical analysis (a multinomial logistic regression) suggests that ERP components are uniquely predicted by learners' proficiency level and the linguistic phenomenon at issue, while no effect of language distance is found. We also made a cursive methodological overview, which evidences several gaps in the literature and raises some concerns on the way proficiency is factorized across studies.

1. Introduction

1.1. Event-related potentials in language studies

1.1.1. The technique

High-temporal resolution experimental techniques, such as Magnetoencephalography (MEG) and Electroencephalography (EEG), reveal that language processing unfolds millisecond-by-millisecond and involves multiple functional processes. EEG records electrical activity coming from post-synaptic potentials by means of electrodes placed on the subject's scalp. Since the propagation of the signal is instantaneous, EEG has an exquisite temporal resolution. On the other hand, given the distance and the variety of tissues – among which grey matter, bones, and skin – that separate signal

detectors and signal sources, the resulting spatial resolution is quite poor (for a recent survey of its strengths and weaknesses, see Leckey & Federmeier 2019). Event-related potentials (ERPs) exploit the EEG technique to get insights into cognitive functions. While the EEG is recorded, some kind of stimulus, e.g., a sentence, a picture, a sound, etc., is presented. This is the 'event' to which the brain signal is temporally related, that is, 'time-locked'. Utilizing ERPs in an informative way first requires establishing a link between a perturbation (amplitude variation) in the EEG waveforms and a certain cognitive operation, which is a problem of forward inference (Kappenman & Luck 2011). Perturbations consistently associated with a certain latency, amplitude, scalp distribution, polarity (positive or negative), and functional interpretation are called ERP components[1] (Kappenman & Luck 2011). Once a component has been defined, it can serve as a proxy to infer what cognitive processes are at play in a given experimental condition – which is a problem of reverse inference (Kappenman & Luck 2011).

1.1.2. ERPs in first language studies

Thanks to their manageability and efficiency, ERPs have become increasingly popular in both first and second language research. In the early 2000s, Friederici and colleagues conduct a series of seminal experiments on both L1 and artificial language processing. The product of their work is an influential model of language comprehension in which (1) linguistic levels are processed sequentially, (2) syntactic information is processed first, and (3) each functional step correlates with a specific ERP component (Friederici 2004, 2002; Hahne & Friederici 1999). Very early morphosyntactic operations, indexed by an early left anterior negativity (ELAN), are followed by categorial evaluation which is marked by a left anterior negativity (LAN). Only *after* such (morpho)syntactic analyses are completed, semantic elaboration takes place, eliciting an N400, i.e., a negative deflection peaking at 400ms with a centro-parietal distribution. Finally, the sentence undergoes a third-pass syntactic

[1] Latency is defined by three timepoints, i.e., onset, peak, and offset, corresponding to the emergence, maximal amplitude, and fading of the component, respectively. Amplitude is the differential potential (measured in volts (V)) between each (active) electrode and the reference electrode. Scalp distribution is the area on the scalp where the potential is most reliably detected by the electrode(s) (Kappenman & Luck 2011).

reanalysis that correlates with a P600, i.e., a positive deflection peaking at about 600ms with a posterior distribution. This model has been subsequently revised and criticized after new empirical findings challenged the idea of serial processing and syntactic primacy, in favor of a parallel dual-stream hypothesis (for review and proposals, see Baggio 2018, 2021; for theoretical perspectives, see Culicover & Jackendoff 2005, 2006a, 2006b). Moreover, the interpretation, as well as the very existence, of some components has been questioned. In their critical review, Steinhauer & Drury (2012) argue that the cases in which ELAN has been genuinely found are rare and what is reported as ELAN is often just a byproduct of context effects, namely, spill-over and offset effects[2]. Moreover, as we see later on, although generally taken as a marker of nativelikeness, the LAN is nevertheless subject to a certain variability among native speakers. The functional connotation of the N400 as the lexical-semantics component by definition has been enriched in recent years, and it is now often associated with anticipatory mechanisms as well (Van Petten & Lukas 2012). Likewise, the P600, which was deemed to be an index of syntactic reanalysis tout court, has been re-evaluated as a signal of global reanalysis, both for syntactic and semantic anomalies that are not necessarily violations (Brouwer & Crocker 2017; Van Petten & Luka 2012; Brouwer et al. 2012). Despite this, the core set of linguistic components can still be identified with LAN, N400, and P600 (for an overview, see Beres 2017; Swaab 2011).

1.1.3. ERPs in second language acquisition studies

In this section, we introduce some key findings and models in SLA.

1.1.3.1. Neural correlates of proficiency and acquisition

Findings in first language research inform the SLA field, as native speakers' responses were (and are) taken as a benchmark to measure how successful learners are in second/foreign language acquisition: the closer their neural responses are to those of the native speakers, the more proficient they will be.

[2] Following Steinhauer & Drury (2012), the spill-over effect obtains when the effects of a pre-target word prolong after the target word, whereas the offset effect is produced by a noisy baseline in which the experimental condition is more positive than in the control condition, thus resulting in a polarity shift (a sustained negativity) after baseline correction.

Osterhout and colleagues (Osterhout et al. 2008, McLaughlin et al. 2004, 2010), for example, have observe that after a few months of classroom instruction, the same violations (e.g., subject-verb agreement) that initially elicited an N400 start to cause a P600, which is a more native-like pattern. This shift would track a progress towards the attainment of the target language as learners' proficiency grows, and Osterhout et al. (2008) call this "proceduralization" or "grammaticalization". This view is compatible with the Declarative-Procedural Model (DPM) of language acquisition proposed by Ullman and Paradis (Ullman 2016, 2001; Paradis 2009, 2004). In this framework, two memory systems are distinguished on anatomical, physiological, and functional grounds. The declarative memory system supports explicit knowledge and learning, which, generally, can be verbalized and are accessible to introspection. It is instantiated in temporal networks and regulated by acetylcholine. The procedural memory system deals with implicit, automatized knowledge and learning, which are largely unavailable to awareness. This system is mainly located in the basal ganglia, BA 44, 45, and the supplementary motor area, and its activity is modulated by dopamine. Since dopamine and acetylcholine are competing neurotransmitters, the two systems do not support each other, but rather operate in parallel with different timing. In other words, they can handle the same contents with different implementations, which makes them complementary and partially redundant. Learners would initially rely more on declarative memory, whose functioning is marked by an N400. As proficiency increases, though, procedural memory would gradually take up part of the L2 processing workload, which correlates with the emergence of the P600 and, possibly, the LAN.

1.1.3.2. Hypotheses on L2 development and ultimate attainment

Akin to accounts such as the Full Transfer/Full access hypothesis (Schwartz & Sprouse 2006) and the convergence hypothesis (Steinhauer et al. 2009), the DPM does not exclude in principle that native-like attainment is possible. In contrast, many scholars claim that a fundamental difference exists between learners and native speakers (Paradis 2009; Bley-Vroman 2009, 1989, 1988). Evidence in support of this position has mainly come from studies on morphosyntax involving very advanced learners. Several discrepancies between native and nonnative speakers' responses have

been indeed detected in the kind, latency and distribution of ERP components elicited (Díaz et al. 2016) as well as in production data (Prévost & White 2000; Lardiere 1998a, 1998b). However, among the authors just mentioned, only Díaz et al. (2016) have taken such differences as the signal of an unbridgeable gap. Some weaker versions of the Fundamental Difference hypothesis envisage the possibility of a patchy ultimate attainment, in which bits of a native-like system are interspersed with areas of persistent nonnativelikeness. Depending on the account, the latter are ascribed to syntax (e.g., in the Shallow Structure Hypothesis, Clahsen & Felser 2018, 2006), morphosyntax (e.g., the Failed Functional Features Hypothesis/Representational Deficit Hypothesis, Hawkins & Chan 1997; the Bottleneck Hypothesis, Slabakova 2019, 2006), or interfaces (e.g., the Interface Hypothesis, Sorace 2011; Sorace & Filiaci 2006).

1.1.3.3. Predictors of L2 development as indexed by ERP components

The literature individuates several factors that may modulate ERP components, namely, proficiency, the age of L2 onset (AO), language similarity (or language distance), context of acquisition, and individual differences.

Proficiency. As presented in paragraphs 1.1.3.1 and 1.1.3.2 above, many authors infer the progress in L2 acquisition from the convergence between native speakers' and learners' neural patterns (Steinhauer et al. 2009; Osterhout et al. 2008). In that sense, proficiency can be considered a dependent variable that is estimated based on the ERP components. On the other hand, proficiency is usually also measured through (standard) assessment tools and questionnaires *before* the experiment. The scores obtained are then included among the independent variables to explain behavioral and brain responses. The relationship between these two kinds of proficiency is not always straightforward, as high test scores do not necessarily correspond to native-like ERP patterns and vice versa (Díaz et al. 2016; Bowden et al. 2013). Nevertheless, as previous reviews indicate (see Section 1.2), a certain degree of consistency exists between the two, and proficiency scores can explain the great amount of variance found in the results. Much of SLA research has investigated how other

factors complement and/or modulate the effect of language skills on electrophysiological data. Another lively debated issue concerns the methodology to factorize, i.e., to score, such skills. Some scholars maintain that language performance rises from a complex network of abilities that should be assessed globally using multiple modules (Lehmann 2007; CEFR, Council of Europe 2001; ACTFL, American Council on the Teaching of Foreign Language 2012). As we will see, many researchers choose official tests of the European or American framework to pre-screen their participants. Such tools tap into language comprehension and production in both written and oral modalities. Perhaps a less thorough assessment is provided by sentence (e.g., cloze tests) and word completion tests (e.g., C-test, Raatz & Klein-Braley 1981), which nonetheless involve morphosyntax and discourse integration besides mere lexical knowledge. Others scholars claim that vocabulary size *alone* can be a reliable proxy for L2 proficiency (Milton 2013; Meara 2010). Common tests in this domain are naming tests (e.g., Peabody Picture Vocabulary test, Dunn 1959; Dunn 2019), and lexical decision tasks (e.g., LexTALE, Lemhöfer & Broersma 2012). Recently, Gaillard and Tremblay (2016) argue that "the selected proficiency test should be sufficiently global that it does not rely on circular logic by being too similar to the target L2 measure investigated" (*ibidem*, p. 420). As a solution, they propose the elicited imitation task which should not favour rote repetition by using sentence of length 7(±2), the critical threshold for items to be retained by working memory (WM) for 2.5-3 seconds. They recommend combining this method with cloze tests to measure bottom-up and top-down knowledge at once. Another method to assess proficiency are questionnaires of self-evaluation (e.g., LEAP-Q, Kaushanskaya et al. 2019), which are considered a resourceful *complement* to other behavioural tools (Ma & Winke 2019; Oscarson 1989). However, as observed in section 3.1.5 below, in many studies, this is the only proficiency assessment tool used, as participants are asked to rate their own language skills without being tested further.

Age of onset (AO). The idea of AO as a predictor of learning outcome dates back to the 1960s and is the main tenet of the Critical Period Hypothesis (CPH, Weber-Fox & Neville 1996; Lenneberg

1967), which states that language, just like other faculties such as vision, must develop within a certain age, otherwise the process becomes impossible (see Steinhauer 2014 for a review). AO effects have been studied by contrasting early and late learners, as well as early learners and native speakers. Some scholars have also started to incorporate it as a continuous variable in state-of-the-art models, like GAMs (Meulman et al. 2015).

Language similarity. According to the language distance hypothesis, proficiency is modulated by the degree of similarity between the L1 and L2. Thus, models like the Competition Model envisage a competition between the features of the two systems, with facilitative transfer for fully overlapping ones, but non-facilitative transfer for conflicting or L2-specific ones (MacWhinney 2005). Unlike the Full Transfer/Full access Hypothesis, the Competition Model maintains that transfer effects cannot be eventually overcome by proficiency, hence, true nativelikeness is precluded. The role of language distance has been assessed by comparing groups of learners with different L1 backgrounds, or native with nonnative speakers on features that are shared, partially shared, or not shared between the two languages.

Context of acquisition. Over forty years ago Krashen (1981) proposed the distinction between "learning" and "acquisition". By the former he indicates a conscious process whose product is declarative knowledge *on* a language. Conversely, the latter is subconscious in nature and results in procedural knowledge *of* a language, which can be applied automatically without the contribution of monitoring mechanisms. This theoretical intuition has found later support in neurolinguistic literature that distinguishes between the declarative and procedural memory systems (Paradis 2009, 2004; Ullman 2016, 2001). A branch of SLA research tried to outline the relationship between the context of acquisition and the outcome of acquisition. People who learn their L2 in a classroom are usually taught grammatical rules *explicitly,* whereas those who—like immigrants—are exposed to the language in a more naturalistic setting can benefit from massive and meaningful input. Some studies show that immersion-like (that is, implicit) training leads to native-like neural patterns earlier than

explicit training (Faretta-Stutenberg et al. 2018; Morgan-Short et al. 2012a, 2012b), while others do not report such an advantage (Batterink & Neville 2013). Further investigation is needed to see whether an isomorphism holds between the context and the content/quality of the acquisition. To date, however, there is evidence that often the correspondence between what is taught and what is learned does not obtain (Van Patten et al. 2012; Lightbown 1983).

Individual differences. Another set of factors contributing to explain language acquisition are "individual differences". This term encompasses aspects that display a certain degree of variability across individuals. Traditionally, the most studied aspects have been motivation and personal L2 experience (Gardner 2010; Dörnyei & Schmidt 2001), cognitive control (Luque & Morgan-Short 2021), and working memory (WM, Wen et al. 2015). They are often regarded as possible predictors of ERP responses. Over the last decade, however, variance has been observed in neural profiles *themselves*. In this subsection, we devote our attention to WM and examine extant evidence on variability in neural profiles.

Traditionally defined as a module of the memory system which retains information during the completion of a complex task (Baddeley 1983, 2010), WM is composed of the visuospatial sketch pad, the phonological loop, and the episodic buffer, which are coordinated by the central executive ("Multi-Component Model", Baddeley 2010). WM capacity is the ability to retain a variable number of objects – usually 5 to 7 – for a limited time span – generally 2 to 4 seconds. It is commonly measured via span tests, wherein subjects are presented with a sequence of stimuli for subsequent recall while performing a secondary task (see Conway et al. 2005, for a review). High WM scores have been associated with better learning abilities, which also extend to language acquisition and syntactic processing (Conway 2005). WM is also thought to have a role in phonological decoding and in item reactivation, which is crucial to establishing long-distance dependencies.

The other individual characteristic we discuss has to do with neural responses. In recent years, some authors have started questioning the validity of the grand average method. They argue that

computing the mean waveform over all subjects does not return a reliable picture of *real* responses. When they compare by-subject and by-group averages, they find remarkable discrepancies. For example, what appears to be an N400-P600 biphasic pattern in the group analysis, looks very different in the by-subject analysis, as some subjects show either component and some subjects show both (Tanner et al. 2013). This piece of evidence is relevant to both L1 and L2 literature since it highlights that some variability exists not only among learners but also among native speakers. As a consequence, some of the extant criteria of interpretation of the findings in L2 research might need to be revised. We address these issues throughout the article, first, by discussing how previous reviews treat and address such issues, later, by reporting what emerges from our survey.

1.2. Previous reviews of SLA ERP research

Several reviews of the ERP technique have been produced in the field of SLA. In this section, we provide a brief overview of those that examine several factors at once and thus resemble ours in scope and methods. Other works, which deal with specific components (Caffarra et al. 2019; Brouwer & Crocker 2017; Brouwer et al. 2012; Steinhauer & Drury 2012), aspects of processing (Reichle et al. 2016; Kaan et al. 2014) or paradigms (Morgan-Short 2020; Grey 2020), are described later on.

Moreno et al. (2008) compare L1 and L2 processing across a wide range of domains, including all linguistic levels, as well as phoneme discrimination in adults and children, and language control (executive control, cognitive control, inhibition, code-switching). These authors do not separate syntactic and morphosyntactic phenomena. Unlike later reviews, they suggest that native and nonnative speakers might engage in qualitatively different analyses even when it comes to semantics. They conclude that nativelikeness can be achieved for more conscious mechanisms (P600) but not for early and automatic ones (ELAN and LAN), hence arguing in favor of a sensitive (rather than a critical) period for language acquisition. In their concluding remarks, they underline the need for more longitudinal studies and designs that go beyond the traditional violation paradigm.

Steinhauer et al. (2009) aim to contribute to the debate on the CPH and propose a model of L2 development over time. After examining both L1 and L2 processing studies, they conclude that there is no evidence that SLA is subject to a critical period. However, they acknowledge that an influence of AO does exist, and it affects (morpho)syntax more than semantics acquisition. AO influence should be disentangled from proficiency, something that previous studies have rarely achieved. They suggest that a good way to do so would be to carry out longitudinal studies using artificial language paradigms; this method would allow researchers to control for the amount of input delivered and the age of onset. Steinhauer et al. (2009) also dissect the construct of proficiency. First, they observe that the native speaker population is not as homogeneous as it is usually assumed to be. Second, they note that we should investigate structure-specific rather than global proficiency because the mastery of a specific construction can be gained regardless of global proficiency. Third, they point out that similar proficiency levels may be characterized by distinct brain signatures depending on the context of acquisition. In the final section, based on previous findings, they outline a six-phase model of L2 acquisition in which each phase corresponds to certain neural patterns and functions: (1) Novice learners do not show any sensitivity whatsoever; (2) At very low proficiency levels, learners rely on semantic and extralinguistic cues and may show an all-purpose N400; (3) At low to intermediate levels, a weak P600 starts to emerge as an early index of grammaticalization; (4) Intermediate learners show a stronger and earlier P600 for sentence repair; (5) Advanced L2 learners start displaying a bilateral AN-P600 pattern; (6) Native-likeness is indexed by a LAN-P600, which implies automatic processing. Steinhauer et al. (2009) also stress that different constructions and features may be acquired at a different pace. In a later review, Steinhauer (2014) adds other elements to the above picture. First, he argues that many studies supporting the CPH either confound AO and proficiency or are prone to artifacts because the pre-target context differs across conditions. Second, he observes that the influence exerted by the L1 is greatest at lower proficiency level, but it is still present at advanced levels due to bilingual activation. Third, he recognizes that implicit learning mechanisms are still available in adults and may boost the acquisition of native-like competence.

In their review, Van Hell & Tokowicz (2010) analyze some of the issues discussed by Steinhauer et al. (2009). They present three leading accounts in SLA, namely the CPH, the Competition Model, and the Declarative-Procedural Model, and examine them in relation to the available empirical literature. Their conclusions are that nativelikeness in the semantic domain is easier to reach than in the (morpho)syntactic domain. In particular, phrase structure can get to be processed in a native-like way – with an ELAN-P600 response – only under some circumstances, namely, (1) if the construction is salient enough, (2) if proficiency is sufficiently high, and (3) if L1 and L2 are not too dissimilar from each other. As far as morphosyntax is concerned, though, they claim that proficiency is a stronger predictor than AO and language distance. They also echo Steinhauer et al. (2009) in tracking a change in neural responses as proficiency increases. Finally, they underscore that cross-study comparability is sometimes undermined by proficiency being factorized in too diverse ways, and that AO effects are often confounded with proficiency.

Morgan-Short et al. (2014), draw similar conclusions, namely, that L2 development has a neural counterpart, that proficiency is the most important factor in acquisition, and that implicit (as opposed to explicit) learning speeds up native-like attainment. However, they also point out that language similarity has an impact on the acquisition process, which can be slowed down if there is only partial overlap between L1 and L2 features. Additionally, there are other variables which deserve some consideration, e.g., verbal attitude, length of residence, and motivation.

The first empirical review on L2 syntactic processing was performed by Caffarra et al. (2015). They systematically examine 41 articles to assess the influence of target linguistic features, language distance, AO, proficiency, and learning context on ERP components. They observe that most L2 acquisition models (including The Full Transfer/Full Access Hypothesis, the Competition Model, and the Functional Features Model) are based on the assumption that the L1 is the baseline for L2 syntactic analysis and L1 processing influences L2 processing. To test such an assumption, in their final logistic regression model, Caffarra et al. (2015) include L1-L2 similarity, AO, proficiency, training, and

immersion duration, as independent and the presence/absence of ERP components (ELAN, LAN, N400, P600) as dependent variables. They create two separate models for L2 speakers (who learned the language naturalistically through immersion) and L2 learners ("traditional" classroom learners). The two groups differ from each other in relevant ways. The ELAN is associated with phrase structure violations due to word omissions, word category violations, and/or wrong word order. It is more frequent in L2 speakers but none of the factors prove a reliable predictor. The LAN correlates with (morpho)syntactic violations and immersion duration in L2 speakers. N400 is found in cases of person and case violations in both groups alike. With respect to L2 speakers, the N400 correlates with AO (though the authors suggest that experimental design might be the cause of its emergence instead); as for classroom learners, the N400 is independent of proficiency. On the other hand, P600 is linked to morpho-syntactic violations and conscious processes, and is explained by (self-declared) proficiency in L2 speakers, while in L2 learners it becomes more likely with longer training. Remarkably, they detect no significant effect of L1-L2 similarity. Commenting on their results, they call for studies able to disentangle L2 exposure and AO, for example, by recruiting subjects who moved from the L2 speaking country early in life.

In sum, previous reviews converge on four main points; (1) proficiency is a major factor in acquisition and (2) has visible neural correlates; (3) AO and language similarity also explain some variance in ultimate attainment, but (4) further investigation is needed to tease apart AO from proficiency effects, and better characterize the role played by L1 influence and individual differences.

1.3. Present review

The present review aims to replicate and possibly enrich the insights from the aforementioned reviews. We followed the general structure of Caffarra et al.'s (2015) work. We considered AO, proficiency, language similarity, target linguistic features, mode of acquisition, and individual differences as predictors, and the ERP components found in the experiments as dependent variables. However, our review differs in some respects from the reviews discussed in the previous section.

First, we examined all linguistic levels involved in sentence processing, including semantics, pragmatics, and interfaces, as well as the type of group contrasts under investigation. Second, although this was not our main goal, we tried to provide a critical overview of current research practices. To this end, we reported data on the number of stimuli and participants per condition, presentation modality, task, and measures of proficiency and working memory. We paid special attention to proficiency assessment tools because we believe they are a crucial methodological issue. Indeed, some scholars note that cross-study comparability is unattainable since proficiency is measured in too varied ways (Rastelli 2018; Van Hell & Tokowicz 2010). Rastelli (2018), for example, observes that self-reports are often used as the only proficiency indicator or are complemented by tests in which no spoken interaction is required. Rather, subjects are mostly evaluated by paper-and-pencil tests, with no time constraints. As he points out, such methods cannot hope to capture the ability of using the L2 in the real world. Since researchers take certain ERP responses (e.g., the N400 to P600 shift in McLaughlin et al. (2010), to name one) as neural correlates of acquisition and proficiency, it is essential that the latter is operationalized and that the criteria are shared among the scientific community. This practice may at least partly reduce the risk of circularity between explananda – the ERP signals – and the proposed explanations, e.g., learners' proficiency level.

Our guiding questions were:

1. What features are held to be processed in a nativelike way by adult L2 learners?
2. What is the impact of proficiency, AO, language distance, context of acquisition, and individual differences (i.e., WM and neural profiles) on the ERP components?

To address these questions, we collected a sample of 61 papers and examined it in three steps. First, we analyzed the distribution of each feature descriptively. Then, we made a qualitative review of the studies to summarize their major findings. Finally, we performed inferential statistics to evaluate the relative weight of a subset of predictors in the presence of ERP components, namely, the

P2, LAN, N400, ANTERIOR NEGATIVITY, P600, LATE POSITIVITY, LATE NEGATIVITY. Unlike LAN, N400, and P600, whose importance is evident from the above, we did not include the other ERP components *a priori*, but rather as we found them reported in the studies. We chose not to consider the ELAN since its very existence is questionable (Steinhauer & Drury 2012).

Finally, two notes on terminology are needed. The first regards the use of the word "nativelikeness". Following the works cited before (Section 1.1.3.1), our criterion to define "nativelikeness" is the similarity between learners' and native speakers' responses. Likewise, a feature is considered "acquired" when it is processed in a native-like way, that is, when the associated ERP components in learners closely resemble those in native speakers. The present review, then, is not concerned with nativelikeness in terms of behavioral performance. In fact, neural changes may or may not be accompanied by changes in behavior, and vice versa (Díaz et al. 2016; Bowden et al. 2013). The second note is about the use of the words "paper", "study", and "experiment". In general, we use them interchangeably. However, especially in section 3.2, we sometimes say that a certain parameter is observed in, e.g., 7 papers and 6 studies. This is because it may be the case that a study comprises multiple experiments which are reported each in a separate paper.

2. Methodology

2.1. Search and selection process

The present paper is a scoping review of studies that use the ERP technique in SLA research (Munn et al. 2018). Unlike systematic reviews, a scoping review provides an initial map of the existing literature without assessing the quality and the statistical comparability of the results. We focused on a specific time window, stimulus type, and learner population. We included articles from the decade 2010-2020 that investigate sentence processing in healthy late learners. By "late learners" we mean people who acquired their L2 after the age of ten (Caffarra et al. 2015) or are so defined by the authors of the study. We were interested in subjects who received some classroom instruction, possibly

enriched by a variable amount of immersion in the L2-speaking country. We excluded special instances of this category such as interpreters and spontaneous learners (e.g., immigrants).

We conducted multiple searches on the Scopus and PubMed databases, two of the main aggregators of research articles. We used the same set of keywords for both databases (Table 1 in online Supplemental Material, henceforth SM). The last search was run on 5th February 2022. We identified 3,870 records in PubMed and 2,343 in Scopus. Seven more records were identified among the papers suggested by an anonymous reviewer. After duplicate removal, we were left with 1,903 records for abstract screening, which resulted in 1,829 exclusions. We thus read 74 articles in full and removed further 13 records for not meeting participant inclusion criteria, namely, AO and context of acquisition, or because they did not provide enough information on their subjects. Therefore, in the end, 61 papers were included in our analysis. The process is summarized in the PRISMA flowchart (Figure 1, Moher et al. 2009).

[Figure 1 here]

2.2. Features of interest

We chose our features of interest prior to the review process. We coded papers along six main dimensions, which were further analyzed into multiple features. A detailed inventory is provided in the following paragraphs. The complete descriptive comparative grid is available as SM.

2.2.1. Design, task and presentation

We divided the studies under analysis into cross-sectional and longitudinal. A study is defined "cross-sectional" when participants are tested in a single session, whereas if the same participants are tested at different points in time, the study is called "longitudinal".

Under "task", we reported the task(s) participants had to perform during the EEG recording. In Acceptability Judgment Tasks (AJT), subjects have to decide whether a sentence is well-formed or not. In the "comprehension task" category, we included tasks involving passive reading or listening, optionally accompanied by comprehension questions. Based on the tasks used in the

reviewed papers, we introduced three more task categories, i.e., "sentence boundary decision" (press a button when you detect the end of the sentence), "semantic relatedness" ("is this word related to the preceding sentence?"), and "word recognition" ("was this word present in the last sentence?").

2.2.2. Languages

By "L1" we mean participants' first language, by "target language" the language they are learning and which is also tested in the experiment. We reported the name of each language together with its typological genus (Romance, Sinitic, Germanic, etc.) and family (Sino-Tibetan, Afro-Asiatic, Indo-European, etc.) according to the WALS classification[3]. Artificial languages were assigned to "artificial" for both genus and family unless they were miniature versions of natural languages, in which case they inherited the typological categories of the original language. Obviously, in the case of native controls, L1 and target language coincide.

2.2.3. Number of participants and stimuli

Under "final number of participants" we reported the number of participants whose data were eventually included in the analyses. We also computed the "number of participants per condition". Along with the number of stimuli, this information aims to provide an indication of the statistical power of the study.

2.2.4. Contrast

When experiments involved more than one group of participants, we registered the feature they were contrasted on under "contrast". Some studies involve more than one contrast, while some others involve none. The "native-nonnative" contrast means that learners are compared with a control group of native speakers or the same group of participants is tested both on their L1 and their L2. The "proficiency level" contrast involves the comparison of learners at different proficiency levels. We named the contrast "L1" when L2 speaker samples with different L1s are recruited to examine the influence different L1s may exert on acquisition. The "Training" contrast applies to those experiments

[3] https://wals.info/languoid

in which groups receive different types of laboratory training prior to performing the task. Finally, other contrasts we occasionally individuated in the papers under analysis are "monolingual-bilingual" (in Grey et al. 2018), "early-late bilinguals" (in Foucart et al. 2014 and Díaz et al. 2016), and "context of acquisition" (in Bowden et al. 2013). The first two are not relevant to the present review, but since the experiments that contain them were worth including in the survey, we reported these contrasts in the comparative grid (see SM) and considered them when describing feature distribution (section 3.1.4). To simplify inferential analyses, as for Foucart et al. (2014), we excluded the early bilinguals' group and only kept the high-proficient late learner and native speaker groups, while from Díaz et al. (2016), we kept both the late and early learner groups and we reassigned them to the intermediate and high proficiency groups, respectively. As for the last contrast, i.e., "Context of acquisition", it captures those studies in which subjects acquire their language outside of a laboratory in a different way, e.g., abroad in an immersive environment or in a classroom in their home country. This feature was not included as a predictor in the inferential statistical analysis.

2.2.5. Pre-screening information

Within pre-screening information, we included proficiency level, proficiency measures, AO, the presence/absence of working memory testing, and the context of acquisition.

Under "proficiency" we recorded the scores obtained or declared by participants in the pre-screening phase. For the statistical analysis, we then relabeled them as "high proficiency", "intermediate proficiency" and "low proficiency", which correspond to 75% and 50% correct as cut-offs between levels (Caffarra et al. 2015). In the "proficiency measure" column we also reported the type of proficiency assessment employed. "Questionnaire" is a broad label that applies to any kind of pre-screening questionnaire, where subjects are typically asked to evaluate their language skills on a Likert scale. When a standardized test was used, we reported the name of the test in the descriptive grid (e.g., TEM-4, DELE, etc…), but for statistical purposes, we eventually classified it into broader categories (see Table 2 in SM for correspondences). Each test was named "language test" if it assesses global proficiency, "grammar test" if it focuses on grammatical features, "vocabulary test" if it

addresses lexical knowledge, "cloze test" if participants have to fill in blanks in a text with words of various categories, "lexical decision task" if participants have to judge whether the target is a real word, "experimental" if behavioral experimental measures are taken as indicators of proficiency (e.g., in Morgan-Short et al. 2010, accuracy in an online chess game). There are also minor tasks which are employed only in one or two of the sampled studies, i.e., "verbal fluency task", "sentence completion task", "translation task", and "elicited imitation task" as well as "interview". If the test used was normalized, we added the word "standard" to the aforementioned labels, and obtained the following three categories: "standard language test", "standard lexical decision task", and "standard vocabulary test".

"Age of onset" is the age at which participants, reportedly, started to be significantly exposed to the target language.

"Working memory" refers to whether participants' WM capacity is tested. For completeness, in the general descriptive grid (see SM), we also reported specific WM memory assessment tools.

"Context of acquisition" indicates how nonnative speakers learned their L2. "Instructed" refers to classroom-based learning that normally takes place in the home country; "immersion" is used for people who acquired the L2 mainly by natural exposure abroad; "immersion instructed" concerns those L2ers that received formal foreign language instruction but also spent some time (more than one month) in an L2-speaking country (e.g., Erasmus students).

2.2.6. Target linguistic feature

The "target linguistic feature" is the linguistic phenomenon under investigation. For the sake of simplicity, specific features were further grouped into more general linguistic levels: "syntax", "morphosyntax", "semantics", and "pragmatics". We also included the interface levels "syntax-discourse interface", "(morpho)syntax-prosody interface" and "semantics-pragmatics interface". The resulting classification, which can be found in Table 3 (see SM) was agreed upon by the two authors (interrater agreement =0.916, measured via Cronbach alpha from the package *ltm*, R version 4.1.3 (R Core Team 2020)).

The category "syntax" includes phenomena regarding either surface relations among linearized items at the sentence level or displacement and hierarchical phrase-structure, such as – respectively – word order and filler-gap constructions (e.g., Carnie 2021; Koeneman & Zeijlstra 2017).

We considered as pertaining to "morphosyntax" those inflectional features that relatesystematic changes in word form to systematic changes in word meaning (e.g., tense, number and gender agreement, etc.) (Aronoff 2013).

The category "Semantics" includes (in)congruency phenomena in which a word is (not) appropriate given a certain preceding context.

We classified as "pragmatics" the tasks testing participants' world knowledge (Foucart et al. 2015a, 2015b), for example, the (in)congruency between the content of the message and the speaker's voice.

The category "Interfaces" encompasses multiple linguistic levels at once. The "syntax-discourse interface" deals with the interaction between sentence structure and discourse structure, which, for instance, is at play in anaphora resolution and focus processing. The "(morpho)syntax-prosody interface" pertains to cases in which (morpho)syntax is influenced or expressed by prosodic means, as in prosodically cued phrasal boundaries and stem tones with morphosyntactic values. Manipulations of both semantic and world-knowledge consistency fall into the "semantics-pragmatics interface" category, and, finally, when prosody affects semantic acceptability, such as in sentences uttered in a nonnative accent, we refer to "semantics-prosody interface".

2.2.7. ERP components

ERP components are the dependent variables in electrophysiological research, as well as in our analysis. In the comparative grid (see SM), each of the seven components found in the papers reviewed is reported in a separate column: P2, LAN, ANTERIOR NEGATIVITY, N400, P600, LATE NEGATIVITY, LATE POSITIVITY. We followed the classification adopted by the author(s) of each study. Together with the presence/absence of the component, we provided details on the

linking between the component and the stimuli. Although we included the full range of components in the statistical analysis, we were mainly interested in the LAN, N400, and P600, which are well established indexes of language processing (see Section 1.1).

2.3. Statistical analysis

We ran a multinomial logistic regression (MLR) using the R software (version 4.5.0., R Core Team 2020) to see whether participants' proficiency, L1, target language (TL), target language proficiency level (TLEVEL) and feature (TFEAT), typological genus of the L1 (L1GEN) and of the target-language (TLGEN), contrast between language genera (GENCON), kind of task (TASK), and context of acquisition (KACQ) predicted the number and type of ERP components found by the sampled studies. The number of ERP components (COMPONENT) was regressed onto the predictors in the domains of syntax, morphosyntax, semantics, pragmatics, and interface phenomena. The MLR technique allows to employ a logistic regression in cases of multiclass problems, when researchers must deal with more than two possible nominal outcomes. It assumes that the dependent variable is a probabilistic event which is a function of cumulative probabilities ranging from 0 to 1 (Agresti, 2013).

In our analysis, first, we examined data from learners and native speakers separately, then we pooled them together including only those studies in which the two groups are directly contrasted. We repeated the analyses twice, first with TLEVEL, and then with TFEAT instead. In this latter case, we focused on those features that are most represented in the sample, so as to obtain more robust results. We always started with a maximal model, and then we dropped less significant predictors stepwise. The output of the models was evaluated using the function Anova (type II) employed in between-model comparisons. Finally, we conducted pairwise contrasts for each factor of the selected models through *emmeans* (R software, library *emmeans*). Contrasts are reported as significant with a Tuckey-corrected $p < 0.05$. The full datasets and markdown files are provided as SM and at https://osf.io/94k6w/?view_only=03e1cdffd74146f9844a9880a4c3cf59. Since each paper is the

source of multiple datapoints we decided to check whether our results were driven by any specific paper. To this end, we included TITLE as a factor and reran the best model (see below) for each unique title found, each time leaving out the datapoints provided by one study.

3. Results

In the next paragraphs we present, in this order, descriptive statistics of feature distribution, a qualitative overview of the literature, and the results of inferential statistics.

3.1. Feature distribution

3.1.1. Design, task and presentation

Fifty-five out of 61 studies (90.16%) adopt a cross-sectional design. Most experiments use either an acceptability judgment task (66.10%) or a comprehension task (27.12%). Stimuli are presented visually in 82.76% of the studies.

3.1.2. Languages

Among the 11 target languages, English is the most frequent (42.62%), followed by Spanish (19.67%). Consequently, Germanic (59.02%) and Romance (34.43%) are the most frequent genera, while the Indo-European family represents the majority of the target languages tested in the sampled studies (93.44%).

The picture for the L1s is more varied since there are 15 different L1s. English (26.39%) shares its primacy with German (19.44%), Mandarin (18.06%), and Spanish (11.11%). Therefore, Germanic is the dominant genus (51.39%), while Sinitic and Romance make up 19.44% of the genera each. Indo-European (76.61%) and Sino-Tibetan (19.44%) families make up almost the total of the L1s.

We also examine the typological distance between the target language and the L1. Out of 57 unique studies, 43 (75.43%) feature languages that belong to different genera; of these, 21 (36.84% of the total) feature languages which also belong to different families.

3.1.3. *Number of participants and stimuli*

A total of 1788 learners take part in the studies we review, with an average of 19.86 (SD=8.07) subjects per group and 5.42 (SD=3.43) per condition.

Data from 823 native speakers are analyzed in the experiments we collect, distributed over 41 groups with an average of 20.07 (SD=5.68) participants per group and 5.51 (SD=2.20) per condition. In each experiment, each subject is administered an average of 149.91(SD=70.24) experimental stimuli in total and 37.64 (SD=14.60) per condition.

3.1.4. *Contrast*

Eleven studies out of 61 involve two group contrasts, 8 none, resulting in a total of 65 contrasts. The comparisons between native and nonnative speakers (63.08%) and proficiency levels (20%) are the most frequent contrasts, while those between contexts of acquisition are investigated in 7.69% of the studies. The remnant is represented by the contrasts between early and late bilinguals (3.07%), L1 (3.07%), monolingual and bilingual (1.53%), and context of acquisition (1.53%).

3.1.5. *Pre-screening information*

Proficiency is measured in various ways. All studies gather information about proficiency using a questionnaire. Fourteen of them (24.13%) do not test it any further, 34 use a questionnaire together with another measure, and 13 (22.41%) employ more than one measure besides the questionnaire. Among these assessment tools, standard language tests (38.98%) and standard lexical decision tasks (11.86%) together make up half of the total sample. The remainder is formed of sparse non-standard methods.

Eighty-four different groups of learners are involved in the experiments collected here. For 77 groups, information about proficiency is available, and the breakdown is as follows: 46 groups (59.74%) include high-proficiency learners, 17 groups (22.08%) include intermediate-proficiency learners, and 14 groups (18.18%) include low-proficiency learners (Figure 2).

[Figure 2 here]

Information about AO is available for 44 learner groups, and the overall average is 14.31 years (SD=4.21).

In 7.94% of the groups, learners acquired the TL through lab training, but among those who learned it in a natural environment, 60% were instructed and spent a variable time in immersion (5.71% of these learners are also administered lab training), while 40% only received classroom instruction (4.35% of these learners are also administered lab training).

3.1.6. Target linguistic feature

For simplicity, we collapse our fine-grained interface labels into the more general category "Interfaces". Among the 71 papers we examine, 16 (15 studies) target syntax, 34 (27 studies) morphosyntax, 18 (18 studies) semantics, 2 (2 studies) pragmatics, and 12 (12 studies) interfaces (Figure 3). Five experiments address two to three linguistic levels at a time. As for the targeted linguistic phenomena, agreement is the most frequently investigated (28 studies out of 71), followed by semantic consistency (17 studies) and word order (nine studies).

[Figure 3 here]

3.1.7. ERP components

N400 and P600 are the components that are most consistently found both in general and across proficiency levels.

If we contrast all learners with native speakers, we see that 61.85% of the experiments report P600 values for learners and 72.72% for native speakers. N400 is reported 47.42% of the times for learners and 38.63% for native speakers. LAN is reported 14.43% of the time for learners and 18.18% for native speakers. Early positivities, non-lateralized anterior negativities and late positivities are not frequently reported for both learners (8.24%; 7.21%; 3.09%, respectively) and native speakers (6.81%; 6.81%; 4.54%). Late negativities are included in 14.43% of the studies for learners and 6.81% for native speakers. Counts are shown in Figures 4 and 5 for native speakers and learners, respectively.

[Figure 4 here]

[Figure 5 here]

When analysing the studies that directly compare native and nonnative speakers, we counted how frequently a component elicited by controls is also elicited by learners. This obtains 1 out of 3 times for the P2, 5 out of 8 times for the LAN, 13 out of 17 times for the N400, 2 out of 3 times for the non-lateralized anterior negativities, 25 out of 32 times for the P600, 2 out of 3 times for the late negativities, and 2 out of 2 times for the late positivities. This indicates that, overall, 73.52% of the experiments comparing native and nonnative speakers observe at least one qualitatively similar component in the two populations.

We address the relationship between linguistic features and ERP components in Section 3.3.

3.2. Qualitative overview of the findings

3.2.1. What can learners learn?

3.2.1.1. Syntax

Sixteen papers (15 studies) address syntax either alone or in combination with semantics and/or morphosyntax. The syntactic structures tested involve word order for the most part, but also include filler-gap dependencies (Jessen et al. 2019, 2017), passive constructions (Chang et al. 2016), and ellipsis (Kaan et al. 2016; Chang et al. 2016).

Word order violations elicit a P600 in native speakers and also advanced learners. Nonetheless, there is a certain degree of variability in earlier components. For instance, with respect to native speakers, a LAN is observed for some but not for all. Bowden et al. (2013), report a LAN for both learners and native speakers, followed by a P600 and a late negativity, respectively. In Batterink & Neville (2013), while a P600 (but not a LAN) is observed only in learners with higher behavioral, a LAN-P600 pattern is found for the French native speakers tested on word order violations in "Mini-French". The LAN, and to a lesser extent also the P600, may have lower amplitude, later onset, and slightly different distribution (e.g., a right-lateralized LAN as observed by Andersson et al. 2019) in

nonnative speakers. Learners at higher levels of proficiency show P600 effects that are qualitatively similar to those shown by the native speakers in response to filler-gap dependencies, passive constructions, and ellipsis violations. However, even advanced learners might be less efficient when it comes to syntactic computation per se. In Jessen et al. (2019), for example, learners, but not native speakers, show a larger P600 at disambiguating regions for plausible (as opposed to implausible) fillers, indicating that, for learners, syntactic repair is more difficult when no additional (semantic) cues are available. In Dallas et al. (2013), the reverse is observed, that is, the load of syntactic processing impinges on semantic processing. Using both filler-gap and non-filler-gap sentences containing semantic violations, they record a native-like N400 in learners only when no gap is involved, while in native speakers the effect is not reduced in the more syntactically complex condition.

In sum, the P600 seems to signal native-likeness when it comes to syntactic violations (although not exclusively), while the LAN is more subject to variation, even in native speakers. As reported in Section 3.1.7, learners and native speakers converge on P600 in 25 out of 32 cases.

3.2.1.2. Morphosyntax

Thirty-four papers (27 studies) address morphosyntax alone or along with syntax and/or semantics. The most investigated features are number agreement and gender agreement. Four experiments consider other phenomena, namely, verb tense inflection (White et al. 2012; Esfandiari et al. 2020), ergative case marking in Basque (Díaz et al. 2016), and Italian auxiliary-gerund/infinitive constructions (Citron et al. 2011). The studies reviewed contribute to the long-standing debate on whether L2ers can acquire features that are absent in their L1. The typical native-like response to morphosyntactic violations is a P600 possibly preceded by a LAN, while nonnative-like reactions can be either null or take the form of an N400.

There is little evidence supporting non-learnability. In Díaz et al. (2016), Spanish-Basque early bilinguals exhibit nonnative reactions to object-verb agreement and ergative case alignment, that are unique to the L1, irrespective of AO, while they perform in a native-like fashion it comes to shared

features, like subject-verb agreement. Conversely, many studies demonstrate that native-like processing is possible. Dowens et al. (2010) report more native-like responses (stronger P600 and a LAN) to number agreement than to gender agreement, and attribute this behavior to transfer from L1 English to L2 Spanish. In Morgan-Short et al. (2010), a P600 is only elicited by determiner-noun violations, while adjective-noun gender agreement violations cause an N400 in high-proficiency learners. However, Foucart & Frenck-Mestre (2011, 2012) note that native-likeness (P600) is independent of the L1. They recruit German and English learners of French and test them on gender agreement, a feature that is present in German but not in English. German speakers display a P600 in the determiner-noun condition, but not in the noun-adjective and in the L1-like adjective-noun conditions. English speakers, by contrast, show a P600 in the non-L1-like noun-adjective condition, but not in the L1-like adjective-noun and noun-predicative adjective condition. The authors suggest that these different reactions might be due to processing demands. Determiner-noun and noun-adjective agreement is indeed more salient in French than adjective-noun agreement and more local than the agreement between a noun and a predicative adjective. Plus, as Morgan-Short et al. (2014) point out in their review, features that are shared between the two languages but are realized in different ways might pose the problem of detrimental competition. Experiments by Alemán Bañón and his colleagues (Gabriele et al. 2013; Alemán Bañón et al. 2014, 2018) point to similar conclusions. They observe that English learners of Spanish show sensitivity to number and gender agreement violations as their proficiency increase, even though this is more pronounced in within-phrase than across-phrase violations; this difference obtains also for native speakers. Finally, turning our attention to subject-verb agreement, even learners whose L1 lacks this feature (e.g., Mandarin speakers) can learn to processed it in a native-like manner, though this might require e a very long time and/or exposure to large amounts of input (Deng & Cheng 2019, Deng et al. 2015; Xue et al. 2013). Deng et al. (2016) and Son (2020) observe that higher-proficiency learners are more able to decompose incoming words into stem and suffix, as indexed by both early components (LAN) and later (P600) components. This seems to be true even for L2ers whose L1 lacks verb morphology, like

Mandarin. Some studies also test subjective grammatical representations, that is, what learners believe to be possible/impossible in the L2. Lemhöfer et al. (2014, 2020) set out to compare responses to objective and subjective gender and number agreement violations. They see that as far as subjective representations are concerned, learners react to violations in a native-like way, as a P600 and even a LAN are recorded. It should be noted, however, that they test L1-German learners on Dutch determiner-noun agreement, a feature common to both the L1 and the L2. A final remark on Lemhöfer et al. (2020) has to do with their experimental task. This is the only study in our sample that directly contrasts a comprehension task with an AJT. Interestingly, native-like components are only recorded when participants perform the AJT, but not when they read a text for comprehension or learning purposes.

3.2.1.3. Pragmatics

Only two studies in our sample focus solely on pragmatics (Foucart et al. 2015a, 2015b). This is partly because we adopt a rather strict notion of pragmatics as a world-knowledge phenomenon disentangled from other linguistic levels. Interactions between pragmatics and other linguistic subfields are considered interface phenomena. Overall, it seems that advanced learners can integrate non-linguistic information online, though not exactly in the same way as native speakers do. As for moral values (Foucart et al. 2015a), while native speakers detect immorality as early as 400ms after word onset (N400), L2ers only do so at a later time and show a late positivity, which is also common to native speakers. In the other study (Foucart et al. 2015b), where the speaker's gender or age consistency is at issue, the late positivity induced by pragmatic violation arises earlier in learners than in native speakers, although the latter are faster in detecting semantic anomalies. A possible interpretation of these findings is that learners tend to defer sentence repair as late as possible and rely more on extralinguistic cues to accomplish this task.

3.2.1.4. Semantics

Eighteen experiments target semantics alone or together with another linguistic level. The typical response to semantic violations or lexical expectations in native speakers is the N400 and learners are found to display similar patterns even at non-advanced proficiency levels (Bowden et al. 2013).

The interpretation of N400 may be challenging at lower proficiency levels as it looks more like an all-purpose response that indexes a general anomaly detection without being restricted to lexicon and semantics (see for instance Esfandiari et al. 2020).

At higher proficiency levels, while patent semantic violations in simple sentences are usually processed by learners and native speakers alike, some discrepancies emerge when it comes to more complex cases. Xue et al. (2014), for example, observe a robust N400 for violations in the spatial metaphor condition but not in the temporal metaphor condition. Along the same lines, the reader may recall that learners in Dallas et al. (2013) prove neurally sensitive to semantic violations only in the no-gap, i.e., the syntactically simplest, condition.

Regarding prediction abilities, while Martin et al. (2013) report that learners, unlike native speakers, cannot anticipate incoming nouns before the article appears, Foucart et al. (2014) claim that they can. They explain these divergent results in terms of typological distance between the L1 and the L2. Martin et al. (2013) test learners whose L1 (English) is further apart from the L2 (Spanish) compared to Foucart et al.'s (2014) learners (French-Spanish bilinguals). Therefore, typologically closer languages would give rise to more native-like anticipation processes.

3.2.1.5. Interface phenomena

Twelve papers investigate interface phenomena, but since the target features tested are quite varied, it is not easy to draw general conclusions from the results of these papers. However, some facts can be reasonably outlined.

Across the board, even at very high proficiency levels, learners struggle to integrate multiple interrelated cues. What is often evident is that they do notice hints and incongruencies in the input, but do not use them as native speakers typically do, as indicated by qualitatively distinct components

(Reichle & Birdsong 2014; Romero-Rivas et al. 2017). In Reichle & Birdsong (2014), both native and nonnative speakers are sensitive to contrastive focus as opposed to informative focus, but while the former elicit a LAN, the latter elicit an N400. Romero-Rivas et al. (2017)'s Italian, French and Portuguese participants pattern with Spanish native speakers in the N400 time window when world or semantic knowledge is violated. However, the two groups differ in that native speakers do not try to make sense of bad sentences any further, while learners recruit additional resources at later stages, as indicated by anterior negativities.

Nickels et al. (2013) and Nickels & Steinhauer (2018) show that learners can become sensitive to prosodic and syntactic boundaries, and to mismatches between them, and this would be a function of proficiency rather than L1 background (Nickels & Steinhauer 2018). These studies also find that learners, just like native speakers, report a closure positive shift (CPS) at boundaries[4], as well as an N400 to superfluous boundaries and a P600 for syntactic reanalysis. This latter, though, is less consistent and more centrally distributed than among native speakers.

Interfaces involving morphosyntax are particularly challenging for learners. This can be seen especially in the Nref component that, in learners, is subject to more variation and interference from other cues, such as conjunctions (Xu et al. 2019) and the speaker's accent (Grey et al. 2019). In addition, Berthelsen et al. (2018) report that while Swedish native speakers exploit the tonal information of the stem to predict the incoming suffix (with a PrAN in correspondence with highly predictive tones) and engage in repair for mismatching suffixes (with a P600), nonnative speakers only respond to whole word accent (with a later negativity). It must be noted, however, that their participants are not very proficient and that a trend towards more robust negativities at higher proficiency levels is observed. In fact, there is some evidence that learners can effectively acquire morphosyntactic stem tones, irrespective of their L1. Hed et al. (2019) expose non-advanced speakers with no experience with tonal languages to Swedish morphosyntactic tones during a training session.

[4] Note that a similar positive shift is also observed at clefted nouns in Reichle & Birdsong (2014).

They observe an increase in the native-like PrAN at tone onset from test session 1 to test session 2, and a LAN at mismatching suffixes at session 2.

3.2.2. Which factors impact acquisition the most?

3.2.2.1. Proficiency

The vast majority of the experiments aims to find the neural correlates of L2 proficiency. This conclusion can be reached in several ways, the most common being to correlate variously obtained proficiency scores with experimental measures in a cross-sectional design. Another, though less frequent, approach is to test participants in one single session after training or instruction without recording any physiological measures before administering the treatment. An even rarer method is to monitor EEG signals and behavioral performance in multiple sessions over a time span in a longitudinal study. This last choice, while very demanding, can give extremely revealing results since participants can act as their own controls. Since all authors recognize that proficiency plays a major role, it is more interesting to focus on those studies that explore the influence of other factors which can modulate the effect of proficiency.

3.2.2.2. AO

Although all experiments factorize AO in the screening phase, only a few – two in this sample – test its role in language acquisition. Díaz et al. (2016) restrict AO influence to the features shared between the L1 and the L2, as neither their learners nor their very early Spanish-Basque bilingual controls behave in a native-like fashion in processing ergative case and object-verb agreement in Basque. Fromont et al. (2020) exclude any AO effect that is independent of proficiency and exposure. However, ours is perhaps not the most suitable pool of articles to address the contribution of AO in SLA, since we focused on late learners. In fact, some papers that we excluded because they concern immigrant populations and/or participants with too low AOs argue for AO to be a significant predictor of ultimate attainment (Nichols & Joanisse 2019; Meulman et al. 2015; Tanner et al. 2014).

3.2.2.3. Language similarity

Twelve studies investigate language similarity effects. Two studies in our sample maintain that L1 background overrides proficiency effects. Xue et al. (2014) observe that Mandarin speakers process English temporal metaphors as if they were spatial expressions because, in their L1, these expressions are closely intertwined. Thus, when tested in their L1, they report a P2, an N400, and a P600 to both temporal and spatial violations, while when tested in the L2, they exhibit a P2 and an N400 (but no P600) in the spatial condition only. As for morphosyntax, Díaz et al. (2016) observe that Spanish-Basque bilinguals cannot process in a native-like way features absent in their L1, no matter how early they started acquiring the L2: instead of a (LAN)-P600, they show an N400 in object-verb agreement violations and an N400 followed by a late negativity in ergative case violations. Both Xue et al. (2014) and Díaz et al. (2016) acknowledge that the complete acquisition of features shared by the L1 is a function of proficiency, as advanced learners present a native-like P600 in subject-verb agreement violations.

Most experiments support an interaction between language distance and proficiency: the closer the L1 is to the L2, the sooner learners will master the new language. In Dowens et al. (2010), English learners of French are more sensitive (stronger LAN-P600) to number than gender agreement, while in Foucart & Frenck-Mestre (2012) they cannot detect gender agreement violations between nouns and predicative adjectives, as shown by the null ERP effects. Chang et al. (2016) report more native-like processing – in terms of a more pronounced N400 – for ungrammatical English passive sentences if they are literal translations from Mandarin. When we turn our attention to typologically similar languages, facilitative transfer seems to occur selectively. For instance, learners are more sensitive to gender agreement violations – as indicated by stronger P600 values – when they involve nouns that have common gender in the two languages (Mickan & Lemhöfer 2020, for German-Dutch; Carrasco-Ortíz et al. 2017, for Spanish-French). When learners with different L1s are directly contrasted, similar patterns are observed. In Andersson et al. (2019), German speakers, whose L1 is a V2 language, are better than English speakers when tested on Swedish V2 word order in that, along with

P600 (also observed in the English group), they show a slightly right-lateralized anterior negativity. Nonetheless, their performance is a function of proficiency. Interestingly, White et al. (2012), investigating the acquisition of English tense inflection before and after training, find no advantage for Korean over Mandarin speakers in the quality of the component – a P600 in both groups – but rather in latency, which is delayed in the Mandarin group. Other authors rule out any L1 influence and explain their results uniquely in terms of proficiency (Nickels & Steinhauer 2018; Alemán Bañón et al. 2014; Gabriele et al. 2013). Nickels & Steinhauer (2018) compare German and Mandarin learners on the acquisition of prosodic-syntactic boundaries in English and find no substantial differences once proficiency is controlled for: both groups display a native-like closure positive shift at all boundaries and an N400-P600 garden path effect, despite the latter being more evident in the German than in the Mandarin group. The same is observed by Alemán Bañón et al. (2014) and Gabriele et al. (2013), who contrast English learners of Spanish at low, intermediate, and advanced proficiency levels on gender agreement, not shared with either L1: high-proficiency learners show a P600 in both gender and number agreement violations; intermediate-proficiency learners only show it in number violations; low-proficiency learners do not show it at all.

3.2.2.4. Context of acquisition

In our survey, learners are mainly classroom instructed either with or without any immersion experience. If we read through the responses obtained from these two categories of participants in across all the studies, we could hardly spot any substantial difference. However, such a comparison might be rash because we cannot control for group specific characteristics that go beyond the context of acquisition. Rather, it would be advisable to devote our attention to the five studies in our sample that are designed to explore this specific matter.

An outstanding issue concerns the opposition between implicit and explicit learning. As described in the introduction, the procedural and declarative memory systems – respectively – are believed to support these functions (Ullman 2016). According to the Redundancy Hypothesis, these two systems can acquire the same contents, albeit in a qualitatively different form, and the redundant information

remains available even when one of the two systems has overcome the other in a given task or function (Ullman 2016). With respect to SLA, learners at initial stages of acquisition would rely more on the declarative system, thus showing an N400 for both semantic and (morpho)syntactic violations, but veer towards a native-like N400-P600 pattern as proficiency increases. Consequently, a context favoring implicit learning (as opposed to explicit learning) should accelerate this shift. Morgan-Short et al. (2012a, 2012b, 2010) and Faretta-Stutenberg et al. (2018) test this hypothesis. Morgan-Short et al. train their participants on an artificial language called Brocanto2. One group is simply exposed to the language via an online chess game, the other is also taught grammatical rules. When tested on Brocanto2 gender agreement, high-proficiency learners from both groups react to determiner-noun gender agreement violations showing a P600, but only low-proficiency learners from the implicitly trained group show sensitivity – in the form of an N400 – to such violations. Data on word order violations are perhaps even more compelling. Again, at low proficiency, only the implicit group detects word order violations (N400). At high proficiency, both groups display a P600, but they diverge in earlier components, which are a right anterior positivity for the explicitly trained subjects and an anterior negativity for the implicitly trained subjects. When tested again after not being exposed to the target language for a few months, the implicitly trained group shows a stronger P600 that is accompanied a LAN followed by a sustained negativity, which were absent in the previous session. As for the explicitly trained group, a more robust P600 and long-lasting anterior negativities, instead of nonnative-like early positivities, are reported.

Faretta-Stutenberg et al. (2018) compare subjects who learned the TL through immersion with subjects who learned the TL at school in their home country on word order violations. While the two samples perform similarly at follow-up, only the former shows a P600 (even though with a slightly anterior distribution) already at baseline. Furthermore, this study takes individual brain profiles into consideration, demonstrating that some subjects are more positivity-oriented and others more negativity-oriented (more on this in the following section). These findings give some support to the DPM. First, at lower proficiency levels, participants recurrently show N400-like negativities for

syntactic violations, while later on, in response to the same phenomena, a P600 is more frequently observed; second, this shift from negativities to the P600 is somehow boosted under implicit training conditions.

By contrast, in Batterink & Neville (2013), who train their subjects on a Mini-French language, successful and rule-aware learners from both the implicitly and explicitly trained groups display a P600 as a reaction to grammatical violations. It should be noted, however, that, unlike Morgan-Short et al. (2012a, 2012b, 2010) and Faretta-Stutenberg et al. (2018), this is not a longitudinal study, so we do not know whether the two groups follow two different developmental trajectories, despite reaching the same endpoint. Other studies give some insight on the role played by training methods. Deng et al. (2015, 2019) claim that structure-specific input can lead to structure-specific proficiency, which is independent of global proficiency even for English subject-verb agreement, which for L1-Chinese learners is relatively hard to acquire. Citron et al. (2011) report that a long uninterrupted training period is more beneficial than multiple shorter sessions interspersed with breaks to the acquisition of verb subcategorization in Mini-Italian. Whereas in the case of subjects exposed to multiple sessions only an N400 is recorded, in the case of learners trained in one continuous session, also a P600 appears.

3.2.2.5. Individual differences

Seven studies analyze and appeal to individual differences to account for their results. A long-standing issue in SLA pertains to the precise characterization of bilinguals and monolinguals. Our survey cannot add much to this debate, since in our sample there is only one study (Grey et al. 2018) that contrasts these two categories of learners presented with a novel artificial language. Rather, this study belongs to another body of research – not represented in our sample – which investigates lexicon organization and lexical retrieval by bilinguals and monolinguals via picture naming, semantic categorization, lexical decision, and word recognition tasks. Grey et al. (2018) trains bilinguals and monolinguals on Brocanto2, and while in the second testing session, they observe a P600 in both

groups (accompanied by an additional early positivity only in monolinguals), in the first testing session, they only observe it in the bilingual group.

Working Memory (WM). Many authors maintain that working memory capacity correlates with syntactic processing ability and L2 learning. An efficient WM would be key to phonological decoding, which underlies the acquisition of vocabulary, and to processing of (long-distance) dependencies between constituents. Comprehension and production of an additional language are generally thought to tax WM resources, as indicated by late anterior negativities. Despite this putative role, only six studies include participants' WM scores in analysis (Fromont et al. 2020; Zheng & Lemhöfer 2019; Faretta-Stutenberg & Morgan-Short 2018; Kaan et al. 2016; Elgort et al. 2015; Dallas et al. 2013). Among those, only Fromont et al. (2020) single out WM as one of the explaining factors independent of daily usage and proficiency. WM correlate with the N400 specific to semantic violations and a sustained negativity in both syntactic category and semantic violations.

Individual neural profiles. In recent years some authors have questioned the homogeneity of neural profiles, suggesting that the same processes might elicit a negativity in some people and a positivity in others. In our sample, three studies focus on this matter. They all find evidence of individual variability, though with some distinctions. On the one hand, Tanner et al. (2013), who target subject-verb agreement in L1-Mandarin learners of English, detect such variability among low-proficiency subjects – who display either an N400 or P600 – but not among advanced L2ers and native speakers, who only report a robust P600. On the other hand, Qi et al. (2017) observe that the relative strength of N400 and P600 detected when participants are tested in their L1 on semantic and syntactic violations, respectively, predict the amplitude of these components when the L2 is tested. Further, in Faretta-Stutenberg & Morgan-Short (2018), the effect of participants' individual neural profiles is visible at both low and higher proficiency levels in both classroom and immersion learning contexts.

3.2.3. How are these factors weighed?

Although the present review does not specifically deal with statistical methods, we will underscore some aspects relative to factor evaluation. In recent years, the statistical toolkit used in psychological

and linguistic studies has been considerably enriched. However, when we look at our sample, we notice that most studies employ traditional methods, such as ANOVA. ANOVA allows to compare the means of different groups, but cannot integrate both random and fixed effects into the analysis. Individual characteristics – both subject-specific and item-specific – have become increasingly relevant to SLA research. More refined models allow us to treat them as continuous variables, thus obtaining more nuanced results, rather than forcing us to split participants or stimuli into clear-cut categories. Linear mixed models are a flexible alternative or complement to ANOVA, as they can cope with random and fixed factors that are either dependent on or independent of each other (Baayen 2012; Baayen et al. 2008). They are added as "adjustments" to the simplest linear equation, thus enhancing model fitness because they can account for a greater amount of variance in the dataset.

Other models have a much more articulated structure. Generalized Additive Models (GAMs, Wood 2017), for instance, comprise smoothing parameters that approximate the data even further, thus allowing for non-linear relationships between variables. Thanks to GAMs, Meulman et al. (2015) find a continuous AO effect on neural responses, while ANOVA indicates a spurious discontinuity between early learners (AO<17), who are native-like, and late learners (AO>17), who are not. Fromont et al. (2020) propose something even more refined when they introduce "Random Forests", a machine learning algorithm, into neurolinguistic research. In their model, factor analysis takes the form of a decision tree in which the weight of each contributor is recomputed over N iterations for each (sub)category of dependent variables.

3.3. Inferential statistics

3.3.1. Native speakers

We considered the following factors of interest: TLEVEL, TASK, TLGEN, L1GEN. We fitted the five models reported below:

m1<-multinom(COMPONENT~TLEVEL+TASK+TITLE+TLGEN+L1GEN, data=pap)

m2<-multinom(COMPONENT~TLEVEL+TASK+TITLE, data=pap)

m3<-multinom(COMPONENT~TLEVEL+TASK, data=pap)

m4<-multinom(COMPONENT~TLEVEL+TITLE, data=pap)

m5<-multinom(COMPONENT~TLEVEL, data=pap)

Pairwise comparisons via the function ANOVA reveals that m5 is the best model (Residual Deviance=191.8285; AIC:251.8285) where TLEVEL is highly significant (LR Chisq=75.17; Df=24; Pr(>Chisq)=p<0.0001). We included TASK, although it is very unevenly distributed, and TITLE to see whether the same study was the source of multiple datapoints. Neither factor was significant. We plot the TLEVEL effect below (Figure 6).

We further explored the data in search of significant contrasts. LAN is more likely for morphosyntax than pragmatics and semantics. N400 is more likely for semantics and interface than morphosyntax. P600 is more likely for morphosyntax than interface, pragmatics, and semantics, for syntax than pragmatics, and for interface than pragmatics.

[Figure 6 here] Figure 6 – Plot of the TLEVEL effect in native speakers.

We then ran the following models replacing TLEVEL with TFEAT employing a subset of the original dataset that only included the best represented levels of TFEAT, namely, gender agreement, number agreement, verb agreement, word order, and semantic consistency.

m1<-multinom(COMPONENT~TFEAT+TITLE, data=papfeat)

m2<-multinom(COMPONENT~TFEAT, data=papfeat)

Using ANOVA, because neither of the two terms had a main effect in m1, we selected m2 (Residual Deviance: 131.2999; AIC: 171.2999), where TFEAT was significant (LR Chisq=27.89; Df=16; Pr(>Chisq)=p=0.03259). The effect is plotted in Figure 7. Contrasts indicate that the N400 is more likely for semantic consistency than gender, number, and verb agreement, while the P600 is

more likely for gender agreement (and, marginally, for verb-agreement too) than for semantic consistency.

[Figure 7 here]

Figure 7 – Plot of the TFEAT effect in native speakers.

3.3.2. L2 learners

We considered seven factors of interest: PROFICIENCY, TLEVEL, TASK, TITLE, TLGEN, L1GEN, GENCON, KACQ. Missing data for proficiency were removed before fitting the following four models.

m1<-multinom(COMPONENT~PROFICIENCY+TLEVEL+TASK+TITLE+TLGEN+L1GEN+ GENCON+KACQ, data=pap1)

m2<-multinom(COMPONENT~PROFICIENCY+TLEVEL+TITLE, data=pap1)

m3<-multinom(COMPONENT~PROFICIENCY+TLEVEL, data=pap1)

m4<-multinom(COMPONENT~PROFICIENCY+TITLE, data=pap1)

Results from ANOVA selected m3 (Residual Deviance: 625.7218; AIC: 723.7218) as the best model with PROFICIENCY (LR Chisq=33.082; Df=14; Pr(>Chisq)=p=0.002804) and TLEVEL (LR Chisq; 138.592 Df=28; Pr(>Chisq)=p<0.00001) as main effects. We also checked for a PROFICIENCYxTLEVEL interaction, but it did not prove significant.

We plot them in Figure 8. We then performed pairwise comparisons for such factors. With respect to PROFICIENCY, ANEG and LPOS are more likely at intermediate and low than high proficiency levels, and the P600 is more likely at high and intermediate than low proficiency levels.

Regarding TLEVEL, significant contrasts suggest that the ANEG is more likely for interface and pragmatics than morphosyntax, semantics, and syntax; the LAN is more likely for interface and morphosyntax than semantics and pragmatics; the LPOS is more likely for pragmatics than all other

levels; the N400 is more likely for semantics than all other levels, and least likely for pragmatics in all contrasts; the null component is more likely for morphosyntax than interface and pragmatics; the P600 is more likely for morphosyntax than interface, pragmatics, and – marginally – semantics, for syntax than pragmatics and interface, and least likely for pragmatics in all contrasts.

[Figure 8 here]

Figure 8 – Plot of the TLEVEL and PROFICIENCY effects in learners.

Afterwards, we conducted analyses including TFEAT instead of the more generic TLEVEL, fitting the following models:

m1<-multinom(COMPONENT~PROFICIENCY+TFEAT+TASK+TITLE+TLGEN+L1GEN+ GENCON+KACQ, data=papfeat)

m2<-multinom(COMPONENT~PROFICIENCY+TFEAT+TITLE, data=papfeat)

m3<-multinom(COMPONENT~PROFICIENCY*TFEAT, data=papfeat)

m4<-multinom(COMPONENT~PROFICIENCY+TFEAT, data=papfeat)

m5<-multinom(COMPONENT~PROFICIENCY+TITLE, data=papfeat)

m6<-multinom(COMPONENT~PROFICIENCY, data=papfeat)

ANOVA shows that neither the effect of TITLE nor the interaction between PROFICIENCY and TFEAT is significant. ANOVA comparisons show that m4 is the best model (Residual Deviance: 328.9377; AIC: 412.9377), where TFEAT is a more influential predictor (LR Chisq=59.049; Df=24; Pr(>Chisq)=p<0.001) than PROFICIENCY (LR Chisq=26.435; Df=12; Pr(<Chisq)=p=0.009309). The effects are visualized in Figure 9. PROFICIENCY contrasts reveal that the null component is more likely at low than high proficiency levels, and the P600 is more likely at high than low proficiency levels. With respect to TFEAT, the N400 is more likely with semantic consistency than

with gender and number agreement and word order, whereas the P600 is more likely with number agreement than gender agreement and semantic consistency.

[Figure 9 here]

Figure 9 – Plot of the TFEAT and PROFICIENCY effects in learners.

3.3.3. Native speakers & L2 learners

We merged together learners' and native speakers' data from studies that originally feature the native-nonnative contrast. In this case, PROFICIENCY beside the usual "high", "intermediate", "low" levels, took the additional "native speaker" level. We fitted the following five models:

m1<-multinom(COMPONENT~PROFICIENCY+TLEVEL+TITLE, data=pap1)

m2<-multinom(COMPONENT~PROFICIENCY+TLEVEL, data=pap1)

m3<-multinom(COMPONENT~PROFICIENCY+TITLE, data=pap1)

m4<-multinom(COMPONENT~PROFICIENCY, data=pap1)

m5<-multinom(COMPONENT~TLEVEL, data=pap1)

ANOVA shows that TITLE is never significant except for m3, but m2 (Figure 10) still proves the best model (Residual Deviance: 482.6518; AIC: 594.6518), with PROFICIENCY (LR Chisq=47.742; Df=21) and TLEVEL (LR Chisq=136.427; Df=28) resulting highly significant (Pr(>Chisq)=p<0.001). Proficiency contrasts show that the LAN is more likely in native speakers than low-proficiency learners; the LNEG is more likely in high- than intermediate-proficiency learners; and the null component is more likely in low-proficiency learners than in native speakers. As for TLEVEL, the LAN is more likely for morphosyntax than pragmatics and semantics; the LPOS is more likely for pragmatics than all other levels; the N400 is more likely for semantics than morphosyntax, pragmatics, and syntax, and for interface than pragmatics; and the P600 is more likely

for morphosyntax than semantics, pragmatics, and interface, while it is least likely for pragmatics in all contrasts.

[Figure 10 here]

Figure 10 – Plot of the TLEVEL and PROFICIENCY effects in native speakers and learners.

Again, we fitted additional models including TFEAT rather than TLEVEL:

m1<-multinom(COMPONENT~PROFICIENCY+TFEAT+TITLE, data=papfeat)

m2<-multinom(COMPONENT~PROFICIENCY+TFEAT, data=papfeat)

m3<-multinom(COMPONENT~PROFICIENCY+TITLE, data=papfeat)

ANOVA shows that TITLE is significant in m1 and m3, while TFEAT is only significant in m2. Nonetheless, between-model ANOVA comparisons indicate m2 (Residual Deviance: 295.0676; AIC: 375.0676) as the best model, with both PROFICIENCY (LR Chisq=43.288; Df=15; Pr(>Chisq)=p<0.001) and TFEAT (LR Chisq=59.020; Df=20; Pr(>Chisq)=p<0.0001) being highly significant. The effects are showed in Figure 11. PROFICIENCY contrasts suggest that the LAN is more likely in native speakers than low-proficiency learners; the N400 is more likely in native speakers and high-proficiency learners than in intermediate learners; the null component is most likely in low-proficiency learners; the P600 is more likely in native speakers, high- and intermediate-proficiency learners than in low-proficiency learners. Regarding TFEAT, the N400 is more likely for semantic consistency than all the other target features; the null component is more likely for gender agreement than verb agreement, semantic consistency, and word order; and the P600 is more likely for verb agreement than semantic consistency and gender agreement.

[Figure 11]

Figure 11 – Plot of the TFEAT and PROFICIENCY effects in native speakers and learners.

Finally, in order to exclude the possibility that one particular study determines our results, we re-ran m2, each time leaving out the datapoint from one of the papers in turn. None of the 26 resulting models proved significantly different from the others, as evidenced by goodness-of-fit tests between LR Chisq scores.

4. Discussion

In the introduction, we proposed two questions that guided and motivated our research. In the following subsections, we address them in turn based on the quantitative (both descriptive and inferential) and qualitative surveys we carried out and reported above.

4.1. What features can be processed in a native-like manner by adult learners?

4.1.1. Semantics

In line with previous reviews, we find that learners reach native-likeness in semantics earlier than in other domains, as indicated by the emergence of N400 even in low-proficiency learners when tested on semantic violations (Bowden et al. 2013). However, with more complex phenomena, like metaphors (Xue et. 2014) and across-syntactic gap anomalies (Dallas et al. 2013), advanced learners are still found to diverge from native speakers.

4.1.2. Syntax

Word order phenomena seem to be more accessible to learners than long-distance dependencies. Advanced speakers may end up displaying a P600, while less proficient ones only display an N400, if anything.

4.1.3. Morphosyntax

Morphosyntactic violations normally elicit a P600 (frequently preceded by a LAN) in native speakers. Learners at higher levels of proficiency usually show a P600 as well, but often not preceded by a LAN, while those at lower levels of global or structure-specific proficiency might display an N400 or lack any response whatsoever. From our survey, it emerges that number agreement might be internalized by learners earlier than gender and verb agreement. Especially for the latter, intense

training and practice seem to favor (near-)native-like processing (Deng & Cheng 2019). Case marking posits long-lasting difficulties (see the review of Díaz et al. 2016 in section 3.2.2.3), but we should be careful on this point since such phenomenon is underrepresented in our sample. According to the studies reviewed, besides proficiency, language distance particularly affects morphosyntax acquisition (Dowens et al. 2010; Morgan-Short et al. 2010; but see Foucart & Frenck-Mestre 2012, 2011 for a different perspective), as we discuss in Section 4.2.3.

4.1.4. Interface phenomena

As previously mentioned, interfaces do not receive much attention in other reviews. In our collection, we find varied and sparse cases, so it is hard to outline a coherent picture. Nonetheless, it seems safe to conclude that interfaces involving (morpho)syntax are the most challenging for L2 learners, who generally find it hard to integrate multiple cues and tend to rely more on situational than structural ones. Learners prove similar to native speakers in detecting syntax-prosody mismatches, and display a closure positive shift at all prosodic boundaries as well as an N400-P600 garden-path effect after wrong boundaries (Nickels & Steinhauer 2018; Nickels et al. 2013). They also show a tendency toward nativelikeness with respect to the PrAN component in response to morphosyntactic tones (Hed et al. 2019), as well as in cases of anaphora resolution, where their responses are qualitatively similar to those of native speakers (a negativity called "Nref", Xu et al. 2019; Grey et al. 2019). Learners' reactions to tonal cues, however, are not native-like and only show an anterior negativity, while native speakers report an N400-anterior negativity-P600 pattern (Berthelsen et al. 2018). Even when tested on information structure (Reichle & Birdsong 2014), learners show a positive shift which is followed by an N400, whereas for native speakers, it is followed by a LAN.

The fact that learners find it hard to take in multiple pieces of information at one time inspired some researchers to investigate anticipatory mechanisms, which are crucial in native processing. Native speakers may be better able to integrate several cues because they do not deal with them all at once, but rather they start processing the elements of an utterance even *before* actually hearing or reading them. We cannot elaborate much further on this topic since it is only addressed by a few

studies (Martin et al. 2013, Foucart et al. 2014, and Berthelsen et al. 2018), which also yield mixed results. Predictive (lexical) processing in the L1 has been linked to the N400, which is elicited by any word and reduced to expected ones, as well as to the P600 and late frontal positivities, which have been interpreted as anomaly resolution and cognitive costs, respectively (Van Petten & Luka 2012). Kaan et al. (2014), when reviewing L2 studies on predictive processing, claim that there are no reasons to believe that learners are qualitatively different from native speakers in this respect. In fact, the efficiency of this mechanism depends on the same conditions in both populations, namely, (1) the frequency information stored, (2) competing information, (3) the accuracy and consistency of the lexical information retrieved, (4) task-induced processes and strategies, and (5) other factors such as motivation, resources, and cognitive control.

4.1.5. Summary

Out of 61 papers, only one concludes that learners cannot process a feature like native speakers. Díaz et al. (2016) find that, irrespective of AO and proficiency, learners show a late anterior negativity to ergative case marking violations rather than the P600 typical of native speakers. It should be noted that among the studies surveyed, Díaz et al. (2016) is the only one that targets case marking, so this linguistic aspect deserves further investigation. Apart from this unique instance, the literature we examine supports the accounts predicting that nativelikeness can be attained by L2ers.

4.2. What is the impact of each predictor of L2 attainment?

4.2.1. Proficiency

Our survey confirms what is stated in previous ERP reviews: learners' proficiency is undoubtedly the primary modulating factor of ERP components. Advanced learners, compared to less proficient learners, are more similar to native speakers with respect to their neural responses. This fact can be discussed in the light of various models that take into account the electrophysiological markers of L2 learners' developing competence (e.g., the Declarative-Procedural Model, the Convergence Hypothesis, among others).

4.2.2. AO

AO is factorized in almost every study but none of them evidences any AO effect independent of proficiency. As the reader may recall, our sample is only composed of late learners and, thus, it is not suitable to address the question of whether very early bilinguals are more nativelike than late learners. However, in the only study where early bilinguals are present as controls, AO and proficiency *together* explained ERP results for features shared between the L1 and the L2, while for those unique to the L2, only language distance does. Additionally, similar findings are reported by Caffarra et al. (2015) who also include earlier bilinguals. Experiments using GAMs provide some evidence of a gradual effect of AO (Meulman et al. 2015), but further investigation is needed to disentangle it from that of proficiency, as noted in previews reviews (Steinhauer 2014; Van Hell & Tokowicz 2014; Steinhauer et al. 2009).

4.2.3. Language similarity

Caffarra et al. (2015) in their empirical review find no significant effect of L1-L2 similarity on participants' responses. The experiments that explicitly test this factor in our sample yield mixed results. Apart from Díaz et al. (2016), none deems language distance to determine whether a trait is acquirable or not. As already pointed out in Morgan-Short et al. (2014), language distance has a complex modulatory effect. In particular, facilitative transfer occurs only when features are not only shared between the L1 and the L2 but also *realized* in the same way in the two languages, otherwise they become less accessible; as for feature that are unique to the L2, they might be acquired more or less easily but they are not precluded in principle. Finally, available cognitive resources seem to play a role, as across-phrase dependencies are more taxing than local ones, which proved true for both native and nonnative speakers.

4.2.4. Context of acquisition

Out of the seven studies that manipulated the context of acquisition, six find that learners who spend time in immersion or receive implicit training are more likely to show native-like brain responses

than those who receive classroom-based instruction or explicit training. Therefore, there seems to be a connection between implicit and immersion learning on the one side, and classroom and explicit learning, on the other. The former would be supported by procedural memory, while the latter by declarative memory. This would also imply a certain degree of isomorphism between mode of instruction and type of learning, which, however, is not guaranteed and should be cautiously assessed. As already mentioned, since the majority of participants we survey are highly proficient and spent some time in immersion it is hard to disentangle proficiency and exposure over the whole sample.

4.2.5. Individual differences

Individual differences have become more and more central in SLA research over the last few years. WM has been associated with language learning and processing for a long time. Recent work, however, reconsiders the role of this faculty. Reichle et al. (2016) evaluate available evidence of WM effects on language processing. They find that higher WM correlates with stronger LAN (for example, in the case of subject-verb agreement violations) but not with P600 in native speakers. In learners, on the other hand, WM modulates the processing of mid-difficulty structures (e.g., within-phrase agreement) but not that of very simple or very demanding structures. They also report the findings of one of their experiments in which WM scores measured in the L1 are better predictors of ERP responses (N400 and LAN) to both languages than those measured in the L2. In our sample, among the six studies that factorize WM, only Fromont et al. (2020) find it to predict a semantic N400 as well as a late anterior negativity in response to both categorial and semantic violations. More convincing, albeit limited, is the evidence that brain profiles are subject to inter-individual variability. Among the studies we survey, three treat this matter (Faretta-Stutenberg et al. 2018; Qi et al. 2017; Tanner et al. 2014) and record either a P600 or an N400 in the same group of participants presented with the same phenomenon. Tanner et al. (2014) introduce the response magnitude index and the response dominance index to capture the tendential strength and polarity of the components elicited by the individuals. They link the N400-dominant index to declarative memory-based and good-enough processing strategies, and the P600-dominant one to deeper and procedural processing. Note

that such variability is present in native speakers as well, and may predict selective learning abilities in the L2 (Qi et al. 2017).

4.2.6. Summary

With respect to our second research question, there is convincing evidence that proficiency is the main predictor of ERP components, while language similarity, context of acquisition and individual differences (in particular neural profiles) seem to have a modulatory effect. The contribution of AO cannot be evaluated based on the present sample. Inferential analyses which consider native and L2 speakers together partially confirm the conclusions drawn from the qualitative survey. The MLR shows that target linguistic features and proficiency are the only significant predictors of the ERP components, while fails to find any effect of task, languages (L1 and L2), and language similarity (this last finding is also reported by Caffarra et al. 2015). Robustness of collinearity between proficiency, target features, and ERP might support the view that brainwaves can be taken as reliable signatures of learners' developing L2 competence as far as certain language domains are concerned. As for proficiency effects, our analysis suggests that: (1) the LAN is more likely to be present in native speakers than in low-proficiency learners, but no difference is found between native speakers and high-proficiency learners; (2) the N400 is more likely to be detected in native speakers and advanced L2 learners than in low- and intermediate-proficiency learners; (3) the P600 more likely occurs in native speakers and learners at high and intermediate proficiency levels than in beginners. With respect to the role played by target features, we observed that (1) the N400 is strongly linked to violations of semantic consistency; (2) a null effect is more likely when gender agreement is involved rather than verb agreement, word order, and semantic consistency anomalies; (3) the P600 is more often elicited when verb agreement rather than semantic consistency or gender agreement violations are encountered. Our model does not detect any significant interaction between the target feature (e.g., verb agreement vs. semantic consistency) and learners' proficiency (e.g., advanced vs. beginning levels). However, this finding is controversial since in many studies (e.g., Osterhout et al. 2008), a strong correlation is found between proficiency, type of violation (e.g., syntax vs. semantics),

and ERP components (e.g., P600 vs. N400). In conclusion, the present analysis supports convergence accounts of L2 acquisition (Steinhauer et al. 2009) and confirms that N400 and P600 are the most robust components across native speakers and learners, while LAN is subject to considerable variability (see Caffarra et al. 2019; Tanner et al. 2015, for critical discussion). We cannot definitively affirm that some features are easier to acquire than others as the PROFICIENCYxTFEAT interaction never proved significant. However, null effects in learners are especially associated with gender agreement.

4.3. Current methods in ERP SLA research: an overview and some remarks

4.3.1. Contrasts

In our sample, most studies involve a group contrast, with the native-nonnative comparison being dominant. Native speakers are held to offer a baseline to evaluate how advanced learners are. Variability among learners in relation to L1 background, proficiency, and AO is less frequently assessed by recruiting multiple groups. Proficiency and AO are often treated as continuous variables and statistically incorporated. Nativeness, on the other hand, is categorical in nature and, for this reason, it is typically used as a grouping factor. Even though a few studies recruit subjects with different mother tongues, the topic of language similarity is nonetheless present in the sample. This is because some – like Foucart & Frenck-Mestre (2011, 2012) – code L1 similarity feature-by-feature, so that the relevant comparisons are between traits of the same language that are more or less similar to the L2.

4.3.2. Participants and stimuli

Standard deviations (as reported in Section 3.3) show that while the number of participants is quite homogeneous, the number of stimuli displays higher variability. This is hardly attributable to variability in the types of stimuli since we only surveyed studies that employ full sentences. Further, the majority of them administer the same task – an AJT- in the same modality, that is, visual.

4.3.3. Languages

As for languages, we find two distinct patterns: (1) a genus contrast between the L1 and the L2 is present in over 75% of the studies; (2) 90% of the L2s and 80% of the L1s investigated belong to the Indo-European family, with English being the single most frequently tested language. These impressive data can be only partially accounted for by the distribution of the L2s over the world. According to official reports (Eurostat 138/2013[5]), in 2011, English was the most studied L2 in Europe (and also China), and the majority of European students chose German, French, Spanish, or Italian as an additional language. In 2016, those language ranked at top positions in the U.S. as well (source: Modern Language Association 2019[6]). In recent years, however, many other languages (e.g., Russian, Chinese, Arabic, Japanese, etc.) have become increasingly popular in secondary education in Western countries, and yet they have been largely neglected by SLA ERP research. Despite critical advances in this field, we are still unable to factor out language specificity in the functional interpretation of ERP components. We are mainly aware of the effects observed in subjects from various L1 when tested in their L2 English, but we are still left to wonder what elicits a LAN, an N400, etc. in learners of Russian, Chinese, or Italian. We do not know whether our knowledge about ERP components would still hold if more varied L1-L2 pairs were taken into account.

4.3.4. Pre-screening measures

Generally, proficiency is measured through at least one objective test. However, almost one-fourth of the studies reviewed only employ questionnaires and self-assessment. Furthermore, among the tests, only half are standardized, while the others are designed by the experimenters or are derived from experimental measures, such as behavioral scores. Such inconsistency raises the issue of reliability and comparability between results (Rastelli 2018; Van Hell & Tokowicz 2010). Proficiency is the most investigated factor in SLA and ERP studies primarily look for its neural correlates. This might be arguable in many respects, primarily because there seems to be variability in individual

[5] https://ec.europa.eu/eurostat/news/themes-in-the-spotlight/language-learning
[6] https://www.mla.org/

brain profiles (Tanner & Van Hell 2012), and, indeed, some scholars have started taking this source of variability into account. Cross-study inconsistency in factorizing proficiency, though, is far less discussed in the field. Another related issue is the very construct of proficiency, which has long been conceived as global competence in a language. Some scholars, like Steinhauer et al. (2014, 2009), have argued that we should narrow down the notion of proficiency to structure-specific proficiency, at least for the purpose of empirical investigation. In this view, structure-specific proficiency and global proficiency are partially independent of each other, that is, a learner may well be classified as high proficient even without mastering certain constructions, or vice versa. As for other predictors of acquisition, while almost all studies include AO in their analyses, less than 20% take WM scores and indexes of brain profiles into consideration. As a consequence, our ability to evaluate their relative contribution is severely limited.

4.3.5. Design and paradigm

Over the years, reviewers have noted that studies featuring cross-sectional design and violation paradigms are by far the most frequent and they could be substituted by (or at the least complemented with) more ecological designs that monitor development over time through, for example, passive reading or listening (Caffarra et al. 2015; Morgan-Short et al. 2014). Despite such recommendations, we report that AJTs are employed in nearly 70% of the experiments and that less than 20% administer the stimuli auditorily. It is, therefore, reasonable to wonder whether different tasks and presentation modalities would yield different outcomes. A good way for testing this would be to directly contrast tasks and modalities. In our survey, the only authors who do so (Lemhöfer et al. 2020) observe that the same stimuli elicit a P600 when subjects perform the AJT, but do not when they perform the reading task. The task-dependency of this component has already been acknowledged by Brouwer & Crocker (2017) and Brouwer et al. (2012). As for the presentation modality, it might play a role in learners' (but not in native speakres') processing, as listening tasks are deemed to be particularly challenging for this population (Fernandez et al. 2019).

With respect to design, only a minority of experiments are longitudinal, which means that most studies are not interested in accounting for the trajectory of the acquisition process. We believe that since SLA models are explicitly crafted to predict such trajectories, it should be a priority for empirical research to test their hypotheses as directly as possible. A valuable way to do so is represented by artificial language paradigms (Steihauer 2014; Steinhauer et al. 2009), which have proven to offer significant advantages over natural languages while giving equally reliable results (Morgan-Short 2020; Grey 2020).

4.3.6. Statistical methods

A final remark concerns statistical methods. Although it is beyond the scope of the present review to assess the appropriateness of the techniques used in research, we highlight a couple of facts. A qualitative inspection of the sample reveals that most studies opted for ANOVA, while only a handful employed mixed-effect models. Several methodological papers in recent years have encouraged the adoption of mixed (or more complex) models because they offer several advantages over ANOVA (Plonsky et al. 2018, 2017; Plonsky 2013). Compared to traditional methods, state-of-the-art models can identify more articulated patterns in the data structure, as observed by Meulman et al. (2015) and Fromont et al. (2020), who employ GAMs and Random Forests, respectively. It might be good practice to perform analyses with multiple methods. This would be a way to cross-validate the results while helping methodological advances in the field.

4.3.7. Summary

This methodological overview evidences that current research mainly (1) focuses on high proficient learners and (2) tests morphosyntax, (3) employs violation paradigms and (4) visual presentation (5) in cross-sectional designs, (6) involves Indo-European languages, (7) takes native speakers as controls, and (8) chooses traditional statistical approaches (e.g., ANOVA) over more recent ones (e.g., GAMs).

5. Limitations

We are aware that this study suffers from three major limitations:

1. Although we screened thousands of papers, it is possible we missed some relevant records.
2. Since this is not a meta-analysis, we did not assess the relative reliability of each experiment, hence we cannot provide a general evaluation of research quality.
3. We focused our attention on sentence processing, leaving out cognitive, inhibitory, and executive control, single-word processing, code-switching, and phoneme discrimination, which are all crucial issues in bilingualism.

6. Conclusions and future directions

We examined 61 SLA papers that report on ERP experiments involving adult learners. Our analysis encompassed a descriptive and an inferential part.

In relation to our first research question -what features are held to be processed in a nativelike way by adult L2 learners?-, we can conclude that in principle any feature can get to be processed in a nativelike way but different features may be acquired at a different pace. In particular, nativelikeness seems to be achieved earlier and more easily in the semantic domain, while syntax (especially long-distance dependencies), morphosyntax, and interfaces are less accessible to automatic processing, as signaled by the P600 components. Moreover, features that only partially overlap in the L1 and the L2 are acquired more slowly than those which are shared between the two languages or are unique to the L2. Regarding question number 2 -what is the impact of proficiency, AO, language distance, context of acquisition, and individual differences on the ERP components?- our qualitative review indicates that proficiency is the most important factor, but its effect is modulated by language similarity, available cognitive resources, context of acquisition, and –possibly– individual neural profiles. On the other hand, virtually no study has argued that AO and language similarity can determine the full acquisition of a linguistic trait. Statistical analyses find that only learners' proficiency reliably

predicts the type of ERP component detected, and confirm that the N400, P600 and LAN components are associated –respectively- with semantics and (morpho)syntax.

Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article, its supplementary materials, and at https://osf.io/94k6w/?view_only=03e1cdffd74146f9844a9880a4c3cf59.

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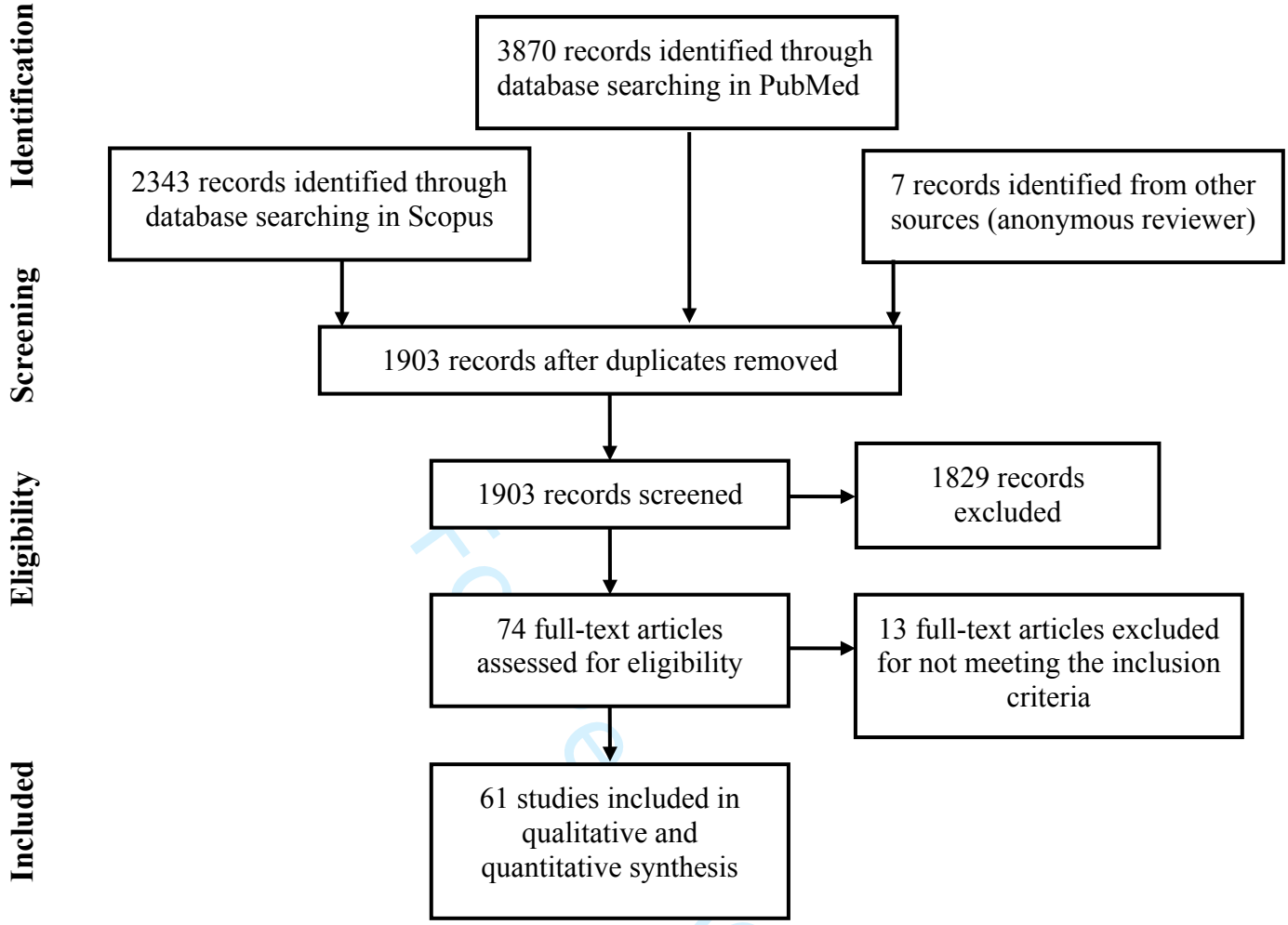

Figure 1 – PRISMA flowchart of the selection process.

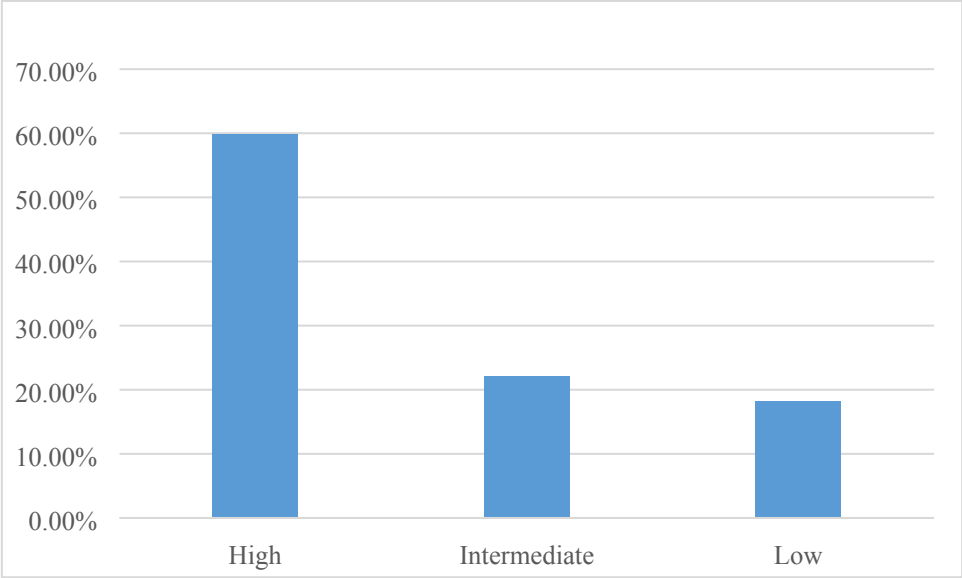

Figure 2 - Percentage of studies featuring each proficiency group.

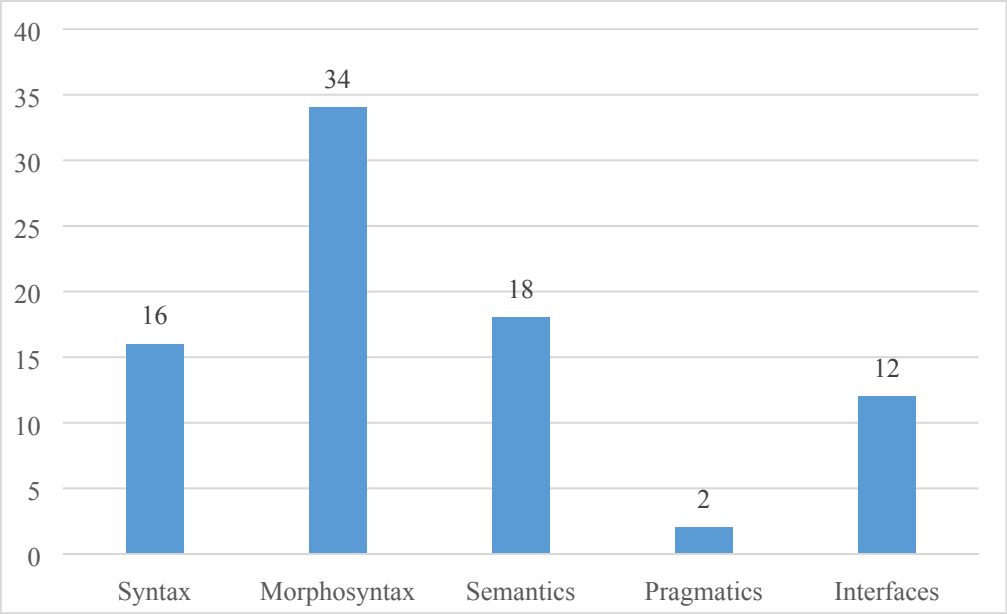

Figure 3 - Number of studies targeting each linguistic level.

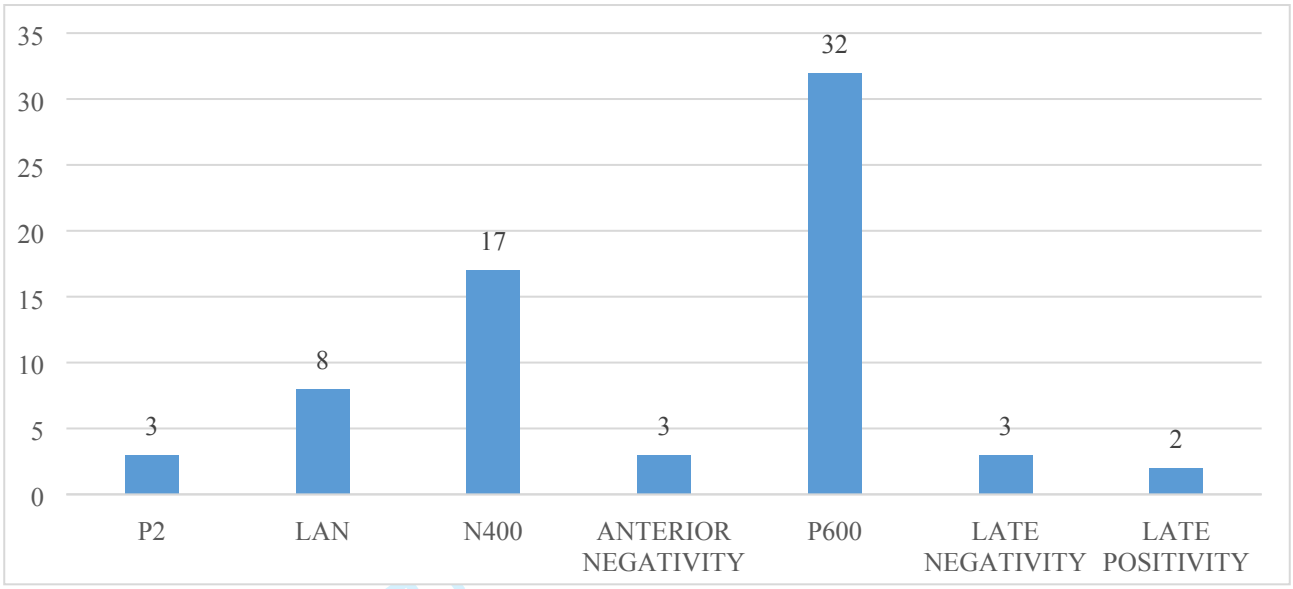

Figure 4 - Number of native speakers' groups eliciting each component.

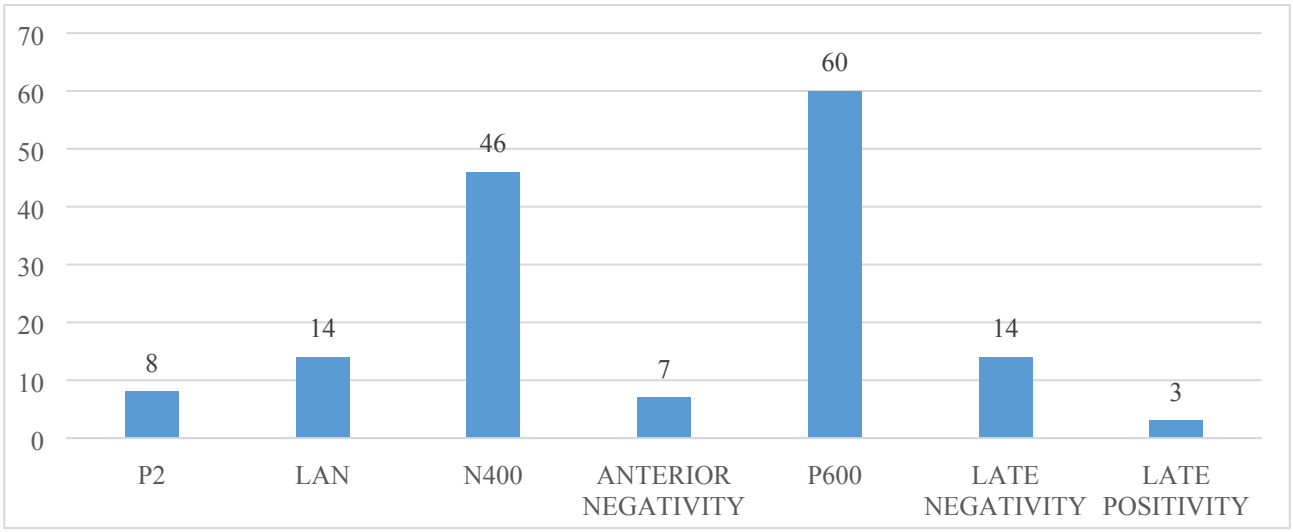

Figure 5 - Number of learners' groups eliciting each component.

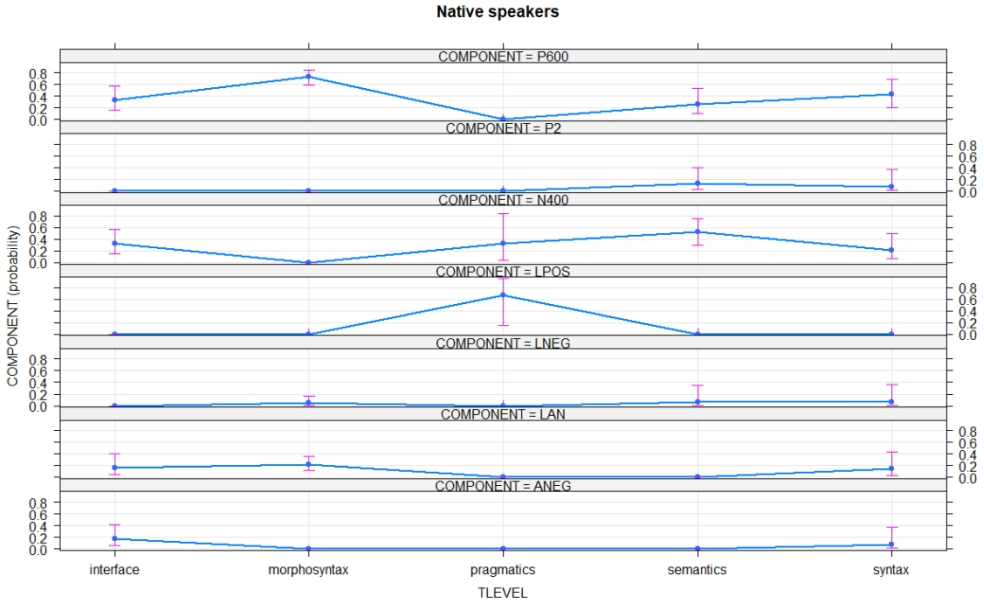

Figure 6 - The effect of TLEVEL in native speakers.

802x491mm (38 x 38 DPI)

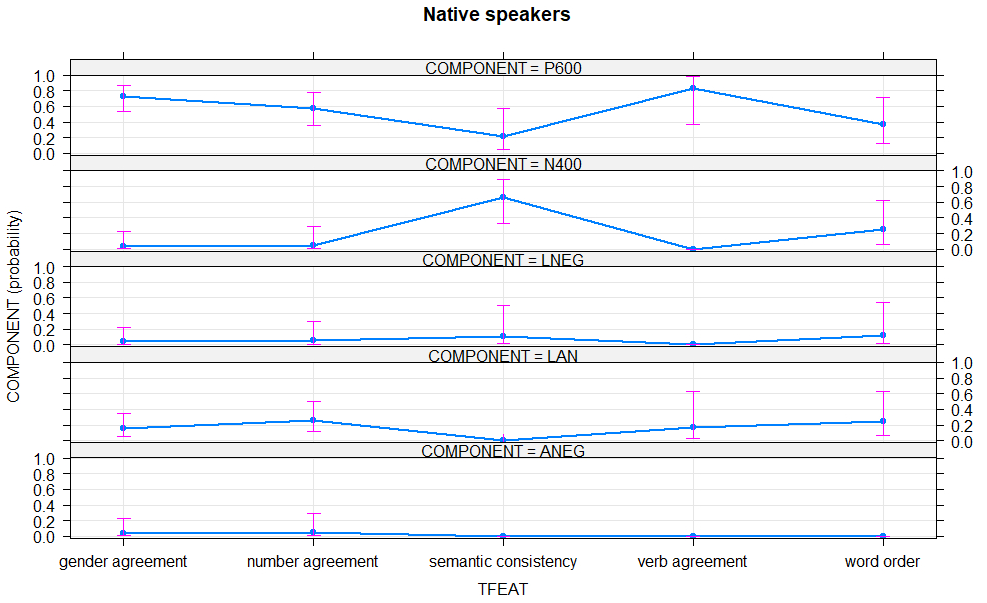

Figure 7 - The effect of TFEAT in native speakers.

668x409mm (38 x 38 DPI)

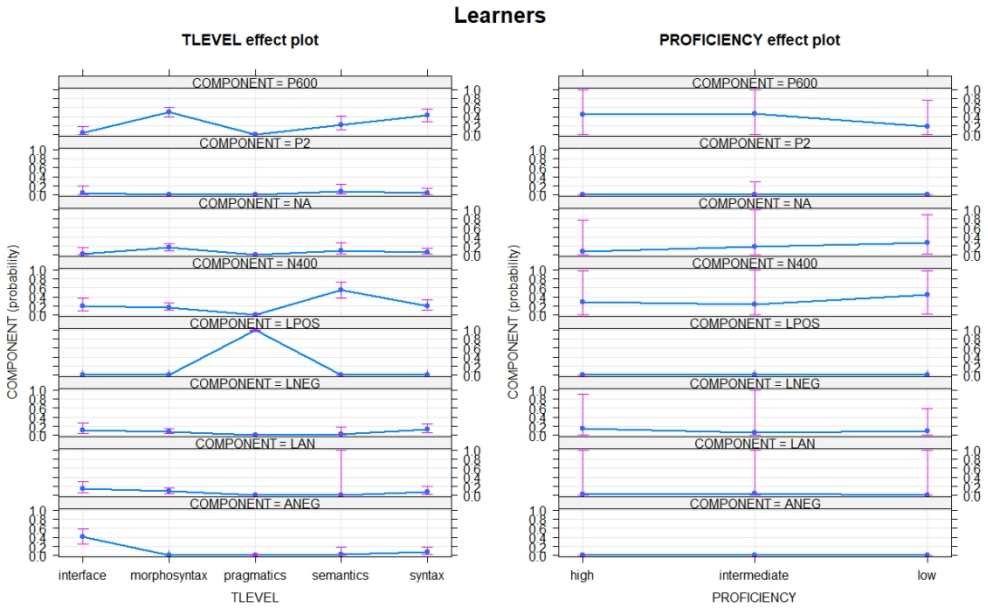

Figure 8 - The effects of TLEVEL and PROFICIENCY in learners.

835x511mm (38 x 38 DPI)

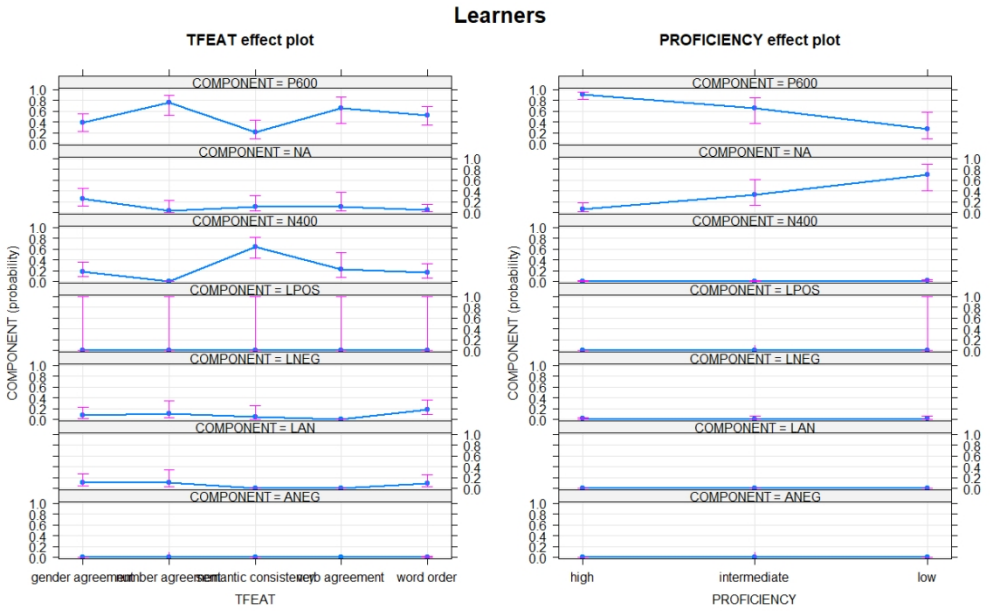

Figure 9 - The effects of TFEAT and PROFICIENCY in learners.

835x512mm (38 x 38 DPI)

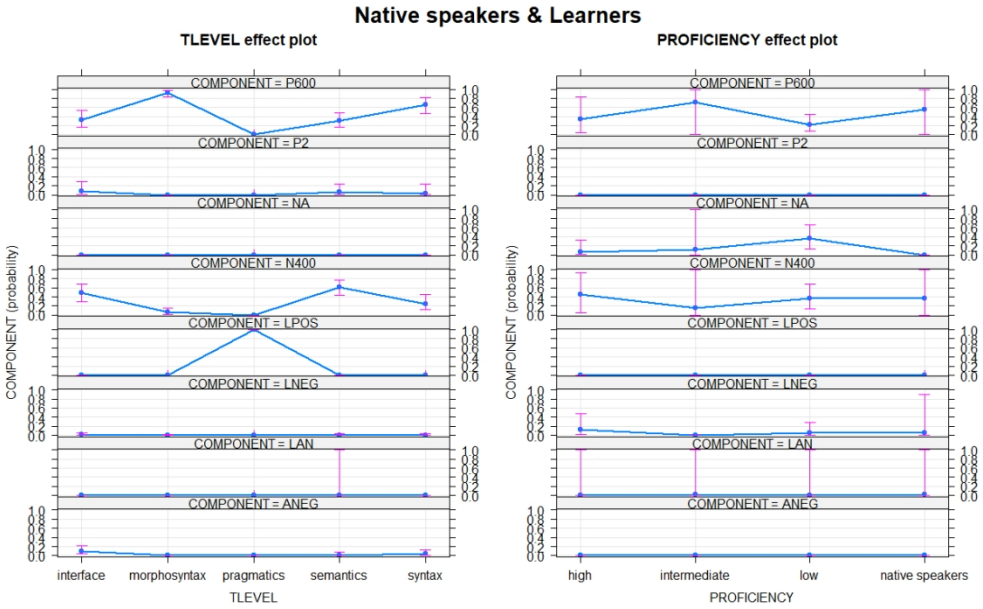

Figure 10 - The effects of TLEVEL and PROFICIENCY in native speakers and learners.

835x512mm (38 x 38 DPI)

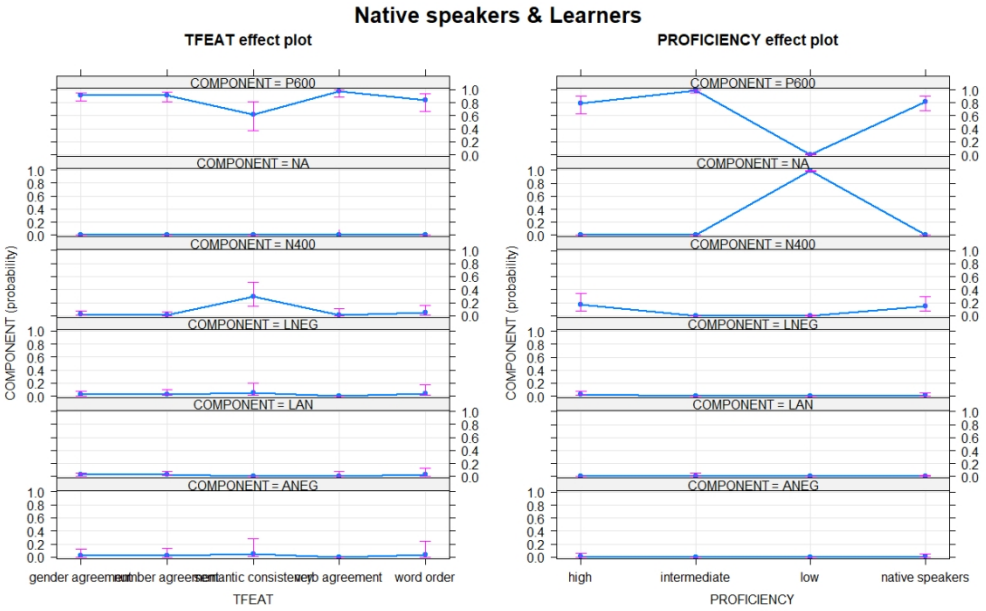

Figure 11 - The effects of TFEAT and PROFICIENCY in native speakers and learners.

835x512mm (38 x 38 DPI)

DATA BASE	QUERY STRINGS Last search 05th February 2022	#RECORDS	#UNIQUE RECORDS
Scopus	TITLE-ABS-KEY (second AND language AND learning AND event-related AND potentials) AND PUBYEAR > 2009 AND PUBYEAR < 2021	121	1001
	TITLE-ABS-KEY (second AND language AND acquisition AND event-related AND potentials) AND PUBYEAR > 2009 AND PUBYEAR < 2021	83	
	TITLE-ABS-KEY (second AND language AND event-related AND potentials) AND PUBYEAR > 2009 AND PUBYEAR < 2021	413	
	TITLE-ABS-KEY (bilingualism AND event-related AND potentials) AND PUBYEAR > 2009 AND PUBYEAR < 2021	189	
	TITLE-ABS-KEY (erp AND second AND language) AND PUBYEAR > 2009 AND PUBYEAR < 2021	371	
	TITLE-ABS-KEY (erp AND second AND language AND learning) AND PUBYEAR > 2009 AND PUBYEAR < 2021	120	
	TITLE-ABS-KEY (erp AND second AND language AND acquisition) AND PUBYEAR > 2009 AND PUBYEAR < 2021	82	
	TITLE-ABS-KEY (erp AND bilingualism) AND PUBYEAR > 2009 AND PUBYEAR < 2021	153	
	TITLE-ABS-KEY (erp AND language AND learning) AND PUBYEAR > 2009 AND PUBYEAR < 2021	363	
	TITLE-ABS-KEY (event-related potentials AND language AND learning) AND PUBYEAR > 2009 AND PUBYEAR < 2021	448	
PubMed	**second:** "second"[All Fields] OR "seconds"[All Fields] **language learning:** "language development"[MeSH Terms] OR ("language"[All Fields] AND "development"[All Fields]) OR "language development"[All Fields] OR ("language"[All Fields] AND "learning"[All Fields]) OR "language learning"[All Fields] **event-related potentials:** "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR ("event"[All Fields] AND "related"[All Fields] AND "potentials"[All Fields]) OR "event related potentials"[All Fields]	137	1450
	second: "second"[All Fields] OR "seconds"[All Fields] **language acquisition:** "language development"[MeSH Terms] OR ("language"[All Fields] AND "development"[All Fields]) OR "language development"[All Fields] OR ("language"[All Fields] AND "acquisition"[All Fields]) OR "language acquisition"[All Fields] **event-related potentials:** "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR ("event"[All Fields] AND "related"[All Fields] AND "potentials"[All Fields]) OR "event related potentials"[All Fields]	100	
	second: "second"[All Fields] OR "seconds"[All Fields]	468	

	language: "language"[MeSH Terms] OR "language"[All Fields] OR "languages"[All Fields] OR "language's"[All Fields] OR "programming languages"[MeSH Terms] OR ("programming"[All Fields] AND "languages"[All Fields]) OR "programming languages"[All Fields] **event-related potentials:** "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR ("event"[All Fields] AND "related"[All Fields] AND "potentials"[All Fields]) OR "event related potentials"[All Fields]		
	event-related potentials: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR ("event"[All Fields] AND "related"[All Fields] AND "potentials"[All Fields]) OR "event related potentials"[All Fields] **bilingualism:** "bilingual"[All Fields] OR "bilingual's"[All Fields] OR "bilinguality"[All Fields] OR "bilingually"[All Fields] OR "bilinguals"[All Fields] OR "multilingualism"[MeSH Terms] OR "multilingualism"[All Fields] OR "bilingualism"[All Fields]	304	
	erp: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR "erp"[All Fields] **second:** "second"[All Fields] OR "seconds"[All Fields] **language:** "language"[MeSH Terms] OR "language"[All Fields] OR "languages"[All Fields] OR "language's"[All Fields] OR "programming languages"[MeSH Terms] OR ("programming"[All Fields] AND "languages"[All Fields]) OR "programming languages"[All Fields]	492	
	erp: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR "erp"[All Fields] **second:** "second"[All Fields] OR "seconds"[All Fields] **language learning:** "language development"[MeSH Terms] OR ("language"[All Fields] AND "development"[All Fields]) OR "language development"[All Fields] OR ("language"[All Fields] AND "learning"[All Fields]) OR "language learning"[All Fields]	145	
	erp: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR "erp"[All Fields] **second:** "second"[All Fields] OR "seconds"[All Fields] **language acquisition:** "language development"[MeSH Terms] OR ("language"[All Fields] AND "development"[All Fields]) OR "language development"[All Fields] OR ("language"[All Fields] AND "acquisition"[All Fields]) OR "language acquisition"[All Fields]	108	
	erp: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR "erp"[All Fields] **bilingualism:** "bilingual"[All Fields] OR "bilingual's"[All Fields] OR "bilinguality"[All Fields] OR "bilingually"[All Fields] OR "bilinguals"[All Fields] OR "multilingualism"[MeSH Terms] OR "multilingualism"[All Fields] OR "bilingualism"[All Fields]	307	
	erp: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked potentials"[All Fields] OR "erp"[All Fields] **language learning:** "language development"[MeSH Terms] OR ("language"[All Fields] AND "development"[All Fields]) OR "language development"[All Fields] OR ("language"[All Fields] AND "learning"[All Fields]) OR "language learning"[All Fields]	911	
	event-related potentials: "evoked potentials"[MeSH Terms] OR ("evoked"[All Fields] AND "potentials"[All Fields]) OR "evoked	898	

	potentials"[All Fields] OR ("event"[All Fields] AND "related"[All Fields] AND "potentials"[All Fields]) OR "event related potentials"[All Fields] **language learning:** "language development"[MeSH Terms] OR ("language"[All Fields] AND "development"[All Fields]) OR "language development"[All Fields] OR ("language"[All Fields] AND "learning"[All Fields]) OR "language learning"[All Fields]		

Table 1 - Query strings and records found.

PROFICIENCY MEASURE CATEGORY	SPECIFIC PROFICIENCY MEASURE
Cloze test (6)	
Elicited imitation task (1)	
Experimental measures (5)	
Grammar test	• morphological knowledge test (1) • grammar test (3)
Interview	Simulated Oral Proficiency Interview – SOPI (1)
Language test (5)	
Lexical decision task (2)	
Sentence completion task (1)	
Standard language test	• Cambridge test (2) • Diplomas de Español como Lengua Extranjera – DELE (6) • Diplôme d'Etudes en Langue Française – DELF (3) • Oxford Placement Test – OPT (7) • Modern Language Association test – MLA (3) • College English Test – CET (2) • Test for English Majors – TEM (2) • Swedish Examinations – SWEDEX (1) • Michigan English Language Institute College Entrance Test – MELICET (1) • International English Language Testing System – IELTS (1) • Test of English as a Foreign Language – TOEFL (1)
Standard lexical decision task	LexTALE (6)
Standard vocabulary test	• Shipley vocabulary test (1) • Vocabulary test from Wechsler Adult Intelligence Scale (1)
Translation task (1)	
Verbal fluency task (2)	
Vocabulary test (3)	

Table 3 - Correspondences between specific proficiency measures and more general categories. Counts for each specific measure are provided in brackets. We considered the sample of 61 unique studies. Some studies employed more than one measure.

TARGET LEVEL	TARGET FEATURE
Morphosyntax	subject-verb agreement number agreement gender agreement det-noun gender agreement noun-adj gender agreement adj-noun gender agreement auxiliary+gerund/infinitive structures verb tense noun-predicative adj gender agreement noun-predicative adj agreement noun-adj agreement gender agreement on clitic pronouns number agreement on clitic pronouns det-noun number agreement singular subject-verb agreement object-verb agreement ergative case derived words in context regular past inflection plural noun forms
Syntax	word order auxiliary omission noun ellipsis passive structure syntactic categories filler gap sentences direct object filler-gap sentences
Semantics	semantic consistency temporal spatial metaphors body-object interaction words in context metaphors
Pragmatics	pragmatic consistency
Semantics-pragmatics interface	semantic-pragmatic consistency NP reference
Semantics-prosody interface	semantic consistency, speaker's accent
(Morpho)syntax-prosody interface	prosodic-syntactic boundaries morphosyntactic stem tones morphosyntactic stem tones pronoun form, speaker's accent
Syntax-discourse interface	focus structure anaphora resolution reflexive pronoun resolution
Syntax-prosody interface	prosodic-syntactic boundaries
Syntax-semantics interface	verb-preposition constructions

Table 2 - Correspondences between target linguistic features and target linguistic levels.

AUTHORS	TITLE	YEAR	JOURNAL	DOI	CROSS-REF	DESIGN	L1	TARGET LA
Dowens, M.G	Morphosyn	2010	Journal of Co	10.1162/jocn.2009.213		cross-sectic	English	Spanish
Morgan-Shor	Second lang	2010	Language Lea	10.1111/j.1467-9922.2		longitudina	English	Brocanto2
Foucart, A., Fl	Grammatic	2011	Bilingualism	10.1017/S1366728910		cross-sectic	German	French
Foucart, A., Fl	Grammatic	2011	Bilingualism	10.1017/S1366728910		cross-sectic	German	French
Foucart, A., Fl	Grammatic	2011	Bilingualism	10.1017/S1366728910		cross-sectic	German	French
Citron, F.M.M	Mass count	2011	Neuroscience	10.1016/j.neulet.2010.		cross-sectic	German	Mini-Italian
White, E.J., G	Brain Respo	2012	PLoS ONE	10.1371/journal.pone.		longitudina	Korean	English
Morgan-Shor	Second lang	2012	PLoS ONE	10.1371/jo	Morgan-Sh	longitudina	English	Brocanto2
Morgan-Shor	Explicit and	2012	Journal of Co	10.1162/jo	Morgan-Sh	longitudina	English	Brocanto2
Foucart, A., Fl	Can late L2	2012	Journal of M	10.1016/j.jml.2011.07.		cross-sectic	English	French
Foucart, A., Fl	Can late L2	2012	Journal of M	10.1016/j.jml.2011.07.		cross-sectic	English	French
Foucart, A., Fl	Can late L2	2012	Journal of M	10.1016/j.jml.2011.07.		cross-sectic	English	French
Nickels, S., Op	ERPs show	2013	Neuroscience	10.1016/j.neulet.2013.		cross-sectic	German	English
Dallas, A., De	An Event-R	2013	Language Lea	10.1111/lang.12026		cross-sectic	Mandarin	English
Bowden, H.W	Native-like	2013	Neuropsycho	10.1016/j.neuropsych		cross-sectic	English	Spanish
Tanner, D., M	Individual d	2013	Bilingualism	10.1017/S1366728912		cross-sectic	English	German
Batterink, L., I	Implicit and	2013	Journal of Co	10.1162/jocn_a_00354		cross-sectic	English	Mini-Frenc
Gabriele, A., F	Examining s	2013	Linguistic Ap	10.1075/lab.3.2.04gab		cross-sectic	English	Spanish
Martin, C.D.,	Bilinguals r	2013	Journal of M	10.1016/j.jml.2013.08.		cross-sectic	Spanish	English
Xue, J., Yang,	An ERP stuc	2013	Neuroscience	10.1016/j.neulet.2012.		cross-sectic	Mandarin	English
Alemán Bañó	Morphosyn	2014	Second Lang	10.1177/02676583135		cross-sectic	English	Spanish
Xue, J., Yang,	Chinese-En	2014	Cognitive Pro	10.1007/s10339-014-0		cross-sectic	Mandarin	English
Reichle, R.V.,	Processing	2014	Studies in Se	10.1017/S0272263113		cross-sectic	English	French
Rossi, E., Krol	Clitic prono	2014	Neuropsycho	10.1016/j.neuropsych		cross-sectic	English	Spanish
Foucart, A., M	Can bilingu	2014	Journal of Ex	10.1037/a0036756		cross-sectic	French	Spanish
Dussias, P.E.	Processing	2014	Revista Espar	10.1075/resla.27.1.03c		cross-sectic	English	Spanish
Lemhöfer, K.,	Idiosyncrati	2014	Journal of Co	10.1162/jocn_a_00609		cross-sectic	German	Dutch
Carrasco-Orti	Phonologic	2014	Front Psycho	10.3389/fpsyg.2014.00		cross-sectic	Spanish	French
Carrasco-Orti	Phonologic	2014	Front Psycho	10.3389/fpsyg.2014.00		cross-sectic	Spanish	French
Deng, T., Zho	Input-base	2015	Brain Resear	10.1016/j.brainres.201		longitudina	Mandarin	English
Elgort, I., Perf	Contextual	2015	Language, Co	10.1080/23273798.201		cross-sectic	NA	English
Paulmann, S.,	Neurophysi	2015	Bilingual Figu	10.1017/CBO9781139		cross-sectic	Arabic	English
Foucart, A., M	Integration	2015	Acta Psychol	10.1016/j.actpsy.2015.		cross-sectic	French	Spanish
Xue, J., Marm	The linguist	2015	Brain Resear	10.1016/j.brainres.201		cross-sectic	Mandarin	English
Foucart, A., G	Does the sp	2015	Neuropsycho	10.1016/j.neuropsych		cross-sectic	English, Ge	Spanish
Díaz, B., Erdo	Electrophys	2016	Frontiers in P	10.3389/fpsyg.2016.00		cross-sectic	Spanish	Basque
Deng, T., Shi,	Morpholog	2016	Journal of Ne	10.1016/j.jneuroling.2(		cross-sectic	Mandarin	English
Kaan, E., Kirkl	Prediction a	2016	Bilingualism	10.1017/S1366728914		cross-sectic	Dutch	English
Chang, X., Wa	Influence o	2016	Journal of Ps	10.1007/s10936-014-9		cross-sectic	Mandarin	English
Foucart, A., R	Discourse c	2016	Brain and Lar	10.1016/j.bandl.2016.(		cross-sectic	Spanish	English
Bañón, J.A., M	Morpholog	2017	Journal of Ex	10.1037/xlr	Gabriele et	cross-sectic	English	Spanish
Bañón, J.A., M	Morpholog	2017	Journal of Ex	10.1037/xlr	Gabriele et	cross-sectic	English	Spanish
Carrasco-Ortí	The role of	2017	International	10.1016/j.ijpsycho.201		cross-sectic	Spanish	French
Carrasco-Ortí	The role of	2017	International	10.1016/j.ijpsycho.201		cross-sectic	Spanish	French
Ito, A., Martir	On predicti	2017	Journal of Ex	10.1037/xlm0000315		cross-sectic	Spanish	English
Ito, A., Martir	On predicti	2017	Journal of Ex	10.1037/xlm0000315		cross-sectic	Spanish	English
Romero-Riva	World knov	2017	Bilingualism	10.1017/S1366728915		cross-sectic	Italian, Fre	Spanish
Qi, Z., Beach,	Native-lang	2017	Neuropsycho	10.1016/j.neuropsych		cross-sectic	English	Mini-langua
Jessen A, Fest	Native and	2017	Journal of Ps	10.1007/s10936-017-9		cross-sectic	German	English
Dekydtspotte	ERP Correla	2017	Proceedings of the 41st Annual Bost			cross-sectic	English	French
Bañón, J.A., F	Using event	2018	PLoS ONE	10.1371/jo	Aleman-Ba	cross-sectic	English	Spanish

Gosselke Bert	Neural proc	2018	Journal of Ne	10.1016/j.jneuroling.2(	cross-sectic	German	Swedish
Faretta-Stute	The interpla	2018	Second Langu	10.1177/0267658316	longitudina	English	Spanish
Wang, Q.	Neural mec	2018	Chinese Jour	10.1515/cjal-2018-000	cross-sectic	Mandarin	English
Nickels, S., St	Prosody–sy	2018	Second Langu	10.1177/0267658316	cross-sectic	German	English
Liang, L., Wer	Gender cor	2018	Journal of Ne	10.1016/j.jneuroling.2(	cross-sectic	Mandarin	English
Grey, S., Sanz	Bilingual an	2018	Bilingualism	10.1017/S1366728917	longitudina	Mandarin	Brocanto2
Deng, T., Che	Input Traini	2019	Journal of Ps	10.1007/s10936-019-0	cross-sectic	Mandarin	English
Hed, A., Schr	Neural corr	2019	Mental Lexic	10.1075/ml.17018.hed	longitudina	Dutch, Engl	Swedish
Andersson, A.	Language b	2019	Bilingualism	10.1017/S1366728918	cross-sectic	German	Swedish
Jessen, A., Fe	Reanalysing	2019	Second Langu	10.1177/0267658317	cross-sectic	German	English
Xu, X., Pan, M	How refere	2019	Second Langu	10.1177/0267658318	cross-sectic	Mandarin	English
Zheng, X., Ler	The “semar	2019	Neuropsychc	10.1016/j.neuropsychc	cross-sectic	German	Dutch
Grey, S., Schu	Processing	2019	Bilingualism	10.1017/S1366728918	cross-sectic	Dutch	English
Mickan, A., Le	Tracking sy	2019	Journal of Co	10.1162/jocn_a_0152	cross-sectic	German	Dutch
Esfandiari, L.,	Research p	2020	Basic and Cli	10.32598/BCN.11.6.24	cross-sectic	Persian	English
Son, G.	Morpheme	2020	Brain Science	10.3390/brainsci1011(	cross-sectic	Korean	German
Fromont, L.A.	Growing Ra	2020	Brain and Lar	10.1016/j.bandl.2020.1	cross-sectic	English	French
Lemhöfer, K.,	Syntactic pr	2020	Journal of Ex	10.1037/xlm0000895	cross-sectic	German	Dutch
Lemhöfer, K.,	Syntactic pr	2020	Journal of Ex	10.1037/xlm0000895	cross-sectic	German	Dutch
Lemhöfer, K.,	Syntactic pr	2020	Journal of Ex	10.1037/xlm0000895	cross-sectic	German	Dutch

TL GENUS	TL FAMILY	L1 GENUS	L1 FAMILY	TARGET LE	TARGET FE	CONTRAST	FINAL SUBJ	FS PER CON
Romance	Indo-Europ	German	Indo-Europ	morphosyn	number an	native-non	22	3.666667
Artificial	Artificial	German	Indo-Europ	morphosyn	gender agr	training: ex	14	3.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	det-noun g	native-non	16	4
Romance	Indo-Europ	German	Indo-Europ	morphosyn	noun-adj g	native-non	14	3.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	adj-noun g	native-non	14	3.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	auxiliary-ge	training: lo	20	5
German	Indo-Europ	Korean	Korean	morphosyn	verb tense	L1s	32	8
Artificial	Artificial	German	Indo-Europ	syntax	word order	training: ex	9	4.5
Artificial	Artificial	German	Indo-Europ	syntax	word order	training: ex	14	3.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	noun-adj g	native-non	14	3.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	adj-noun g	native-non	14	3.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	noun-predi	native-non	14	3.5
German	Indo-Europ	German	Indo-Europ	(morpho)sy	prosodic-sy	native-non	20	5
German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantic c	native-non	20	5
Romance	Indo-Europ	German	Indo-Europ	semantics,	semantic c	native-non	14	3.5
German	Indo-Europ	German	Indo-Europ	morphosyn	subject-ver	native-non	13	6.5
Romance	Indo-Europ	German	Indo-Europ	morphosyn	det-noun a	native-non	42	7.333333
Romance	Indo-Europ	German	Indo-Europ	morphosyn	number an	native-non	25	4.166667
German	Indo-Europ	Romance	Indo-Europ	semantics	semantic c	native-non	19	4.75
German	Indo-Europ	Chinese	Sino-Tibeta	morphosyn	subject-verb agreemen		19	3.166667
Romance	Indo-Europ	German	Indo-Europ	morphosyn	noun-adj a	native-non	26	2.888889
German	Indo-Europ	Chinese	Sino-Tibeta	semantics	temporal s	native-non	24	6
Romance	Indo-Europ	German	Indo-Europ	syntax-disc	focus struc	native-non	12	6
Romance	Indo-Europ	German	Indo-Europ	morphosyn	gender and	native-non	21	5.25
Romance	Indo-Europ	Romance	Indo-Europ	semantics	semantic c	native-non	18	9
Romance	Indo-Europ	German	Indo-Europ	semantics	semantic c	native-non	18	4.5
German	Indo-Europ	German	Indo-Europ	morphosyn	det-noun n	native-non	29	7.25
Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	subject-ver	native-non	15	5
Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	singular su	native-non	15	5
German	Indo-Europ	Chinese	Sino-Tibeta	morphosyn	subject-ver	training	19	4.75
German	Indo-Europ	NA	NA	semantics	semantic c	proficiency	10	2.5
German	Indo-Europ	Semitic	Afro-Asiatic	syntax-sem	verb-prepo	native-non	10	3
Romance	Indo-Europ	Romance	Indo-Europ	pragmatics	pragmatic c	native-non	24	6
German	Indo-Europ	Chinese	Sino-Tibeta	semantics	body-object interactio		17	4.25
Romance	Indo-Europ	German	Indo-Europ	semantics,	semantic c	native-non	29	9.666667
Basque	Basque	Romance	Indo-Europ	morphosyn	verb agreer	proficiency	13	2.6
German	Indo-Europ	Chinese	Sino-Tibeta	morphosyn	derived wo	proficiency	18	9
German	Indo-Europ	German	Indo-Europ	syntax	noun ellips	native-non	19	4.75
German	Indo-Europ	Chinese	Sino-Tibeta	syntax, sem	passive stru	proficiency	20	2.5
German	Indo-Europ	Romance	Indo-Europ	semantics-p	semantic a	native-non	24	8
Romance	Indo-Europ	German	Indo-Europ	morphosyn	number ag	native-non	22	1.833333
Romance	Indo-Europ	German	Indo-Europ	morphosyn	gender agr	native-non	22	1.833333
Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	noun-adjec	native-non	16	8
Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	noun-adjec	native-non	16	4
German	Indo-Europ	Romance	Indo-Europ	semantics	semantic c	consistency,	23	5.75
German	Indo-Europ	Romance	Indo-Europ	semantics	semantic c	consistency,	24	6
Romance	Indo-Europ	Romance	Indo-Europ	semantics-p	pragmatic c	native-non	17	5.666667
Artificial	Artificial	German	Indo-Europ	semantics,	semantic c	native-non	38	9.5
German	Indo-Europ	German	Indo-Europ	syntax	filler gap s	native-non	21	5.25
Romance	Indo-Europ	German	Indo-Europ	syntax-disc	anaphora r	native-non	16	4
Romance	Indo-Europ	German	Indo-Europ	morphosyn	gender and	native-non	18	3

German	Indo-Europ	German	Indo-Europ	(morpho)sy	morphosyn	native-non	23	5.75
Romance	Indo-Europ	German	Indo-Europ	syntax	word order	context: im	17	8.5
German	Indo-Europ	Chinese	Sino-Tibeta	semantics	metaphors	native-non	30	7.5
German	Indo-Europ	German	Indo-Europ	(morpho)sy	prosodic-sy	native-non	39	9.75
German	Indo-Europ	Chinese	Sino-Tibeta	syntax-disc	reflexive pr	native-non	16	8
Artificial	Artificial	Chinese	Sino-Tibeta	syntax	word order	monolingua	13	6.5
German	Indo-Europ	Chinese	Sino-Tibeta	morphosyn	subject-ver	training: str	14	3.5
German	Indo-Europ	German, Rc	Indo-Europ	(morpho)sy	morphosyntactic stem		19	4.75
German	Indo-Europ	German	Indo-Europ	syntax	word order	native-non	14	3.5
German	Indo-Europ	German	Indo-Europ	syntax, sem	direct obje	native-non	21	10.5
German	Indo-Europ	Chinese	Sino-Tibeta	semantics-p	NP referen	native-non	26	3.25
German	Indo-Europ	German	Indo-Europ	semantics	semantic c	native-non	61	30.5
German	Indo-Europ	German	Indo-Europ	(morpho)sy	pronoun form, speaker		25	3.125
German	Indo-Europ	German	Indo-Europ	syntax	word order	native-non	19	4.75
German	Indo-Europ	Iranian	Indo-Europ	morphosyn	regular pas	proficiency	10	1.666667
German	Indo-Europ	Korean	Korean	morphosyn	plural noun	proficiency	11	2.75
Romance	Indo-Europ	German	Indo-Europ	syntax, sem	syntactic ca	native-non	40	10
German	Indo-Europ	German	Indo-Europ	morphosyn	det-noun	gender agree	22	5.5
German	Indo-Europ	German	Indo-Europ	morphosyn	det-noun	gender agree	21	5.25
German	Indo-Europ	German	Indo-Europ	morphosyn	det-noun	gender agree	21	5.25

PROFICIEN	PRO MEAS	AO	WM	CONTEXT C	EXPERIMEN	STIMULI	PEPRESENTA	TASK
98/100	questionna	20		immersion	120	20	visual	AJT
				lab training	96	24	auditory	AJT
95.2/100	questionnaire, grammar test, DELF			immersion	96	24	visual	AJT
95.8/100	questionnaire, grammar test, DELF			immersion	96	24	visual	AJT
94.4/100	questionnaire, grammar test, DELF			immersion	96	24	visual	AJT
				lab training	128	32	visual	AJT
	questionnaire, cloze test			immersion	72	36	visual	AJT
				lab training	80	40	auditory	AJT
				lab training	80	40	auditory	AJT
94.3/100	questionna	13.4		immersion	192	48	visual	AJT
94.3/100	questionna	13.4		immersion	192	48	visual	AJT
94.3/100	questionna	13.4		immersion	192	48	visual	AJT
>75/100	questionna	11.7		instructed	160	40	auditory	AJT
-2.20 (z scc	questionna	12.1	alphabet sp	immersion	60	15	visual	AJT
2.4/3	questionna	12.4		immersion	120	30	visual	AJT
				immersion	60	30	visual	AJT
				lab training	240	40	visual	AJT
				instructed	240	40	visual	AJT
7.6/10	questionna	10		immersion	80	20	visual	comprehen
7.07/10	questionna	>9.5		immersion	180	30	visual	AJT
44/50	questionna	>11		immersion	360	40	visual	AJT
6.9/10	questionnaire			instructed	120	30	visual	AJT
7.7/10	questionna	14.75		instructed	100	50	visual	AJT
8.3/10	questionna	>14		instructed	192	48	visual	AJT
15.8/20	questionna	14		immersion	52	26	visual	comprehen
32/50	questionnaire, DELE, verbal fluenc			immersion	140	35	visual	AJT
5/7	questionna	19.2		immersion	160,64	80,32	visual	comprehen
4/6	questionna	16.8		immersion	90	30	visual	AJT
4.2/6	questionna	23.6		immersion	90	30	visual	AJT
38.36/50	questionna	12.16		instructed	320	40	visual	comprehen
9860 word	questionna	9	O-span test	immersion	120	30	visual	semantic re
81/100	questionna	8		immersion	74	36	visual	comprehen
15.8/20	questionna	13.7		immersion	160	40	visual	AJT
7.58/10	questionnaire			instructed	96	24	visual	AJT
4.95, 83/10	questionna	13		immersion	120	3	auditory	comprehen
2.28/4	questionna	24.76		immersion	240	48	visual	AJT
70.5/100, 3	questionna	>10		instructed	80	40	visual	comprehen
90.1/100, 7	questionna	10	backward a	instructed	160	40	visual	AJT
	questionna	11		instructed	224	28	visual	AJT
6.17/7, 77.4	questionnaire, language test			instructed	138	46	visual	AJT
43/50	questionna	14		immersion	240	20	visual	AJT
43/50	questionna	14		immersion	240	20	visual	AJT
4.35/7	questionna	15		instructed	96	48	visual	AJT
4.35/7	questionna	15		instructed	192	48	visual	AJT
8.2/10	questionna	11		immersion	160	40	visual	comprehen
7.8/10	questionna	10.3		immersion	160	40	visual	comprehen
5.93/7, 87/	questionna	19.23		immersion	120	40	auditory	comprehen
				lab training	160	40	auditory	AJT
39.9/50	questionna	10.3		instructed	96	24	visual	comprehen
47.5/50	questionna	>10		immersion	200	50	visual	comprehen
43-50/50	questionna	14.27		immersion	240	40	visual	AJT

	questionna	>10		immersion	120	30	auditory	sentence b
Baseline: 4	questionna	13.06	O-span task	instructed	120	60	visual	AJT
	questionnaire			instructed	160	40	visual	semantic ju
	questionna	11.8		instructed	160	40	auditory	AJT
4.9/7	questionnaire, TEM-4			instructed	80	40	visual	AJT
				lab training	80	40	auditory	AJT
2.92/7, 38.(	questionna	12.07		lab training	160	40	visual	comprehen
A1-B2	questionna	>20		immersion	120	30	auditory	word recog
8.93/10	questionna	21.5		immersion	320	80	visual	AJT
39.9/50	questionna	10.3		instructed	96	48	visual	comprehen
78.7/100	questionna	>10		instructed	240	30	visual	comprehen
3.47/5, 68.2	questionna	>10	reading spa	immersion	120	60	visual	AJT
7.92/10, 42	questionna	10.56		instructed	240	30	auditory	comprehen
3.67/5, 70.2	questionna	>10		immersion	50, 60	25, 30	visual	AJT
	questionna	>15		instructed	240	40	visual	AJT
	questionna	>19		immersion	56	14	visual	AJT
39.65/100,	questionna	12.5	backward a	immersion	320	80	visual	AJT
5.06/7, 74.4	questionna	20.1		immersion	136	34	visual	comprehen
4.79/7, 74.3	questionna	19.7		immersion	136	34	visual	comprehen
4.82/7, 72.2	questionna	20.2		immersion	136	34	visual	AJT

P2	LAN	N400	ANTERIOR	P600	LATE NEGA	LATE POSIT	FACTOR(S)
	in first position (det-noun) only, n			all violation		second position (noun-	proficiency, L1 transfer
		low proficiency all viola		high proficiency noun-det only			proficiency, kind of trai
				all violations			proficiency
							proficiency
							proficiency
		all violations					proficiency, kind of trai
				session 2 only all violations			proficiency (componen
	all violation	session 1 o	all violation	all violation	all violations stronger a		proficiency, kind of trai
		low proficie	high profici	high profici	high proficiency all viol		proficiency, kind of trai
				all violations			
		all violations					
							proficiency, L1 transfer
		superflous boundary		all violations more central			proficiency
		violations in no-gap sentences only					proficiency (no WM)
	word order	semantic violations		all violations			proficiency
				all violations			proficiency, individual
				successful learners all violations			proficiency (not kind of
				all violations number>gender			proficiency (not L1)
nsion task		unexpected nouns only					nonnativeness
		subject-verb agreemer		number agreement and auxiliary o			proficiency
				all violations (weaker demonstrati			proficiency (not L1)
spatial violations only		spatial violations only					L1
		contrastive focus>informative focus+positive shift at cleft					proficiency
				number and combined violations b			proficiency
nsion task		unexpected articles					
				object+ser	event+estar violation		proficiency
nsion task	number violations delayed but all			number violations but all violation			proficiency
				orally realized>silent violations			proficiency
				orally realized>silent violations			proficiency
nsion task				session 2 only all violations			structure-specific profi
elatedness judgment		unrelated probes					proficiency
nsion task		phrasal verbs reduced					proficiency
						LPP immor	proficiency
BOI words in rich sens		High BOI words in poor sensorimotor context					proficiency
nsion task		semantic violations more anterior				LPP inconsi	proficiency
		object-verb agreement		subject-ver	ergative case violations		L1 (not AO nor proficie
nsion task				pseudo-derived words			specific proficiency
				"of" violati	all violations		proficiency
passive sentence mode		double violations only		syntactic and double violations str			proficiency>L1
					intermediately related		proficiency?
				number>ge	all violations		proficiency
				number>ge	all violations		proficiency
		all violations					
		gender overlap noun violations only					proficiency, L1
nsion task		implausible unrelated>implausible related					
nsion task		implausible semantically unrelated>implausib				LPC form-re	proficiency
nsion task		world knowledge violations and ur				world knowledge viola	proficiency
		semantic violations str		syntactic violations in subjects witl			individual neural profil
nsion task	long lasting	unexpected arguments		filled-gap distributed			proficiency
nsion task			anterior positivity	N-complement structures		early matching pronoun	
	all number	agreement violations		all violations within-phrase>across			proficiency

oundary decision task		mid-distributed word accent only with increas		proficiency
	negative-dominant gro	positive-do	negative-dominant gro	proficiency, individual r
dgment task	metaphors>literal, Eng	LPC metaphors>literal, English>Chi		proficiency
CPS with increasing pr	detached noun in supe	disambiguating verb in no-bounda		proficiency (not L1)
		gender pronoun violation		proficiency
		at session 1 and 2 violations		proficiency, bilingualisr
sion task		all violations		structure-specific profi
gnition	PrAN tone onset inreasing from session 1 to session 2 (more for acce			proficiency
	all violations right-lateralized	higher proficiency all violations		proficiency, L1
sion task	at V implausible fillers	at disambiguating regions all violations		plausible>implaus
so, and>although, full stop at pron	Nref stronger than natives at pronouns in so, a			nonnativeness
		semantic violations only but also ir		nonnativeness
sion task	semantic vi	Nref pronoun violations native-accented only		nonnativeness and unf
		violations no-conflict>conflict conc		proficiency, language d
	past tense and word order violatio	all violations		proficiency
	regular plu	regular plural nouns vi	regular plural nouns violations	proficiency
	all violations	sustained n	semantic and double violations, sy	daily usage, proficiency
sion task				proficiency, input relial
sion task				proficiency, input relial
		subjective violations only		proficiency, input relial

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ıt), L1 (latency)

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neural profile

f training)

iciency

ɛncy for features absent in the L1

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s instead

neural profile

m
iciency

sible fillers

familiarity with the accent
distance

y, WM (not AO)
bility
bility
bility

AUTHORS	TITLE	YEAR	JOURNAL	DOI	CROSS-REF DESIGN	MEMBERS	L1
Dowens, M.G	Morphosyn	2010	Journal of Co	10.1162/jocn.2009.21304		native spea	Spanish
Morgan-Shor	Second lan	2010	Language Le	10.1111/j.1467-9922.2009.00554.		explicit trai	English
Foucart, A., Fl	Grammatic	2011	Bilingualism	10.1017/S136672891000012X		native spea	French
Foucart, A., Fl	Grammatic	2011	Bilingualism	10.1017/S136672891000012X		native spea	French
Foucart, A., Fl	Grammatic	2011	Bilingualism	10.1017/S136672891000012X		native spea	French
Citron, F.M.M	Mass count	2011	Neuroscience	10.1016/j.neulet.2010.10.038		long phase	German
White, E.J., G	Brain Respo	2012	PLoS ONE	10.1371/journal.pone.0052318		L1	Mandarin
Morgan-Shor	Second lan	2012	PLoS ONE	10.1371/journal.pone.0032974		explicit trai	English
Morgan-Shor	Explicit and	2012	Journal of Co	10.1162/jocn_a_00119		explicit trai	English
Foucart, A., Fl	Can late L2	2012	Journal of M	10.1016/j.jml.2011.07.007		native spea	French
Foucart, A., Fl	Can late L2	2012	Journal of M	10.1016/j.jml.2011.07.007		native spea	French
Foucart, A., Fl	Can late L2	2012	Journal of M	10.1016/j.jml.2011.07.007		native spea	French
Nickels, S., Op	ERPs show	2013	Neuroscience	10.1016/j.neulet.2013.10.019		native spea	English
Dallas, A., De	An Event-R	2013	Language Le	10.1111/lang.12026		native spea	English
Bowden, H.W	Native-like	2013	Neuropsycho	10.1016/j.neuropsychologia.2013.		native spea	Spanish
Bowden, H.W	Native-like	2013	Neuropsycho	10.1016/j.neuropsychologia.2013.		low proficie	English
Tanner, D., M	Individual d	2013	Bilingualism	10.1017/S1366728912000302		native spea	German
Tanner, D., M	Individual d	2013	Bilingualism	10.1017/S1366728912000302		low proficie	English
Batterink, L., I	Implicit and	2013	Journal of Co	10.1162/jocn_a_00354		native spea	French
Batterink, L., I	Implicit and	2013	Journal of Co	10.1162/jocn_a_00354		explicit trai	English
Gabriele, A., F	Examining s	2013	Linguistic Ap	10.1075/lab.3.2.04gab		native spea	Spanish
Gabriele, A., F	Examining s	2013	Linguistic Ap	10.1075/lab.3.2.04gab		intermedia	English
Gabriele, A., F	Examining s	2013	Linguistic Ap	10.1075/lab.3.2.04gab		low proficie	English
Martin, C.D.,	Bilinguals r	2013	Journal of M	10.1016/j.jml.2013.08.001		native spea	English
Xue, J., Yang,	An ERP stud	2013	Neuroscience	10.1016/j.neulet.2012.11.045			
Alemán Bañó	Morphosyn	2014	Second Lang	10.1177/0267658313515671		native spea	Spanish
Xue, J., Yang,	Chinese-En	2014	Cognitive Pro	10.1007/s10339-014-0621-5		native spea	Mandarin
Reichle, R.V.,	Processing	2014	Studies in Se	10.1017/S0272263113000594		native spea	French
Reichle, R.V.,	Processing	2014	Studies in Se	10.1017/S0272263113000594		low proficie	English
Rossi, E., Krol	Clitic prono	2014	Neuropsycho	10.1016/j.neuropsychologia.2014.		native spea	Spanish
Foucart, A., M	Can bilingu	2014	Journal of Ex	10.1037/a0036756		native spea	Spanish
Foucart, A., M	Can bilingu	2014	Journal of Ex	10.1037/a0036756		early bilingu	Catalan
Dussias, P.E.	Processing	2014	Revista Espa	10.1075/resla.27.1.03dus		native spea	Spanish
Dussias, P.E.	Processing	2014	Revista Espa	10.1075/resla.27.1.03dus		low proficie	English
Lemhöfer, K.,	Idiosyncrati	2014	Journal of Co	10.1162/jocn_a_00609		native spea	Dutch
Carrasco-Orti	Phonologic	2014	Front Psycho	10.3389/fpsyg.2014.00888		native spea	French
Carrasco-Orti	Phonologic	2014	Front Psycho	10.3389/fpsyg.2014.00888		native spea	French
Deng, T., Zho	Input-base	2015	Brain Resear	10.1016/j.brainres.2015.03.039		non-specifi	Mandarin
Elgort, I., Perf	Contextual	2015	Language, Co	10.1080/23273798.2014.942673		low proficie	NA
Paulmann, S.,	Neurophysi	2015	Bilingual Figu	10.1017/CBO9781139342100.013		native spea	English
Foucart, A., M	Integration	2015	Acta Psychol	10.1016/j.actpsy.2015.09.009		native spea	Spanish
Xue, J., Marm	The linguist	2015	Brain Resear	10.1016/j.brainres.2015.03.050			
Foucart, A., G	Does the sp	2015	Neuropsycho	10.1016/j.neuropsychologia.2015.		native spea	Spanish
Díaz, B., Erdo	Electrophys	2016	Frontiers in P	10.3389/fpsyg.2016.00133		early bilingu	Spanish
Deng, T., Shi,	Morpholog	2016	Journal of Ne	10.1016/j.jneuroling.2015.09.001		low proficie	Mandarin
Kaan, E., Kirkl	Prediction a	2016	Bilingualism	10.1017/S1366728914000844		native spea	English
Chang, X., Wa	Influence o	2016	Journal of Ps	10.1007/s10936-014-9319-1		intermedia	Mandarin
Foucart, A., R	Discourse c	2016	Brain and La	10.1016/j.bandl.2016.09.001		native spea	English
Bañón, J.A., M	Morpholog	2017	Journal of Ex	10.1037/xlm0000394		native spea	Spanish
Carrasco-Ortí	The role of	2017	International	10.1016/j.ijpsycho.2017.04.008		native spea	French
Carrasco-Ortí	The role of	2017	International	10.1016/j.ijpsycho.2017.04.008		native spea	French

Ito, A., Martir	On predicti	2017	Journal of Ex	10.1037/xlm0000315		
Romero-Riva	World knov	2017	Bilingualism	10.1017/S1366728915000905	native spea	Spanish
Qi, Z., Beach,	Native-lang	2017	Neuropsychc	10.1016/j.neuropsychologia.2016.	native spea	English
Jessen A, Fest	Native and	2017	J Psycholingu	10.1007/s10936-017-9496-9	native spea	English
Dekydtspotte	ERP Correla	2017	Proceedings of the 41st Annual Boston Universi		native spea	French
Bañón, J.A., F	Using event	2018	PLoS ONE	10.1371/journal.pone.0200791	low proficie	English
Gosselke Bert	Neural proc	2018	Journal of Ne	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Faretta-Stute	The interpla	2018	Second Langu	10.1177/0267658316684903	immersion	English
Wang, Q.	Neural mec	2018	Chinese Jour	10.1515/cjal-2018-0004	low proficie	Mandarin
Nickels, S., St	Prosody–sy	2018	Second Langu	10.1177/0267658316649998	native spea	English
Nickels, S., St	Prosody–sy	2018	Second Langu	10.1177/0267658316649998	L1	Mandarin,
Liang, L., Wer	Gender cor	2018	Journal of Ne	10.1016/j.jneuroling.2017.08.001	native spea	Mandarin
Grey, S., Sanz	Bilingual an	2018	Bilingualism	10.1017/S1366728917000426	monolingua	English
Deng, T., Chei	Input Traini	2019	Journal of Ps	10.1007/s1 Deng et al. 2015	non-specifi	Mandarin
Hed, A., Schre	Neural corr	2019	Mental Lexic	10.1075/ml.17018.hed		
Andersson, A.	Language b	2019	Bilingualism	10.1017/S1366728918000573	native spea	Swedish
Andersson, A.	Language b	2019	Bilingualism	10.1017/S1366728918000573	L1	English
Jessen, A., Fe	Reanalysing	2019	Second Langu	10.1177/0267658317753030	native spea	English
Xu, X., Pan, M	How refere	2019	Second Langu	10.1177/0267658318756948	native spea	English
Zheng, X., Ler	The "semar	2019	Neuropsychc	10.1016/j.neuropsychologia.2019.	native spea	Dutch
Grey, S., Schu	Processing	2019	Bilingualism	10.1017/S1366728918000937		
Mickan, A., Le	Tracking sy	2019	Journal of Co	10.1162/jocn_a_01528	native spea	Dutch
Mickan, A., Le	Tracking sy	2019	Journal of Co	10.1162/jocn_a_01528	intermedia	German
Mickan, A., Le	Tracking sy	2019	Journal of Co	10.1162/jocn_a_01528	low proficie	German
Esfandiari, L.,	Research p	2020	Basic and Cli	10.32598/BCN.11.6.2401.1	low proficie	Persian
Son, G.	Morpheme	2020	Brain Science	10.3390/brainsci10110866	low proficie	Korean
Fromont, L.A.	Growing Ra	2020	Brain and Lar	10.1016/j.bandl.2020.104770	native spea	French
Lemhöfer, K.,	Syntactic pr	2020	Journal of Ex	10.1037/xlm0000895		

TARGET LA	TL GENUS	TL FAMILY	L1 FAMILY	L1 GENUS	FINAL SUBJ	FS PER CON	PROFICIEN	AO	
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	23	3.833333			
Brocanto2	Artificial	Artificial	German	Indo-Europ	16	4			
French	Romance	Indo-Europ	Romance	Indo-Europ	16	4			
French	Romance	Indo-Europ	Romance	Indo-Europ	14	3.5			
French	Romance	Indo-Europ	Romance	Indo-Europ	14	3.5			
Mini-Italian	Romance	Indo-Europ	German	Indo-Europ	22	5.5			
English	German	Indo-Europ	Chinese	Sino-Tibetan					
Brocanto2	Artificial	Artificial	German	Indo-Europ	10	5			
Brocanto2	Artificial	Artificial	German	Indo-Europ	16	4			
French	Romance	Indo-Europ	Romance	Indo-Europ	14	3.5			
French	Romance	Indo-Europ	Romance	Indo-Europ	14	3.5			
French	Romance	Indo-Europ	Romance	Indo-Europ	14	3.5			
English	German	Indo-Europ	German	Indo-Europ	20	5			
English	German	Indo-Europ	German	Indo-Europ	19	4.75			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	15	3.75			
Spanish	Romance	Indo-Europ	German	Indo-Europ	16	4	1.1/3		14.1
German	German	Indo-Europ	German	Indo-Europ	13	6.5			
German	German	Indo-Europ	German	Indo-Europ	20	10			
Mini-Frenc	Romance	Indo-Europ	Romance	Indo-Europ	24	4			
Mini-Frenc	Romance	Indo-Europ	German	Indo-Europ	33	5.5			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	24	4			
Spanish	Romance	Indo-Europ	German	Indo-Europ	11	2.75		>11	
Spanish	Romance	Indo-Europ	German	Indo-Europ	11	2.75		>11	
English	German	Indo-Europ	German	Indo-Europ	19	4.75			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	24	2.666667			
Mandarin	Chinese	Sino-Tibeta	Chinese	Sino-Tibeta	24	6			
French	Romance	Indo-Europ	Romance	Indo-Europ	12	6			
French	Romance	Indo-Europ	German	Indo-Europ	12	6	5.36/10		16
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	18	4.5			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	18	9			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	18	9			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	24	6			
Spanish	Romance	Indo-Europ	German	Indo-Europ	24	6	17.4/50		
Dutch	German	Indo-Europ	German	Indo-Europ	21				
French	Romance	Indo-Europ	Romance	Indo-Europ	15	5			
French	Romance	Indo-Europ	Romance	Indo-Europ	15	5			
English	German	Indo-Europ	Chinese	Sino-Tibeta	18	4.5	38.17/50		12.22
English	German	Indo-European			14	3.5	6307 word		11.6
English	German	Indo-Europ	German	Indo-Europ	10	5			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	24	6			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	28	9.333333			
Basque	Basque	Basque	Romance	Indo-Europ	13	2.6	3.85/4		3.23
English	German	Indo-Europ	Chinese	Sino-Tibeta	18		57.06/100,	40.22/50	
English	German	Indo-Europ	German	Indo-Europ	19	4.75			
English	German	Indo-Europ	Chinese	Sino-Tibeta	20	2.5			
English	German	Indo-Europ	German	Indo-Europ	20	6.666667			
Spanish	Romance	Indo-Europ	Romance	Indo-Europ	27	2.25			
French	Romance	Indo-Europ	Romance	Indo-Europ	16	8			
French	Romance	Indo-Europ	Romance	Indo-Europ	16	4			

Spanish	Romance	Indo-Europ	Romance	Indo-Europ	17	5.666667		
English	German	Indo-Europ	German	Indo-Europ	38	9.5		
English	German	Indo-Europ	German	Indo-Europ	20	5		
French	Romance	Indo-Europ	Romance	Indo-Europ	15	3.75		
Spanish	Romance	Indo-Europ	German	Indo-Europ	18	3	12-23/50	
Swedish	German	Indo-Europ	German	Indo-Europ	23	5.75		
Spanish	Romance	Indo-Europ	German	Indo-Europ	13	6.5	Baseline: 4(	11.85
English	German	Indo-Europ	Chinese	Sino-Tibeta	30	7.5		
English	German	Indo-Europ	German	Indo-Europ	20	5		
English	German	Indo-Europ	Chinese	Sino-Tibeta	30	7.5		13.3
Mandarin	Chinese	Sino-Tibeta	Chinese	Sino-Tibeta	16	8		
Brocanto2	Artificial	Artificial	German	Indo-Europ	16	8		
English	German	Indo-Europ	Chinese	Sino-Tibeta	14	3.5	2.71/7, 38/	12.21
Swedish	German	Indo-Europ	German	Indo-Europ	20			
Swedish	German	Indo-Europ	German	Indo-Europ	14	3.5	8.66/10	23.2
English	German	Indo-Europ	German	Indo-Europ	20	10		
English	German	Indo-Europ	German	Indo-Europ	23	2.875		
Dutch	German	Indo-Europ	German	Indo-Europ	24	12		
Dutch	German	Indo-Europ	German	Indo-Europ	22	5.5		
Dutch	German	Indo-Europ	German	Indo-Europ	23	5.75	3.31/5, 66.09/100, 75.4	
Dutch	German	Indo-Europ	German	Indo-Europ	18	4.5	3.23/5, 61.91/100, 73.2	
English	German	Indo-Europ	Iranian	Indo-Europ	10	1.666667		>15
German	German	Indo-Europ	Korean	Korean	11			>19
French	Romance	Indo-Europ	Romance	Indo-Europ	35	8.75		

CONTEXT	C	P2	LAN	N400	ANTERIOR	P600	LATE NEGA	LATE POSIT	FACTOR(S)
			all violations			all violations			
			low proficie	high proficiency noun-a		high profici	high proficiency noun-adj only		
						all violations			
						all violations			
						all violations			
				all violations		all violations			
						session 2 only all violations delayed			
			right anteri	at fist sessi	all violation	all violation	all violations stronger at retention		
			high proficiency right anterior posi			high proficiency all violations			
						all violations stronger			
						all violations			
						all violations			
				superflous boundary		all violations			proficiency
				all violations					
			word order	semantic violations			word order violations		
instructed			positivity w	semantic violations distributed					
						all violations			
				negative-dominant all		positive dominant all violations			
			all violations			all violations stronger			
						successful learners all violations			
						all violations			
instructed						number violations			
instructed									
				all unexpected items stronger					
						all violations			
		all conditions		all conditions but differ		all conditions but different distributions			
			contrastive focus>informative focus			+positive shift at clefted noun			
		positive shift at clefted noun							
						all violations			
				unexpected article					
				unexpected article					
						object+ser	event+estar violation		
instructed									
			number violations			all violations			
						orally realized>silent violations			
						orally realized>silent violations			
immersion instructed, lab training									
				phrasal verbs reduced					
				immoral sentences				LPP immoral sentences	
				semantic violations				LPP inconsistent speak	
						all verb agr	ergative case violation		
instructed				pseudo-derived words			pseudo-derived words		
						"of" violations earlier onset			
		passive sentence mode		all conditions literal>fr		syntactic and double violations			
				causally unrelated>intermediately related>highly related					
			all violations			all violation	all violations		
						all violations			
						all violations			

				world knowledge violations and unknown sentences	
				semantic violations	syntactic violations (long lasting)
				unexpected arguments	filled gap fronto-central
				Nref N-complement structures early matching pronouns	
					all number agreement violations
				reduced maPrAN high-p	mismatched trials
immersion	instructed			negativity-dominant gr	positivity-dominant group at follov proficiency,
				metaphors>literal, Eng	LPC metaphors>literal, English>Chinese, stron
	CPS			detached noun in supe	disambiguating verb in garden-path condition
immersion	CPS with increasing pro			detached noun in supe	detached noun in superfluous boundary condi
		gender pronoun violations			gender pronoun violations
					at session 2 violations (preceded by anterior p
lab training, instructed					
		all violations			all violations
immersion	instructed	anterior positivity all violations			higher proficiency all violations
				at V implausible fillers	at disambiguating regions all viola nonnativen
	at pronouns			Nref at pronouns NP2->NP1-biased sentences in so and fu	
					implausible sentences semantic violations
					all violations
immersion	instructed				violations no-conflict>conflict condition
immersion	instructed			violations no-conflict>conflict con	violations no-conflict only
				past tense and word or	correct and incorrect paste tense delayed
immersion	instructed	regular plu		irregular plural nouns	violations
				all violations but modu	all violations but modulated

s

er

, procedural memory, WM
ger than high proficiency
s and detached noun in superfluous boundary condition
ition weaker

positivity)

ness
ull stop conditions, although>and, so, full stop

AUTHORS	TITLE	YEAR	JOURNAL	DOI	CROSS-REF	DESIGN	MEMBERS	L1
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Dowens, M	Morphosyn	2010	Journal of (	10.1162/jocn.2009.21304			native spea	Spanish
Foucart, A.,	Grammatic	2011	Bilingualisn	10.1017/S136672891000012X			native spea	French
Foucart, A.,	Grammatic	2011	Bilingualisn	10.1017/S136672891000012X			native spea	French
Foucart, A.,	Grammatic	2011	Bilingualisn	10.1017/S136672891000012X			native spea	French
Foucart, A.,	Can late L2	2012	Journal of I	10.1016/j.jml.2011.07.007			native spea	French
Foucart, A.,	Can late L2	2012	Journal of I	10.1016/j.jml.2011.07.007			native spea	French
Foucart, A.,	Can late L2	2012	Journal of I	10.1016/j.jml.2011.07.007			native spea	French
Nickels, S.,	ERPs show	2013	Neuroscien	10.1016/j.neulet.2013.10.019			native spea	English
Nickels, S.,	ERPs show	2013	Neuroscien	10.1016/j.neulet.2013.10.019			native spea	English
Dallas, A., [	An Event-R(	2013	Language L	10.1111/lang.12026			native spea	English
Bowden, H.	Native-like	2013	Neuropsycl	10.1016/j.neuropsychologia.2013.			native spea	Spanish
Bowden, H.	Native-like	2013	Neuropsycl	10.1016/j.neuropsychologia.2013.			native spea	Spanish
Bowden, H.	Native-like	2013	Neuropsycl	10.1016/j.neuropsychologia.2013.			native spea	Spanish
Tanner, D.,	Individual c	2013	Bilingualisn	10.1017/S1366728912000302			native spea	German
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Batterink, L	Implicit anc	2013	Journal of (	10.1162/jocn_a_00354			native spea	French
Gabriele, A	Examining :	2013	Linguistic A	10.1075/lab.3.2.04gab			native spea	Spanish
Gabriele, A	Examining :	2013	Linguistic A	10.1075/lab.3.2.04gab			native spea	Spanish
Martin, C.D	Bilinguals r(	2013	Journal of I	10.1016/j.jml.2013.08.001			native spea	English
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671			native spea	Spanish
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671			native spea	Spanish
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671			native spea	Spanish
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671			native spea	Spanish
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671			native spea	Spanish
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671			native spea	Spanish
Xue, J., Yan	Chinese-En	2014	Cognitive P	10.1007/s10339-014-0621-5			native spea	Mandarin
Xue, J., Yan	Chinese-En	2014	Cognitive P	10.1007/s10339-014-0621-5			native spea	Mandarin
Xue, J., Yan	Chinese-En	2014	Cognitive P	10.1007/s10339-014-0621-5			native spea	Mandarin
Reichle, R.\	Processing	2014	Studies in S	10.1017/S0272263113000594			native spea	French
Rossi, E., Kr	Clitic prono	2014	Neuropsycl	10.1016/j.neuropsychologia.2014.			native spea	Spanish
Rossi, E., Kr	Clitic prono	2014	Neuropsycl	10.1016/j.neuropsychologia.2014.			native spea	Spanish
Foucart, A.,	Can bilingu	2014	Journal of E	10.1037/a0036756			native spea	Spanish
Dussias, P.E	Processing	2014	Revista Esp	10.1075/resla.27.1.03dus			native spea	Spanish
Dussias, P.E	Processing	2014	Revista Esp	10.1075/resla.27.1.03dus			native spea	Spanish
Lemhöfer, I	Idiosyncrat	2014	Journal of (	10.1162/jocn_a_00609			native spea	Dutch
Lemhöfer, I	Idiosyncrat	2014	Journal of (	10.1162/jocn_a_00609			native spea	Dutch
Lemhöfer, I	Idiosyncrat	2014	Journal of (	10.1162/jocn_a_00609			native spea	Dutch
Carrasco-O	Phonologic	2014	Front Psych	10.3389/fpsyg.2014.00888			native spea	French

Carrasco-O	Phonologic	2014	Front Psych	10.3389/fpsyg.2014.00888	native spea	French
Paulmann,	Neurophysi	2015	Bilingual Fi	10.1017/CBO9781139342100.013	native spea	English
Foucart, A.,	Integration	2015	Acta Psych	10.1016/j.actpsy.2015.09.009	native spea	Spanish
Foucart, A.,	Integration	2015	Acta Psych	10.1016/j.actpsy.2015.09.009	native spea	Spanish
Foucart, A.,	Does the s	2015	Neuropsych	10.1016/j.neuropsychologia.2015.	native spea	Spanish
Foucart, A.,	Does the s	2015	Neuropsych	10.1016/j.neuropsychologia.2015.	native spea	Spanish
Kaan, E., Ki	Prediction	2016	Bilingualism	10.1017/S1366728914000844	native spea	English
Foucart, A.,	Discourse c	2016	Brain and L	10.1016/j.bandl.2016.09.001	native spea	English
Bañón, J.A.	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea	Spanish
Bañón, J.A.	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea	Spanish
Bañón, J.A.	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea	Spanish
Bañón, J.A.	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea	Spanish
Bañón, J.A.	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea	Spanish
Bañón, J.A.	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea	Spanish
Carrasco-O	The role of	2017	Internation	10.1016/j.ijpsycho.2017.04.008	native spea	French
Carrasco-O	The role of	2017	Internation	10.1016/j.ijpsycho.2017.04.008	native spea	French
Romero-Ri	World know	2017	Bilingualism	10.1017/S1366728915000905	native spea	Spanish
Qi, Z., Beac	Native-lang	2017	Neuropsych	10.1016/j.neuropsychologia.2016.	native spea	English
Qi, Z., Beac	Native-lang	2017	Neuropsych	10.1016/j.neuropsychologia.2016.	native spea	English
Qi, Z., Beac	Native-lang	2017	Neuropsych	10.1016/j.neuropsychologia.2016.	native spea	English
Jessen A, F	Native and	2017	J Psycholing	10.1007/s10936-017-9496-9	native spea	English
Jessen A, F	Native and	2017	J Psycholing	10.1007/s10936-017-9496-9	native spea	English
Dekydtspot	ERP Correla	2017	Proceedings of the 41st Annual Boston Univer		native spea	French
Gosselke B	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Gosselke B	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Gosselke B	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Gosselke B	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Gosselke B	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Gosselke B	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea	Swedish
Nickels, S.,	Prosody–sy	2018	Second Lan	10.1177/0267658316649998	native spea	English
Nickels, S.,	Prosody–sy	2018	Second Lan	10.1177/0267658316649998	native spea	English
Nickels, S.,	Prosody–sy	2018	Second Lan	10.1177/0267658316649998	native spea	English
Liang, L., W	Gender cor	2018	Journal of N	10.1016/j.jneuroling.2017.08.001	native spea	Mandarin
Liang, L., W	Gender cor	2018	Journal of N	10.1016/j.jneuroling.2017.08.001	native spea	Mandarin
Andersson,	Language b	2019	Bilingualism	10.1017/S1366728918000573	native spea	Swedish
Andersson,	Language b	2019	Bilingualism	10.1017/S1366728918000573	native spea	Swedish
Jessen, A.,	Reanalysing	2019	Second Lan	10.1177/0267658317753030	native spea	English
Jessen, A.,	Reanalysing	2019	Second Lan	10.1177/0267658317753030	native spea	English
Xu, X., Pan,	How refere	2019	Second Lan	10.1177/0267658318756948	native spea	English
Xu, X., Pan,	How refere	2019	Second Lan	10.1177/0267658318756948	native spea	English
Zheng, X., L	The “sema	2019	Neuropsych	10.1016/j.neuropsychologia.2019.	native spea	Dutch
Mickan, A.,	Tracking sy	2019	Journal of C	10.1162/jocn_a_01528	native spea	Dutch
Fromont, L.	Growing Ra	2020	Brain and L	10.1016/j.bandl.2020.104770	native spea	French
Fromont, L.	Growing Ra	2020	Brain and L	10.1016/j.bandl.2020.104770	native spea	French

TL	TLGEN	TLFAM	L1GEN	L1FAM	TARGET LE	TLEVEL	TARGET FE	TFEAT
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj n	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj n	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj g	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	adj-noun g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	adj-noun g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-predi	gender agre
English	German	Indo-Europ	Indo-Europ	German	syntax-pros	interface	prosodic-sy	other
English	German	Indo-Europ	Indo-Europ	German	syntax-pros	interface	prosodic-sy	other
English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic cc	semantic cc
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc	semantic cc
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order	word order
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order	word order
German	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	subject-ver	verb agreer
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n	number agr
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g	gender agre
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	subject-ver	verb agreer
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order	word order
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n	number agr
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g	gender agre
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	subject-ver	verb agreer
Mini-Frenc	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order	word order
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agi	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agr	gender agre
English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic cc	semantic cc
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj n	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-predi	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj g	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-predi	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g	gender agre
Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	semantics	semantics	temporal s	other
Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	semantics	semantics	temporal s	other
Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	semantics	semantics	temporal s	other
French	Romance	Indo-Europ	Indo-Europ	Romance	syntax-disc	interface	focus struc	other
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agr	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agi	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc	semantic cc
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc	semantic cc
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc	semantic cc
Dutch	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	det-noun n	number agr
Dutch	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	det-noun n	number agr
Dutch	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	det-noun g	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	subject-ver	verb agreer

French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	singular sul	verb agreer
English	German	Indo-Europ	Indo-Europ	German	syntax-sem	interface	verb-prepo	other
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	pragmatics	pragmatics	pragmatic c	other
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	pragmatics	pragmatics	pragmatic c	other
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc	semantic cc
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	pragmatics	pragmatics	pragmatic c	other
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	noun ellipsi	other
English	German	Indo-Europ	Indo-Europ	German	semantics-p	interface	semantic ar	other
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr	number agr
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agr	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agr	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agr	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adjec	gender agre
French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adjec	gender agre
Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics-p	interface	semantic-p	other
English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic cc	semantic cc
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	syntactic ca	other
English	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	subject-ver	verb agreer
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	filler gap se	other
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	filler gap se	other
French	Romance	Indo-Europ	Indo-Europ	Romance	syntax-disc	interface	anaphora r	other
Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	gender agr	gender agre
Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	gender agr	gender agre
Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	gender agr	gender agre
Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	number agr	number agr
Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	number agr	number agr
Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	number agr	number agr
English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	metaphors	other
English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	metaphors	other
English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	metaphors	other
Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	(morpho)sy	interface	prosodic-sy	other
Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	(morpho)sy	interface	prosodic-sy	other
Swedish	German	Indo-Europ	Indo-Europ	German	syntax-disc	interface	reflexive pr	other
Swedish	German	Indo-Europ	Indo-Europ	German	syntax-disc	interface	reflexive pr	other
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	word order	word order
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	word order	word order
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	direct obje	other
English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	direct obje	other
Dutch	German	Indo-Europ	Indo-Europ	German	syntax-disc	interface	NP referen	other
Dutch	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic cc	semantic cc
French	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order	word order
French	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order	word order

PRESENTA1	TASK	COMPONE	P2	LAN	N400	ANTERIOR	P600	LATE NEGA
visual	AJT	LAN		all violations				
visual	AJT	P600					all violations	
visual	AJT	LAN		all violations				
visual	AJT	P600					all violations	
visual	AJT	LAN		all violations				
visual	AJT	P600					all violations	
visual	AJT	LAN		all violations				
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	stronger
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
auditory	AJT	N400			superflous boundary		all violations	
auditory	AJT	P600			superflous boundary		all violations	
visual	AJT	N400			all violations			
visual	AJT	N400			semantic violations			
visual	AJT	LAN		word order violations				word order
visual	AJT	LNEG		word order violations				word order
visual	AJT	P600					all violations	
visual	AJT	LAN		all violations			all violations	stronger
visual	AJT	LAN		all violations			all violations	stronger
visual	AJT	LAN		all violations			all violations	stronger
visual	AJT	LAN		all violations			all violations	stronger
visual	AJT	P600		all violations			all violations	stronger
visual	AJT	P600		all violations			all violations	stronger
visual	AJT	P600		all violations			all violations	stronger
visual	AJT	P600		all violations			all violations	stronger
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	comprehen	N400			all unexpected items		stronger	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	AJT	P2	all conditions		all conditions but differ		all conditions but differ	
visual	AJT	N400	all conditions		all conditions but differ		all conditions but differ	
visual	AJT	P600	all conditions		all conditions but differ		all conditions but differ	
visual	AJT	LAN		contrastive focus>informative focus+positive shift at cleft				
visual	AJT	P600					all violations	
visual	AJT	P600					all violations	
visual	comprehen	N400			unexpected article			
visual	AJT	P600					object+ser	event+esta
visual	AJT	LNEG					object+ser	event+esta
visual	comprehen	LAN		number violations			all violations	
visual	comprehen	P600		number violations			all violations	
visual	comprehen	P600					all violations	
visual	AJT	P600					orally realized>silent vi	

visual	AJT	P600			orally realized>silent vi	
visual	comprehen	N400		phrasal verbs reduced		
visual	AJT	N400		immoral sentences		
visual	AJT	LPOS		immoral sentences		
auditory	comprehen	N400		semantic violations		
auditory	comprehen	LPOS				
visual	AJT	P600			"of" violations earlier c	
visual	AJT	N400		causally unrelated>intermediately related>hig		
visual	AJT	LAN	all violations		all violation	all violation
visual	AJT	P600	all violations		all violation	all violation
visual	AJT	LNEG	all violations		all violation	all violation
visual	AJT	LAN	all violations		all violation	all violation
visual	AJT	P600	all violations		all violation	all violation
visual	AJT	LNEG	all violations		all violation	all violation
visual	AJT	P600			all violations	
visual	AJT	P600			all violations	
auditory	comprehen	N400		world knowledge violations and unknown sen		
auditory	AJT	N400		semantic violations		
auditory	AJT	P600			syntactic violations (lor	
auditory	AJT	P600			syntactic violations (lor	
visual	comprehen	N400		unexpected arguments	filled gap fronto-centra	
visual	comprehen	P600		unexpected arguments	filled gap fronto-centra	
visual	comprehen	ANEG		Nref N-complement structures ear		
auditory	sentence b	N400		reduced ma	PrAN high-p	mismatched trials
auditory	sentence b	ANEG		reduced ma	PrAN high-p	mismatched trials
auditory	sentence b	P600		reduced ma	PrAN high-p	mismatched trials
auditory	sentence b	N400		reduced ma	PrAN high-p	mismatched trials
auditory	sentence b	ANEG		reduced ma	PrAN high-p	mismatched trials
auditory	sentence b	P600		reduced ma	PrAN high-p	mismatched trials
auditory	AJT	P2	CPS	detached noun in supe	disambiguating verb in	
auditory	AJT	N400	CPS	detached noun in supe	disambiguating verb in	
auditory	AJT	P600	CPS	detached noun in supe	disambiguating verb in	
visual	AJT	LAN	gender pronoun violations		gender pronoun violati	
visual	AJT	P600	gender pronoun violations		gender pronoun violati	
visual	AJT	LAN	all violations		all violations	
visual	AJT	P600	all violations		all violations	
visual	comprehen	N400		at V implausible fillers	at disambiguating regio	
visual	comprehen	P600		at V implausible fillers	at disambiguating regio	
visual	comprehen	P2	at pronouns	Nref at pronouns NP2->NP1-biased		
visual	comprehen	ANEG	at pronouns	Nref at pronouns NP2->NP1-biased		
visual	AJT	P600			implausible sentences	
visual	AJT	P600			all violations	
visual	AJT	N400		all violations but modu	all violations but modu	
visual	AJT	P600		all violations but modu	all violations but modu	

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LPP immoral sentences

LPP inconsistent speaker

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AUTHORS	TITLE	YEAR	JOURNAL	DOI	CROSS-REFERENCE	DESIGN	MEMBER
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Dowens, M.G	Morphosyn	2010.00	Journal of Co	10.1162/jocn.2009.21304		cross-sectional	
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudinal	
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudinal	
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudinal	
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudina	explicit traini
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudina	explicit traini
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudina	explicit traini
Morgan-Shor	Second lang	2010.00	Language Le	10.1111/j.1467-9922.2009.00554.		longitudina	explicit traini
Foucart, A., F	Grammatic	2011.00	Bilingualism	10.1017/S136672891000012X		cross-sectional	
Foucart, A., F	Grammatic	2011.00	Bilingualism	10.1017/S136672891000012X		cross-sectional	
Foucart, A., F	Grammatic	2011.00	Bilingualism	10.1017/S136672891000012X		cross-sectional	
Citron, F.M.M	Mass count	2011.00	Neuroscienc	10.1016/j.neulet.2010.10.038		cross-sectional	
Citron, F.M.M	Mass count	2011.00	Neuroscienc	10.1016/j.neulet.2010.10.038		cross-sectional	
Citron, F.M.M	Mass count	2011.00	Neuroscienc	10.1016/j.neulet.2010.10.038		cross-sectic	long phases
Citron, F.M.M	Mass count	2011.00	Neuroscienc	10.1016/j.neulet.2010.10.038		cross-sectic	long phases
Citron, F.M.M	Mass count	2011.00	Neuroscienc	10.1016/j.neulet.2010.10.038		cross-sectic	long phases
White, E.J., G	Brain Respo	2012.00	PLoS ONE	10.1371/journal.pone.0052318		longitudinal	
White, E.J., G	Brain Respo	2012.00	PLoS ONE	10.1371/journal.pone.0052318		longitudinal	
White, E.J., G	Brain Respo	2012.00	PLoS ONE	10.1371/journal.pone.0052318		longitudina	L1
White, E.J., G	Brain Respo	2012.00	PLoS ONE	10.1371/journal.pone.0052318		longitudinal	
Foucart, A., F	Can late L2	2012.00	Journal of M	10.1016/j.jml.2011.07.007		cross-sectional	
Foucart, A., F	Can late L2	2012.00	Journal of M	10.1016/j.jml.2011.07.008		cross-sectional	
Foucart, A., F	Can late L2	2012.00	Journal of M	10.1016/j.jml.2011.07.009		cross-sectional	
Morgan-Shor	Explicit and	2012.00	Journal of Co	10.1162/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Explicit and	2012.00	Journal of Co	10.1162/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Explicit and	2012.00	Journal of Co	10.1162/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Explicit and	2012.00	Journal of Co	10.1162/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Explicit and	2012.00	Journal of Co	10.1162/jo	Morgan-Short et al. 20	longitudina	explicit traini
Morgan-Shor	Explicit and	2012.00	Journal of Co	10.1162/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/jo	Morgan-Short et al. 20	longitudinal	
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/journal.pone.0032974			explicit traini
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/journal.pone.0032974			explicit traini
Morgan-Shor	Second lang	2012.00	PLoS ONE	10.1371/journal.pone.0032974			explicit traini
Xue, J., Yang,	An ERP stu	2013.00	Neuroscienc	10.1016/j.neulet.2012.11.045		cross-sectional	
Xue, J., Yang,	An ERP stu	2013.00	Neuroscienc	10.1016/j.neulet.2012.11.045		cross-sectional	
Xue, J., Yang,	An ERP stu	2013.00	Neuroscienc	10.1016/j.neulet.2012.11.045		cross-sectional	
Dallas, A., De	An Event-R	2013.00	Language Le	10.1111/lang.12026		cross-sectional	
Martin, C.D.,	Bilinguals r	2013.00	Journal of M	10.1016/j.jml.2013.08.001		cross-sectional	
Nickels, S., O	ERPs show	2013.00	Neuroscienc	10.1016/j.neulet.2013.10.019		cross-sectional	
Nickels, S., O	ERPs show	2013.00	Neuroscienc	10.1016/j.neulet.2013.10.019		cross-sectional	
Gabriele, A., F	Examining	2013.00	Linguistic Ap	10.1075/lab.3.2.04gab		cross-sectional	

Gabriele, A.,	Examining	2013.00	Linguistic Ap	10.1075/lab.3.2.04gab	cross-sectic	intermediate
Gabriele, A.,	Examining	2013.00	Linguistic Ap	10.1075/lab.3.2.04gab	cross-sectic	low proficien
Gabriele, A.,	Examining	2013.00	Linguistic Ap	10.1075/lab.3.2.04gab	cross-sectional	
Gabriele, A.,	Examining	2013.00	Linguistic Ap	10.1075/lab.3.2.04gab	cross-sectic	intermediate
Gabriele, A.,	Examining	2013.00	Linguistic Ap	10.1075/lab.3.2.04gab	cross-sectic	low proficien
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectional	
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectional	
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectional	
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectional	
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectic	explicit traini
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectic	explicit traini
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectic	explicit traini
Batterink, L.,	Implicit anc	2013.00	Journal of Co	10.1162/jocn_a_00354	cross-sectic	explicit traini
Tanner, D., M	Individual c	2013.00	Bilingualism	10.1017/S1366728912000302	cross-sectional	
Tanner, D., M	Individual c	2013.00	Bilingualism	10.1017/S1366728912000302		low proficien
Tanner, D., M	Individual c	2013.00	Bilingualism	10.1017/S1366728912000302		low proficien
Bowden, H.W	Native-like	2013.00	Neuropsycho	10.1016/j.neuropsychologia.2013.	cross-sectional	
Bowden, H.W	Native-like	2013.00	Neuropsycho	10.1016/j.neuropsychologia.2013.	cross-sectional	
Bowden, H.W	Native-like brain processing of syntax can be attained by university foreign language learners					
Bowden, H.W	Native-like	2013.00	Neuropsycho	10.1016/j.neuropsychologia.2013.09.004		low proficien
Bowden, H.W	Native-like brain processing of syntax can be attained by university foreign language learners					
Foucart, A., M	Can bilingu	2014.00	Journal of Ex	10.1037/a0036756	cross-sectional	
Xue, J., Yang,	Chinese-En	2014.00	Cognitive Prc	10.1007/s10339-014-0621-5	cross-sectional	
Xue, J., Yang,	Chinese-En	2014.00	Cognitive Prc	10.1007/s10339-014-0621-5	cross-sectional	
Rossi, E., Krol	Clitic prono	2014.00	Neuropsycho	10.1016/j.neuropsychologia.2014.	cross-sectional	
Rossi, E., Krol	Clitic prono	2014.00	Neuropsycho	10.1016/j.neuropsychologia.2014.	cross-sectional	
Lemhöfer, K.,	Idiosyncrat	2014.00	Journal of Co	10.1162/jocn_a_00609	cross-sectional	
Lemhöfer, K.,	Idiosyncrat	2014.00	Journal of Co	10.1162/jocn_a_00609	cross-sectional	
Lemhöfer, K.,	Idiosyncrat	2014.00	Journal of Co	10.1162/jocn_a_00609	cross-sectional	
Lemhöfer, K.,	Idiosyncrat	2014.00	Journal of Co	10.1162/jocn_a_00609	cross-sectional	
Alemán Bañó	Morphosyn	2014.00	Second Lang	10.1177/0267658313515671	cross-sectional	
Alemán Bañó	Morphosyn	2014.00	Second Lang	10.1177/0267658313515671	cross-sectional	
Alemán Bañó	Morphosyn	2014.00	Second Lang	10.1177/0267658313515671	cross-sectional	
Alemán Bañó	Morphosyn	2014.00	Second Lang	10.1177/0267658313515671	cross-sectional	
Alemán Bañó	Morphosyn	2014.00	Second Lang	10.1177/0267658313515671	cross-sectional	
Alemán Bañó	Morphosyn	2014.00	Second Lang	10.1177/0267658313515671	cross-sectional	
Carrasco-Orti	Phonologic	2014.00	Front Psycho	10.3389/fpsyg.2014.00888	cross-sectional	
Carrasco-Orti	Phonologic	2014.00	Front Psycho	10.3389/fpsyg.2014.00888	cross-sectional	
Reichle, R.V.,	Processing	2014.00	Studies in Se	10.1017/S0272263113000594	cross-sectional	
Reichle, R.V.,	Processing	2014.00	Studies in Se	10.1017/S0272263113000594	cross-sectic	low proficien
Dussias, P.E.	Processing	2014.00	Revista Espa	10.1075/resla.27.1.03dus	cross-sectional	
Dussias, P.E.	Processing	2014.00	Revista Espa	10.1075/resla.27.1.03dus	cross-sectional	
Dussias, P.E.	Processing	2014.00	Revista Espa	10.1075/resla.27.1.03dus	cross-sectic	low proficien
Elgort, I., Perf	Contextual	2015.00	Language, Cc	10.1080/23273798.2014.942673	cross-sectional	
Elgort, I., Perf	Contextual	2015.00	Language, Cc	10.1080/23273798.2014.942673	cross-sectic	low proficien
Foucart, A., G	Does the sp	2015.00	Neuropsycho	10.1016/j.neuropsychologia.2015.	cross-sectional	
Foucart, A., G	Does the sp	2015.00	Neuropsycho	10.1016/j.neuropsychologia.2015.	cross-sectional	
Foucart, A., G	Does the sp	2015.00	Neuropsycho	10.1016/j.neuropsychologia.2015.	cross-sectional	
Foucart, A., G	Does the sp	2015.00	Neuropsycho	10.1016/j.neuropsychologia.2015.	cross-sectional	
Foucart, A., G	Does the sp	2015.00	Neuropsycho	10.1016/j.neuropsychologia.2015.	cross-sectional	
Foucart, A., G	Does the sp	2015.00	Neuropsycho	10.1016/j.neuropsychologia.2015.	cross-sectional	
Deng, T., Zho	Input-base	2015.00	Brain Resear	10.1016/j.brainres.2015.03.039	longitudinal	

Deng, T., Zho	Input-base	2015.00	Brain Resear	10.1016/j.brainres.2015.03.039	longitudinal	
Deng, T., Zho	Input-base	2015.00	Brain Resear	10.1016/j.brainres.2015.03.039	longitudina	non-specific
Foucart, A., M	Integration	2015.00	Acta Psychol	10.1016/j.actpsy.2015.09.009	cross-sectional	
Paulmann, S.,	Neurophysi	2015.00	Bilingual Figu	10.1017/CBO9781139342100.013	cross-sectional	
Xue, J., Marm	The linguist	2015.00	Brain Resear	10.1016/j.brainres.2015.03.050	cross-sectional	
Xue, J., Marm	The linguist	2015.00	Brain Resear	10.1016/j.brainres.2015.03.050	cross-sectional	
Foucart, A., R	Discourse c	2016.00	Brain and La	10.1016/j.bandl.2016.09.001	cross-sectional	
Díaz, B., Erdo	Electrophys	2016.00	Frontiers in P	10.3389/fpsyg.2016.00133	cross-sectional	
Díaz, B., Erdo	Electrophys	2016.00	Frontiers in P	10.3389/fpsyg.2016.00133	cross-sectional	
Díaz, B., Erdo	Electrophys	2016.00	Frontiers in P	10.3389/fpsyg.2016.00133	cross-sectional	
Díaz, B., Erdo	Electrophys	2016.00	Frontiers in P	10.3389/fpsyg.2016.00133	cross-sectional	
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectional	
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectional	
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectional	
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectional	
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectional	
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectic	intermediate
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectic	intermediate
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectic	intermediate
Chang, X., Wa	Influence o	2016.00	Journal of Ps	10.1007/s10936-014-9319-1	cross-sectional	
Deng, T., Shi,	Morpholog	2016.00	Journal of Ne	10.1016/j.jneuroling.2015.09.001	cross-sectional	
Deng, T., Shi,	Morpholog	2016.00	Journal of Ne	10.1016/j.jneuroling.2015.09.001	cross-sectic	low proficien
Deng, T., Shi,	Morpholog	2016.00	Journal of Ne	10.1016/j.jneuroling.2015.09.001	cross-sectic	low proficien
Kaan, E., Kirkl	Prediction a	2016.00	Bilingualism	10.1017/S1366728914000844	cross-sectional	
Kaan, E., Kirkl	Prediction a	2016.00	Bilingualism	10.1017/S1366728914000844	cross-sectional	
Dekydtspotte	ERP Correla	2017.00	Proceedings of the 41st Annual Boston Universi		cross-sectional	
Bañón, J.A., M	Morpholog	2017.00	Journal of Ex	10.1037/xlm0000394	cross-sectional	
Bañón, J.A., M	Morpholog	2017.00	Journal of Ex	10.1037/xlm0000394	cross-sectional	
Bañón, J.A., M	Morpholog	2017.00	Journal of Ex	10.1037/xlm0000394	cross-sectional	
Bañón, J.A., M	Morpholog	2017.00	Journal of Ex	10.1037/xlm0000394	cross-sectional	
Jessen A, Fest	Native and	2017.00	Journal of Ps	10.1007/s10936-017-9496-9	cross-sectional	
Jessen A, Fest	Native and	2017.00	Journal of Ps	10.1007/s10936-017-9496-9	cross-sectional	
Jessen A, Fest	Native and	2017.00	Journal of Ps	10.1007/s10936-017-9496-9	cross-sectional	
Qi, Z., Beach,	Native-lang	2017.00	Neuropsycho	10.1016/j.neuropsychologia.2016.	cross-sectional	
Qi, Z., Beach,	Native-lang	2017.00	Neuropsycho	10.1016/j.neuropsychologia.2016.	cross-sectional	
Qi, Z., Beach,	Native-lang	2017.00	Neuropsycho	10.1016/j.neuropsychologia.2016.	cross-sectional	
Ito, A., Martin	On predicti	2017.00	Journal of Ex	10.1037/xlm0000315	cross-sectional	
Ito, A., Martin	On predicti	2017.00	Journal of Ex	10.1037/xlm0000315	cross-sectional	
Ito, A., Martin	On predicti	2017.00	Journal of Ex	10.1037/xlm0000315	cross-sectional	
Carrasco-Ortí	The role of	2017.00	International	10.1016/j.ijpsycho.2017.04.008	cross-sectional	
Carrasco-Ortí	The role of	2017.00	International	10.1016/j.ijpsycho.2017.04.008	cross-sectional	
Romero-Rivas	World know	2017.00	Bilingualism	10.1017/S1366728915000905	cross-sectional	
Romero-Rivas	World know	2017.00	Bilingualism	10.1017/S1366728915000905	cross-sectional	
Romero-Rivas	World know	2017.00	Bilingualism	10.1017/S1366728915000905	cross-sectional	
Romero-Rivas	World know	2017.00	Bilingualism	10.1017/S1366728915000905	cross-sectional	
Romero-Rivas	World know	2017.00	Bilingualism	10.1017/S1366728915000905	cross-sectional	
Romero-Rivas	World know	2017.00	Bilingualism	10.1017/S1366728915000905	cross-sectional	
Grey, S., Sanz	Bilingual an	2018.00	Bilingualism	10.1017/S1366728917000426	longitudinal	
Grey, S., Sanz	Bilingual an	2018.00	Bilingualism	10.1017/S1366728917000426	longitudinal	
Grey, S., Sanz	Bilingual an	2018.00	Bilingualism	10.1017/S1366728917000426	longitudina	monolinguals
Grey, S., Sanz	Bilingual an	2018.00	Bilingualism	10.1017/S1366728917000426	longitudina	monolinguals
Liang, L., Wer	Gender cor	2018.00	Journal of Ne	10.1016/j.jneuroling.2017.08.001	cross-sectional	

Wang, Q.	Neural mec	2018.00	Chinese Jour	10.1515/cjal-2018-0004		cross-sectional	
Wang, Q.	Neural mec	2018.00	Chinese Jour	10.1515/cjal-2018-0004		cross-sectic	low proficien
Wang, Q.	Neural mec	2018.00	Chinese Jour	10.1515/cjal-2018-0004		cross-sectional	
Wang, Q.	Neural mec	2018.00	Chinese Jour	10.1515/cjal-2018-0004		cross-sectic	low proficien
Gosselke Bert	Neural proc	2018.00	Journal of Ne	10.1016/j.jneuroling.2017.09.001		cross-sectional	
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectional	
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectic	L1
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectic	L1
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectional	
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectic	L1
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectic	L1
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectional	
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectic	L1
Nickels, S., St	Prosody–sy	2018.00	Second Lang	10.1177/0267658316649998		cross-sectic	L1
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudinal	
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudinal	
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudinal	
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudinal	
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudina	immersion le
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudina	immersion le
Faretta-Stute	The interpl	2018.00	Second Lang	10.1177/0267658316684903		longitudina	immersion le
Bañón, J.A., F	Using event	2018.00	PLoS ONE	10.1371/jo	Aleman-Banon et al. 2(	cross-sectional	
Bañón, J.A., F	Using event	2018.00	PLoS ONE	10.1371/jo	Aleman-Banon et al. 2(	cross-sectional	
Bañón, J.A., F	Using event	2018.00	PLoS ONE	10.1371/jo	Aleman-Banon et al. 2(	cross-sectional	
Bañón, J.A., F	Using event	2018.00	PLoS ONE	10.1371/journal.pone.0200791		cross-sectic	low proficien
Bañón, J.A., F	Using event	2018.00	PLoS ONE	10.1371/journal.pone.0200791		cross-sectic	low proficien
Xu, X., Pan, M	How refere	2019.00	Second Lang	10.1177/0267658318756948		cross-sectional	
Xu, X., Pan, M	How refere	2019.00	Second Lang	10.1177/0267658318756948		cross-sectional	
Deng, T., Che	Input Traini	2019.00	Journal of Ps	10.1007/s10936-019-09628-z		cross-sectional	
Deng, T., Che	Input Traini	2019.00	Journal of Ps	10.1007/s1	Deng et al. 2015	cross-sectic	non-specific
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Hed, A., Schre	Neural corr	2019.00	Mental Lexic	10.1075/ml.17018.hed		longitudinal	
Grey, S., Schu	Processing	2019.00	Bilingualism	10.1017/S1366728918000937		cross-sectional	

Grey, S., Schu	Processing	2019.00	Bilingualism	10.1017/S1366728918000937	cross-sectional	
Jessen, A., Fel	Reanalysing	2019.00	Second Lang	10.1177/0267658317753030	cross-sectional	
Jessen, A., Fel	Reanalysing	2019.00	Second Lang	10.1177/0267658317753030	cross-sectional	
Zheng, X., Ler	The “semar	2019.00	Neuropsycho	10.1016/j.neuropsychologia.2019.	cross-sectional	
Mickan, A., Le	Tracking sy	2019.00	Journal of Co	10.1162/jocn_a_01528	cross-sectional	
Mickan, A., Le	Tracking sy	2019.00	Journal of Co	10.1162/jocn_a_01528	cross-sectic	intermediate
Mickan, A., Le	Tracking sy	2019.00	Journal of Co	10.1162/jocn_a_01528	cross-sectic	low proficien
Mickan, A., Le	Tracking sy	2019.00	Journal of Co	10.1162/jocn_a_01528	cross-sectic	low proficien
Andersson, A	Language b	2019.00	Bilingualism	10.1017/S1366728918000573	cross-sectional	
Andersson, A	Language b	2019.00	Bilingualism	10.1017/S1366728918000573	cross-sectional	
Andersson, A	Language b	2019.00	Bilingualism	10.1017/S1366728918000573	cross-sectic	L1
Fromont, L.A.	Growing Ra	2020.00	Brain and Lar	10.1016/j.bandl.2020.104770	cross-sectional	
Fromont, L.A.	Growing Ra	2020.00	Brain and Lar	10.1016/j.bandl.2020.104770	cross-sectional	
Fromont, L.A.	Growing Ra	2020.00	Brain and Lar	10.1016/j.bandl.2020.104770	cross-sectional	
Fromont, L.A.	Growing Ra	2020.00	Brain and Lar	10.1016/j.bandl.2020.104770	cross-sectional	
Fromont, L.A.	Growing Ra	2020.00	Brain and Lar	10.1016/j.bandl.2020.104770	cross-sectional	
Fromont, L.A.	Growing Ra	2020.00	Brain and Lar	10.1016/j.bandl.2020.104770	cross-sectional	
Son, G.	Morpheme	2020.00	Brain Science	10.3390/brainsci10110866	cross-sectional	
Son, G.	Morpheme	2020.00	Brain Science	10.3390/brainsci10110866	cross-sectional	
Son, G.	Morpheme	2020.00	Brain Science	10.3390/brainsci10110866	cross-sectional	
Son, G.	Morpheme	2020.00	Brain Science	10.3390/brainsci10110866	cross-sectic	low proficien
Son, G.	Morpheme	2020.00	Brain Science	10.3390/brainsci10110866	cross-sectic	low proficien
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectional	
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectional	
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectional	
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectional	
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectic	low proficien
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectic	low proficien
Esfandiari, L.,	Research pa	2020.00	Basic and Cli	10.32598/BCN.11.6.2401.1	cross-sectic	low proficien
Lemhöfer, K.,	Syntactic pı	2020.00	Journal of Ex	10.1037/xlm0000895	cross-sectional	
Lemhöfer, K.,	Syntactic pı	2020.00	Journal of Ex	10.1037/xlm0000895	cross-sectional	
Lemhöfer, K.,	Syntactic pı	2020.00	Journal of Ex	10.1037/xlm0000895	cross-sectional	

PROFICIENC\	L1	TL	TLGEN	TLFAM	L1GEN	L1FAM
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
low	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	German	French	Romance	Indo-Europea	German	Indo-Europea
high	German	French	Romance	Indo-Europea	German	Indo-Europea
high	German	French	Romance	Indo-Europea	German	Indo-Europea
low	German	Mini-Italian	Romance	Indo-Europea	German	Indo-Europea
high	German	Mini-Italian	Romance	Indo-Europea	German	Indo-Europea
low	German	Mini-Italian	Romance	Indo-Europea	German	Indo-Europea
low	German	Mini-Italian	Romance	Indo-Europea	German	Indo-Europea
high	German	Mini-Italian	Romance	Indo-Europea	German	Indo-Europea
low	Korean	English	German	Indo-Europea	Korean	Korean
intermediate	Korean	English	German	Indo-Europea	Korean	Korean
low	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	English	French	Romance	Indo-Europea	German	Indo-Europea
high	English	French	Romance	Indo-Europea	German	Indo-Europea
high	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
low	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Spanish	English	German	Indo-Europea	Romance	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea

intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	Mini-French	Romance	Indo-Europea	German	Indo-Europea
high	English	German	German	Indo-Europea	German	Indo-Europea
low	English	German	German	Indo-Europea	German	Indo-Europea
low	English	German	German	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	French	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	Spanish	French	Romance	Indo-Europea	Romance	Indo-Europea
intermediate	Spanish	French	Romance	Indo-Europea	Romance	Indo-Europea
high	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	NA	English	German	Indo-Europea	NA	NA
low	NA	English	German	Indo-Europea	NA	NA
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	German	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	Swedish	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	German	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	Swedish	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan

high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	French	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
high	Arabic	English	German	Indo-Europea	Semitic	Afro-Asiatic
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Spanish	English	German	Indo-Europea	Romance	Indo-Europea
intermediate	Spanish	Basque	Basque	Basque	Romance	Indo-Europea
intermediate	Spanish	Basque	Basque	Basque	Romance	Indo-Europea
intermediate	Spanish	Basque	Basque	Basque	Romance	Indo-Europea
intermediate	Spanish	Basque	Basque	Basque	Romance	Indo-Europea
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Dutch	English	German	Indo-Europea	German	Indo-Europea
high	Dutch	English	German	Indo-Europea	German	Indo-Europea
high	English	French	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
NA	English	Mini-language	NA	NA	German	Indo-Europea
NA	English	Mini-language	NA	NA	German	Indo-Europea
NA	English	Mini-language	NA	NA	German	Indo-Europea
high	Spanish	English	German	Indo-Europea	Romance	Indo-Europea
high	Spanish	English	German	Indo-Europea	Romance	Indo-Europea
high	Spanish	English	German	Indo-Europea	Romance	Indo-Europea
high	Spanish	French	Romance	Indo-Europea	Romance	Indo-Europea
high	Spanish	French	Romance	Indo-Europea	Romance	Indo-Europea
high	Italian	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
high	Italian	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
high	Italian	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
high	Italian	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
high	Italian	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
high	Italian	Spanish	Romance	Indo-Europea	Romance	Indo-Europea
low	Mandarin	Brocanto2	NA	NA	Chinese	Sino-Tibetan
high	Mandarin	Brocanto2	NA	NA	Chinese	Sino-Tibetan
low	English	Brocanto2	NA	NA	German	Indo-Europea
high	English	Brocanto2	NA	NA	German	Indo-Europea
intermediate	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan

high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	German	Swedish	German	Indo-Europea	German	Indo-Europea
NA	German	English	German	Indo-Europea	German	Indo-Europea
NA	Mandarin, (	English	German	Indo-Europea	Chinese	Sino-Tibetan
NA	Cantonese	English	German	Indo-Europea	Chinese	Sino-Tibetan
NA	German	English	German	Indo-Europea	German	Indo-Europea
NA	Mandarin, (	English	German	Indo-Europea	Chinese	Sino-Tibetan
NA	Cantonese	English	German	Indo-Europea	Chinese	Sino-Tibetan
NA	German	English	German	Indo-Europea	German	Indo-Europea
NA	Mandarin, (	English	German	Indo-Europea	Chinese	Sino-Tibetan
NA	Cantonese	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
intermediate	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
low	English	Spanish	Romance	Indo-Europea	German	Indo-Europea
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
high	Mandarin	English	German	Indo-Europea	Chinese	Sino-Tibetan
low	Dutch	Swedish	German	Indo-Europea	German	Indo-Europea
low	English	Swedish	German	Indo-Europea	German	Indo-Europea
low	Finnish	Swedish	German	Indo-Europea	Finnic	Uralic
low	German	Swedish	German	Indo-Europea	German	Indo-Europea
low	Russian	Swedish	German	Indo-Europea	Slavic	Indo-Europea
low	Italian	Swedish	German	Indo-Europea	Romance	Indo-Europea
low	Spanish	Swedish	German	Indo-Europea	Romance	Indo-Europea
intermediate	Dutch	Swedish	German	Indo-Europea	German	Indo-Europea
intermediate	English	Swedish	German	Indo-Europea	German	Indo-Europea
intermediate	Finnish	Swedish	German	Indo-Europea	Finnic	Uralic
intermediate	German	Swedish	German	Indo-Europea	German	Indo-Europea
intermediate	Russian	Swedish	German	Indo-Europea	Slavic	Indo-Europea
intermediate	Italian	Swedish	German	Indo-Europea	Romance	Indo-Europea
intermediate	Spanish	Swedish	German	Indo-Europea	Romance	Indo-Europea
intermediate	Dutch	Swedish	German	Indo-Europea	German	Indo-Europea
intermediate	English	Swedish	German	Indo-Europea	German	Indo-Europea
intermediate	Finnish	Swedish	German	Indo-Europea	Finnic	Uralic
intermediate	German	Swedish	German	Indo-Europea	German	Indo-Europea
intermediate	Russian	Swedish	German	Indo-Europea	Slavic	Indo-Europea
intermediate	Italian	Swedish	German	Indo-Europea	Romance	Indo-Europea
intermediate	Spanish	Swedish	German	Indo-Europea	Romance	Indo-Europea
high	Dutch	English	German	Indo-Europea	German	Indo-Europea

high	Dutch	English	German	Indo-Europea	German	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
high	German	English	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
high	German	Dutch	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
low	German	Dutch	German	Indo-Europea	German	Indo-Europea
low	German	Dutch	German	Indo-Europea	German	Indo-Europea
high	German	Swedish	German	Indo-Europea	German	Indo-Europea
high	German	Swedish	German	Indo-Europea	German	Indo-Europea
high	English	Swedish	German	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
low	English	French	Romance	Indo-Europea	German	Indo-Europea
high	Korean	German	German	Indo-Europea	Korean	Korean
high	Korean	German	German	Indo-Europea	Korean	Korean
high	Korean	German	German	Indo-Europea	Korean	Korean
low	Korean	German	German	Indo-Europea	Korean	Korean
low	Korean	German	German	Indo-Europea	Korean	Korean
high	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
high	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
high	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
high	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
low	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
low	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
low	Persian	English	German	Indo-Europea	Iranian	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea
intermediate	German	Dutch	German	Indo-Europea	German	Indo-Europea

TARGET LEVEL	TLEVEL	TARGET FEAT	TFEAT	CONTRAST
morphosyntax	morphosyntax	det-noun number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	noun-adj number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	noun-adj number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	noun-adj gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	noun-adj gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	gender agreement	gender agreement	training: explic
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	noun-adj gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	adj-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	auxiliary-gerund/infin	other	training: long-s
morphosyntax	morphosyntax	auxiliary-gerund/infin	other	training: long-s
morphosyntax	morphosyntax	auxiliary-gerund/infin	other	training: long-s
morphosyntax	morphosyntax	auxiliary-gerund/infin	other	training: long-s
morphosyntax	morphosyntax	auxiliary-gerund/infin	other	training: long-s
morphosyntax	morphosyntax	verb tense	other	L1s
morphosyntax	morphosyntax	verb tense	other	L1s
morphosyntax	morphosyntax	verb tense	other	L1s
morphosyntax	morphosyntax	verb tense	other	L1s
morphosyntax	morphosyntax	noun-adj gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	adj-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	noun-predicative adj	gender agreement	native-nonnati
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
syntax	syntax	word order	word order	training: explic
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	
morphosyntax	morphosyntax	number agreement	number agreement	
morphosyntax	morphosyntax	auxiliary omission	other	
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
syntax-prosody int	interface	prosodic-syntactic bo	other	native-nonnati
syntax-prosody int	interface	prosodic-syntactic bo	other	native-nonnati
morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati

morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati
morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	det-noun number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
syntax	syntax	word order	word order	native-nonnati
morphosyntax	morphosyntax	det-noun number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
syntax	syntax	word order	word order	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
syntax	syntax	word order	word order	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
syntax	syntax	word order	word order	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	temporal spatial meta	other	native-nonnati
semantics	semantics	temporal spatial meta	other	native-nonnati
morphosyntax	morphosyntax	gender agreement cli	gender agreement	native-nonnati
morphosyntax	morphosyntax	number agreement cl	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun number agr	number agreement	native-nonnati
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	native-nonnati
morphosyntax	morphosyntax	noun-adj number agr	number agreement	
morphosyntax	morphosyntax	noun-predicative adj	number agreement	
morphosyntax	morphosyntax	det-noun number agr	number agreement	
morphosyntax	morphosyntax	noun-adj gender agre	gender agreement	
morphosyntax	morphosyntax	noun-predicative adj	gender agreement	
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
morphosyntax	morphosyntax	singular subject-verb	verb agreement	native-nonnati
syntax-discourse i	interface	focus structure	other	native-nonnati
syntax-discourse i	interface	focus structure	other	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	proficiency lev
semantics	semantics	semantic consistency	semantic consistency	proficiency lev
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
pragmatics	pragmatics	pragmatic consistency	other	native-nonnati
pragmatics	pragmatics	pragmatic consistency	other	native-nonnati
pragmatics	pragmatics	pragmatic consistency	other	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	training

morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	training
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	training
pragmatics	pragmatics	pragmatic consistency	other	native-nonnati
syntax-semantics i	interface	verb-preposition cons	other	native-nonnati
semantics	semantics	body-object interactio	other	
semantics	semantics	body-object interactio	other	
semantics-pragma	interface	semantic and pragma	other	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	proficiency lev
morphosyntax	morphosyntax	object-verb agreemer	verb agreement	proficiency lev
morphosyntax	morphosyntax	ergative case	other	proficiency lev
morphosyntax	morphosyntax	ergative case	other	proficiency lev
syntax	syntax	passive structure	other	proficiency lev
syntax	syntax	passive structure	other	proficiency lev
syntax	syntax	passive structure	other	proficiency lev
semantics	semantics	semantic consistency	semantic consistency	proficiency lev
semantics	semantics	semantic consistency	semantic consistency	proficiency lev
syntax	syntax	passive structure	other	proficiency lev
syntax	syntax	passive structure	other	proficiency lev
syntax	syntax	passive structure	other	proficiency lev
semantics	semantics	semantic consistency	semantic consistency	proficiency lev
morphosyntax	morphosyntax	derived words in cont	other	proficiency lev
morphosyntax	morphosyntax	derived words in cont	other	proficiency lev
morphosyntax	morphosyntax	derived words in cont	other	proficiency lev
syntax	syntax	noun ellipsis	other	native-nonnati
syntax	syntax	noun ellipsis	other	native-nonnati
syntax-discourse i	interface	anaphora resolution	other	native-nonnati
morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati
morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
syntax	syntax	filler gap sentences	other	native-nonnati
syntax	syntax	filler gap sentences	other	native-nonnati
syntax	syntax	filler gap sentences	other	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	native-nonnati
syntax	syntax	syntactic category	other	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	
semantics	semantics	semantic consistency	semantic consistency	
semantics	semantics	semantic consistency	semantic consistency	
morphosyntax	morphosyntax	noun-adjective gende	gender agreement	native-nonnati
morphosyntax	morphosyntax	noun-adjective gende	gender agreement	native-nonnati
semantics-pragma	interface	pragmatic and seman	other	native-nonnati
semantics-pragma	interface	pragmatic and seman	other	native-nonnati
semantics-pragma	interface	pragmatic and seman	other	native-nonnati
semantics-pragma	interface	pragmatic and seman	other	native-nonnati
semantics-pragma	interface	pragmatic and seman	other	native-nonnati
semantics-pragma	interface	pragmatic and seman	other	native-nonnati
syntax	syntax	word order	word order	monolinguals-l
syntax	syntax	word order	word order	monolinguals-l
syntax	syntax	word order	word order	monolinguals-l
syntax	syntax	word order	word order	monolinguals-l
syntax-discourse i	interface	reflexive pronoun res	other	native-nonnati

semantics	semantics	metaphors	other	native-nonnati
semantics	semantics	metaphors	other	native-nonnati
semantics	semantics	metaphors	other	native-nonnati
semantics	semantics	metaphors	other	native-nonnati
(morpho)syntax-p	interface	morphosyntactic sten	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
(morpho)syntax-p	interface	prosodic-syntactic bo	other	native-nonnati
syntax	syntax	word order	word order	context: imme
syntax	syntax	word order	word order	context: imme
syntax	syntax	word order	word order	context: imme
syntax	syntax	word order	word order	context: imme
syntax	syntax	word order	word order	context: imme
syntax	syntax	word order	word order	context: imme
syntax	syntax	word order	word order	context: imme
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati
morphosyntax	morphosyntax	gender agreement	gender agreement	native-nonnati
morphosyntax	morphosyntax	number agreement	number agreement	native-nonnati
semantics-pragma	interface	NP reference	other	native-nonnati
semantics-pragma	interface	NP reference	other	native-nonnati
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	training: struct
morphosyntax	morphosyntax	subject-verb agreeme	verb agreement	training: struct
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
(morpho)syntax-p	interface	morphosyntactic sten	other	
semantics-prosod	interface	semantic consistency,	semantic consistency	

(morpho)syntax-p	interface	pronoun form, speake	other	
syntax	syntax	direct object filler-gap	other	native-nonnati
syntax	syntax	direct object filler-gap	other	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	word order	word order	native-nonnati
syntax	syntax	syntactic categories	other	native-nonnati
syntax	syntax	syntactic categories	other	native-nonnati
syntax	syntax	syntactic categories	other	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
semantics	semantics	semantic consistency	semantic consistency	native-nonnati
morphosyntax	morphosyntax	plural noun forms	other	proficiency lev
morphosyntax	morphosyntax	plural noun forms	other	proficiency lev
morphosyntax	morphosyntax	plural noun forms	other	proficiency lev
morphosyntax	morphosyntax	plural noun forms	other	proficiency lev
morphosyntax	morphosyntax	plural noun forms	other	proficiency lev
morphosyntax	morphosyntax	regular past inflection	other	proficiency lev
morphosyntax	morphosyntax	regular past inflection	other	proficiency lev
syntax	syntax	word order	word order	proficiency lev
syntax	syntax	word order	word order	proficiency lev
morphosyntax	morphosyntax	regular past inflection	other	proficiency lev
morphosyntax	morphosyntax	regular past inflection	other	proficiency lev
syntax	syntax	word order	word order	proficiency lev
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	
morphosyntax	morphosyntax	det-noun gender agre	gender agreement	

PRO MEASURES	AO	WM	KACQ	PRESENTATION	TASK
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
questionnaire, gram		20.00	immersion instructed	visual	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
questionnaire, grammar test, DELF			immersion instructed	visual	AJT
questionnaire, grammar test, DELF			immersion instructed	visual	AJT
questionnaire, grammar test, DELF			immersion instructed	visual	AJT
short learning phases			lab training	visual	AJT
short learning phases			lab training	visual	AJT
short learning phases			lab training	visual	AJT
short learning phases			lab training	visual	AJT
short learning phases			lab training	visual	AJT
questionnaire, cloze test			immersion instructed	visual	AJT
questionnaire, cloze test			immersion instructed	visual	AJT
questionnaire, cloze test			immersion instructed	visual	AJT
questionnaire, cloze test			immersion instructed	visual	AJT
questionnaire, gram		13.40	immersion instructed	visual	AJT
questionnaire, gram		13.40	immersion instructed	visual	AJT
questionnaire, gram		13.40	immersion instructed	visual	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
cit-implicit			lab training	auditory	AJT
questionnaire	>9.5		immersion instructed	visual	AJT
questionnaire	>9.5		immersion instructed	visual	AJT
questionnaire	>9.5		immersion instructed	visual	AJT
questionnaire, IELTS		12.10 alphabet sp	immersion instructed	visual	AJT
questionnaire		10.00	immersion instructed	visual	comprehen
questionnaire, Cam		11.70	instructed	auditory	AJT
questionnaire, Cam		11.70	instructed	auditory	AJT
ive, proficiency level: low-intermediate-high			instructed	visual	AJT

ive, proficiency level	>11		instructed	visual	AJT
ive, proficiency level	>11		instructed	visual	AJT
ive, proficiency level: low-intermediate-high			instructed	visual	AJT
ive, proficiency level: low-intermediate-high			instructed	visual	AJT
ive, proficiency level: low-intermediate-high			instructed	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, training: explicit-implicit			lab training	visual	AJT
ive, proficiency level: low-high			immersion instructed	visual	AJT
ive, proficiency level: low-high			immersion instructed	visual	AJT
ive, proficiency level: low-high			immersion instructed	visual	AJT
questionnaire, Simu		12.40	immersion instructed	visual	AJT
questionnaire, Simu		12.40	immersion instructed	visual	AJT
questionnaire, Simu		12.40	immersion instructed	visual	AJT
questionnaire, Simu		14.10	instructed	visual	AJT
questionnaire, Simu		14.10	instructed	visual	AJT
questionnaire, langu		14.00	immersion instructed	visual	comprehen
questionnaire			instructed	visual	AJT
questionnaire			instructed	visual	AJT
questionnaire	>14		instructed	visual	AJT
questionnaire	>14		instructed	visual	AJT
questionnaire		19.20	immersion instructed	visual	comprehen
questionnaire		19.20	immersion instructed	visual	comprehen
questionnaire		19.20	immersion instructed	visual	comprehen
questionnaire		19.20	immersion instructed	visual	comprehen
questionnaire, MLA	>11		immersion instructed	visual	AJT
questionnaire, MLA	>11		immersion instructed	visual	AJT
questionnaire, MLA	>11		immersion instructed	visual	AJT
questionnaire, MLA	>11		immersion instructed	visual	AJT
questionnaire, MLA	>11		immersion instructed	visual	AJT
questionnaire, MLA	>11		immersion instructed	visual	AJT
questionnaire, DELF		16.80	immersion instructed	visual	AJT
questionnaire, DELF		23.60	immersion instructed	visual	AJT
questionnaire, cloze		14.75	instructed	visual	AJT
questionnaire, cloze		16.00	instructed	visual	AJT
questionnaire, DELE, verbal fluency task, tr			immersion instructed	visual	AJT
questionnaire, DELE, verbal fluency task, tr			immersion instructed	visual	AJT
questionnaire, DELE, verbal fluency task, tr			instructed	visual	AJT
questionnaire, voca		9.00	O-span testimmersion instructed, lan train	visual	semantic re
questionnaire, voca		11.60	immersion instructed, lab training		
questionnaire, voca		13.00	immersion instructed	auditory	comprehen
questionnaire, voca		13.00	immersion instructed	auditory	comprehen
questionnaire, voca		13.00	immersion instructed	auditory	comprehen
questionnaire, voca		13.00	immersion instructed	auditory	comprehen
questionnaire, voca		13.00	immersion instructed	auditory	comprehen
questionnaire, voca		13.00	immersion instructed	auditory	comprehen
questionnaire, OPT		12.16	instructed	visual	comprehen

questionnaire, OPT	12.16	instructed	visual	comprehen
questionnaire, OPT	12.22	instructed	visual	comprehen
questionnaire, DELE	13.70	immersion instructed	visual	AJT
questionnaire, OPT	8.00	immersion instructed	visual	comprehen
questionnaire		instructed	visual	AJT
questionnaire		instructed	visual	AJT
questionnaire, language test		instructed	visual	AJT
questionnaire	24.76	immersion instructed	visual	AJT
questionnaire	24.76	immersion instructed	visual	AJT
questionnaire	24.76	immersion instructed	visual	AJT
questionnaire	24.76	immersion instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, CET	11.00	instructed	visual	AJT
questionnaire, mor	>10	instructed	visual	comprehen
questionnaire, mor	>10	instructed	visual	comprehen
questionnaire, mor	>10	instructed	visual	comprehen
questionnaire, Lexta	10.00 backward a	instructed	visual	AJT
questionnaire, Lexta	10.00 backward a	instructed	visual	AJT
questionnaire, cloze	>10	immersion instructed	visual	comprehen
questionnaire, langu	14.00	immersion instruted	visual	AJT
questionnaire, langu	14.00	immersion instruted	visual	AJT
questionnaire, langu	14.00	immersion instruted	visual	AJT
questionnaire, langu	14.00	immersion instruted	visual	AJT
questionnaire, OPT	10.30	instructed	visual	comprehen
questionnaire, OPT	10.30	instructed	visual	comprehen
questionnaire, OPT	10.30	instructed	visual	comprehen
ive within		lab training	auditory	AJT
ive within		lab training	auditory	AJT
ive within		lab training	auditory	AJT
questionnaire	11.00	immersion instructed	visual	comprehen
questionnaire	10.30	immersion instructed	visual	comprehen
questionnaire	10.30	immersion instructed	visual	comprehen
questionnaire	15.00	instructed	visual	AJT
questionnaire	15.00	instructed	visual	AJT
questionnaire, voca	19.23	immersion instructed	auditory	comprehen
questionnaire, voca	19.23	immersion instructed	auditory	comprehen
questionnaire, voca	19.23	immersion instructed	auditory	comprehen
questionnaire, voca	19.23	immersion instructed	auditory	comprehen
questionnaire, voca	19.23	immersion instructed	auditory	comprehen
questionnaire, voca	19.23	immersion instructed	auditory	comprehen
bilinguals		lab training	auditory	AJT
bilinguals		lab training	auditory	AJT
bilinguals		lab training	auditory	AJT
bilinguals		lab training	auditory	AJT
questionnaire, TEM-4		instructed	visual	AJT

questionnaire			instructed	visual	semantic ju
questionnaire			instructed	visual	semantic ju
questionnaire			instructed	visual	semantic ju
questionnaire			instructed	visual	semantic ju
questionnaire	>10		immersion instructed	auditory	sentence b
questionnaire, Cam	11.80		instructed	auditory	AJT
questionnaire, Cam	13.30		immersion instructed	auditory	AJT
questionnaire, Cam	13.30		immersion instructed	auditory	AJT
questionnaire, Cam	11.80		instructed	auditory	AJT
questionnaire, Cam	13.30		immersion instructed	auditory	AJT
questionnaire, Cam	13.30		immersion instructed	auditory	AJT
questionnaire, Cam	11.80		instructed	auditory	AJT
questionnaire, Cam	13.30		immersion instructed	auditory	AJT
questionnaire, Cam	13.30		immersion instructed	auditory	AJT
questionnaire, Elicit	13.06	O-span tas	instructed	visual	AJT
questionnaire, Elicit	13.06	O-span tas	instructed	visual	AJT
questionnaire, Elicit	13.06	O-span tas	instructed	visual	AJT
questionnaire, Elicit	13.06	O-span tas	instructed	visual	AJT
questionnaire, Elicit	11.85	O-span tas	immersion instructed	visual	AJT
questionnaire, Elicit	11.85	O-span tas	immersion instructed	visual	AJT
questionnaire, Elicit	11.85	O-span tas	immersion instructed	visual	AJT
questionnaire, MLA	14.27		immersion instructed	visual	AJT
questionnaire, MLA	14.27		immersion instructed	visual	AJT
questionnaire, MLA	14.27		immersion instructed	visual	AJT
questionnaire, MLA	14.27		immersion instructed	visual	AJT
questionnaire, MLA	14.27		immersion instructed	visual	AJT
questionnaire, TEM	>10		instructed	visual	comprehen
questionnaire, TEM	>10		instructed	visual	comprehen
questionnaire, OPT,	12.07		lab training, instructed	visual	comprehen
questionnaire, OPT,	12.21		lab training, instructed	visual	comprehen
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire	>20		immersion instructed, lab train	auditory	word recog
questionnaire, MEL	10.56		instructed	auditory	comprehen

questionnaire, MELI	10.56		instructed	auditory	comprehen
questionnaire, OPT	10.30		instructed	visual	comprehen
questionnaire, OPT	10.30		instructed	visual	comprehen
questionnaire, LexT.	>10	reading spa	immersion instructed	visual	AJT
questionnaire, LexT.	>10		immersion instructed	visual	AJT
questionnaire, LexTALE,	language test		immersion instructed	visual	AJT
questionnaire, LexTALE,	language test		immersion instructed	visual	AJT
questionnaire, LexTALE,	language test		immersion instructed	visual	AJT
questionnaire, SWE	21.50		immersion instructed	visual	AJT
questionnaire, SWE	21.50		immersion instructed	visual	AJT
questionnaire, SWE	23.20		immersion instructed	visual	AJT
questionnaire, cloze	12.50	backward a	immersion instructed	visual	AJT
questionnaire, cloze	12.50	backward a	immersion instructed	visual	AJT
questionnaire, cloze	12.50	backward a	immersion instructed	visual	AJT
questionnaire, cloze	12.50	backward a	immersion instructed	visual	AJT
questionnaire, cloze	12.50	backward a	immersion instructed	visual	AJT
questionnaire, cloze	12.50	backward a	immersion instructed	visual	AJT
questionnaire	>19		immersion instructed	visual	AJT
questionnaire	>19		immersion instructed	visual	AJT
questionnaire	>19		immersion instructed	visual	AJT
questionnaire	>19		immersion instructed	visual	AJT
questionnaire	>19		immersion instructed	visual	AJT
questionnaire, OPT	>15		instructed	visual	AJT
questionnaire, OPT	>15		instructed	visual	AJT
questionnaire, OPT	>15		instructed	visual	AJT
questionnaire, OPT	>15		instructed	visual	AJT
questionnaire, OPT	>15		instructed	visual	AJT
questionnaire, OPT	>15		instructed	visual	AJT
vel: low-high	>15		instructed	visual	AJT
questionnaire, LexT.	20.10		immersion instructed	visual	comprehen
questionnaire, LexT.	19.70		immersion instructed	visual	comprehen
questionnaire, LexT.	20.20		immersion instructed	visual	AJT

COMPONEI	GENCON	FAMCON	P2	LAN	N400	ANTERIOR NEGATIVITY	P600
LAN	y	n		in first position (det-noun) only, number>gender			
P600	y	n					all violation
LAN	y	n		in first position (det-noun) only, number>gender			
P600	y	n					all violation
P600	y	n					all violation
LNEG	y	n					
P600	y	n					all violation
LNEG	y	n					
N400	y	y			all violations		
N400	y	y			noun-adj only		noun-det o
P600	y	y			noun-adj only		noun-det o
LAN	y	y		noun-adj only			
N400	y	y			noun-adj only		noun-det o
P600	y	y			noun-adj only		noun-det o
LNEG	y	y			noun-adj only		noun-det o
P600	y	n					all violation
NA	y	n					
NA	y	n					
N400	y	n			all violations		
NA	y	n					
N400	y	n			all violations		all violation
P600	y	n			all violations		all violation
NA	y	n					
NA	y	y					
P600	y	y					all violation
NA	y	y					
P600	y	y					all violation
P600	y	n					all violation
N400	y	n			all violations		
NA	y	n					
N400	y	y			low proficiency all violations		
ANEG	y	y				high proficiency all violatior	high profici
P600	y	y				high proficiency all violatior	high profici
LNEG	y	y				high proficiency all violatior	high profici
NA	y	y					
P600	y	y					high profici
LAN	y	y		all violations at retenti		all violations at retention o	all violation
ANEG	y	y		all violations at retenti		all violations at retention o	all violation
P600	y	y		all violations at retenti		all violations at retention o	all violation
LNEG	y	y		all violations at retenti		all violations at retention o	all violation
ANEG	y	y				all violations at retention o	all violation
P600	y	y				all violations at retention o	all violation
LNEG	y	y				all violations at retention o	all violation
N400	y	y			subject-verb agreement violations		
P600	y	y					number agr
P600	y	y					number agr
N400	y	y			violations in no-gap sentences only		
N400	y	n			unexpected nouns only		
N400	n	n			superflous boundary		all violation
P600	n	n			superflous boundary		all violation
P600	y	n					all violation

P600	y	n			number vio
NA	y	n			
P600	y	n			all violation
NA	y	n			
NA	y	n			
P600	y	n			successful l
P600	y	n			successful l
P600	y	n			successful l
P600	y	n			successful l
P600	y	n			successful l
P600	y	n			successful l
P600	y	n			successful l
P600	y	n			successful l
P600	n	n			all violation
N400	n	n		negative-dominant all violations	positive dor
P600	n	n		negative-dominant all violations	positive dor
N400	y	n		semantic violations	all violation
P600	y	n		semantic violations	all violation
LAN	y	n	word order violations		
N400	y	n		semantic violations distributed	
NA	y	n			
N400	n	n		unexpected articles	
P2	y	y	spatial violations only	spatial violations only	
N400	y	y	spatial violations only	spatial violations only	
NA	y	n			
P600	y	n			number and
LAN	n	n	number violations delayed but all violations as far		number vio
P600	n	n	number violations delayed but all violations as far		number vio
LAN	n	n	number violations delayed but all violations as far		number vio
P600	n	n	number violations delayed but all violations as far		number vio
P600	y	n			all violation
P600	y	n			all violation
P600	y	n			all violation
P600	y	n			all violation
P600	y	n			all violation
P600	y	n			all violation
P600	n	n			orally realiz
P600	n	n			orally realiz
N400	y	n		contrastive focus>informative focus+	positive shift
P2	y	n	positive shift at clefted noun		
P600	y	n			object+ser
LNEG	y	n			object+ser
NA	y	n			
N400	y	y	visual	unrelated probes	
NA	y	y			
N400	y	n		semantic violations more anterior	
N400	y	n		semantic violations more anterior	
N400	y	n		semantic violations more anterior	
LPOS	y	n			
LPOS	y	n			
LPOS	y	n			
NA	y	y			

P600	y	y			session 2 o
NA	y	y			
LPOS	n	n			
N400	y	y		phrasal verbs reduced	
P2	y	y	BOI words in rich sensc	High BOI words in poor sensorimotor context	
N400	y	y	BOI words in rich sensc	High BOI words in poor sensorimotor context	
LNEG	y	n			
P600	y	y			subject-ver
N400	y	y		object-verb agreement violations and ergative cas	
N400	y	y		object-verb agreement violations and ergative cas	
LNEG	y	y		object-verb agreement violations and ergative cas	
P2	y	y	passive sentence mode	double violations only literal>free trans	syntactic ar
N400	y	y	passive sentence mode	double violations only literal>free trans	syntactic ar
P600	y	y	passive sentence mode	double violations only literal>free trans	syntactic ar
N400	y	y		double violations only literal>free trans	syntactic ar
P600	y	y		double violations only literal>free trans	syntactic ar
P2	y	y	passive sentence mode	all conditions literal>free translations	syntactic ar
N400	y	y	passive sentence mode	all conditions literal>free translations	syntactic ar
P600	y	y	passive sentence mode	all conditions literal>free translations	syntactic ar
NA	y	y			
P600	y	y			pseudo-der
N400	y	y		pseudo-derived words	
LNEG	y	y		pseudo-derived words	
P600	n	n			"of" violatic
LNEG	n	n			"of" violatic
NA	y	n			
P600	y	n			number>ge
LNEG	y	n			number>ge
P600	y	n			number>ge
LNEG	y	n			number>ge
LAN	n	n	long lasting	unexpected arguments	filled-gap d
N400	n	n	long lasting	unexpected arguments	filled-gap d
P600	n	n	long lasting	unexpected arguments	filled-gap d
N400	y	y		semantic violations stronger in subjects with highe	
P600	y	y			syntactic vic
P600	y	y			syntactic vic
N400	y	n		implausible unrelated>implausible related	
N400	y	n		implausible semantically unrelated>implausible se	
LPOS	y	n		implausible semantically unrelated>implausible se	
N400	n	n		all violations	
N400	n	n		gender overlap noun violations only	
N400	n	n		world knowledge violations and unknown sentenc	
N400	n	n		world knowledge violations and unknown sentenc	
N400	n	n		world knowledge violations and unknown sentenc	
LNEG	n	n		world knowledge violations and unknown sentenc	
LNEG	n	n		world knowledge violations and unknown sentenc	
LNEG	n	n		world knowledge violations and unknown sentenc	
P600	y	y			at session 1
P600	y	y			at session 1
NA	y	y			
P600	y	y			at session 2
P600	y	y			gender pro

N400	y	y		metaphors>literal, English>Chinese	LPC metaph
N400	y	y		metaphors>literal, English>Chinese, str	LPC metaph
P600	y	y		metaphors>literal, English>Chinese	LPC metaph
P600	y	y		metaphors>literal, English>Chinese, str	LPC metaph
ANEG	n	n			mid-distributed word accent only with
P2	n	n	CPS with increasing prc	detached noun in superfluous boundar	disambigua
P2	y	y	CPS with increasing prc	detached noun in superfluous boundar	detached n
P2	y	y	CPS with increasing prc	detached noun in superfluous boundar	detached n
N400	n	n	CPS with increasing prc	detached noun in superfluous boundar	disambigua
N400	y	y	CPS with increasing prc	detached noun in superfluous boundar	detached n
N400	y	y	CPS with increasing prc	detached noun in superfluous boundar	detached n
P600	n	n	CPS with increasing prc	detached noun in superfluous boundar	disambigua
P600	y	y	CPS with increasing prc	detached noun in superfluous boundar	detached n
P600	y	y	CPS with increasing prc	detached noun in superfluous boundar	detached n
LNEG	y	n			
N400	y	n		negative-dominant group at follow-up	positive-do
P600	y	n		negative-dominant group at follow-up	positive-do
LNEG	y	n		negative-dominant group at follow-up	positive-do
N400	y	n		negativity-dominant group at baseline	and follow-
N400	y	n		negativity-dominant group at baseline	positivity-d
P600	y	n		negativity-dominant group at baseline	positivity-d
LAN	y	n		all number agreement violations	all violation
P600	y	n		all number agreement violations	all violation
P600	y	n			all violation
NA	y	n			
P600	y	n			all number
P2	y	y	so, and>although, full stop at pron	Nref stronger than natives at pronouns	
ANEG	y	y	so, and>although, full stop at pron	Nref stronger than natives at pronouns	
P600	y	y			all violation
NA	y	y			
ANEG	n	n		PrAN tone onset	
ANEG	n	n		PrAN tone onset	
ANEG	y	y		PrAN tone onset	
ANEG	n	n		PrAN tone onset	
ANEG	y	n		PrAN tone onset	
ANEG	y	n		PrAN tone onset	
ANEG	y	n		PrAN tone onset	
LAN	n	n	LAN suffix onset all vio	PrAN tone onset	
LAN	n	n	LAN suffix onset all vio	PrAN tone onset	
LAN	y	y	LAN suffix onset all vio	PrAN tone onset	
LAN	n	n	LAN suffix onset all vio	PrAN tone onset	
LAN	y	n	LAN suffix onset all vio	PrAN tone onset	
LAN	y	n	LAN suffix onset all vio	PrAN tone onset	
LAN	y	n	LAN suffix onset all vio	PrAN tone onset	
ANEG	n	n	LAN suffix onset all vio	PrAN tone onset	
ANEG	n	n	LAN suffix onset all vio	PrAN tone onset	
ANEG	y	y	LAN suffix onset all vio	PrAN tone onset	
ANEG	n	n	LAN suffix onset all vio	PrAN tone onset	
ANEG	y	n	LAN suffix onset all vio	PrAN tone onset	
ANEG	y	n	LAN suffix onset all vio	PrAN tone onset	
ANEG	y	n	LAN suffix onset all vio	PrAN tone onset	
N400	n	n		semantic violations all accents but delayed	

ANEG	n	n		Nref pronoun violations	native-accente
N400	n	n		at V implausible fillers	at disambig
P600	n	n		at V implausible fillers	at disambig
P600	n	n			semantic vi
P600	n	n			violations n
P600	n	n			violations n
N400	n	n		violations no-conflict>conflict condition	
LNEG	n	n		violations no-conflict>conflict condition	
ANEG	n	n		all violations right-lateralize	higher prof
P600	n	n		all violations right-lateralize	higher prof
P600	n	n			higher prof
N400	y	n		all violationsustained negativity and no	semantic ar
ANEG	y	n		all violationsustained negativity and no	semantic ar
P600	y	n		all violationsustained negativity and no	semantic ar
N400	y	n		all violationsustained negativity and no	semantic ar
ANEG	y	n		all violationsustained negativity and no	semantic ar
P600	y	n		all violationsustained negativity and no	semantic ar
LAN	y	y	regular plui	regular plural nouns violations	regular plur
N400	y	y	regular plui	regular plural nouns violations	regular plur
P600	y	y	regular plui	regular plural nouns violations	regular plur
LAN	y	y	regular plui	irregular plural nouns violations	
N400	y	y	regular plui	irregular plural nouns violations	
LAN	y	n	past tense and word order violations		all violation
P600	y	n	past tense and word order violations		all violation
LAN	y	n	past tense and word order violations		all violation
P600	y	n	past tense and word order violations		all violation
N400	y	n		past tense and word order violations	correct and
P600	y	n		past tense and word order violations	correct and
N400	y	n		past tense and word order violations	
NA	n	n			
NA	n	n			
P600	n	n			subjective v

LATE NEGATIVITY	LATE POSITIVITY	FACTOR(S) OF INTEREST
		proficiency, L1 transfer
ıs, number>gender		proficiency, L1 transfer
		proficiency, L1 transfer
ıs, number>gender		proficiency, L1 transfer
ıs, number>gender		proficiency, L1 transfer
second position (noun-adj) only, number>g		proficiency, L1 transfer
ıs, number>gender		proficiency, L1 transfer
second position (noun-adj) only, number>g		proficiency, L1 transfer
		proficiency, kind of training
ınly		
ınly		
noun-adj only		
noun-adj only		
noun-adj only		
ıs		proficiency
		proficiency
		proficiency
		proficiency, kind of training
ıs		
ıs		
		proficiency (component), L1 (latency)
ıs		
ıs delayed		
ıs		
		proficiency, L1 transfer
		proficiency, kind of training
high proficiency all violations		
high proficiency all violations		
high proficiency all violations		
iency all violations		
all violations stronger at retention		proficiency, kind of training
all violations stronger at retention		proficiency, kind of training
all violations stronger at retention		proficiency, kind of training
all violations stronger at retention		proficiency, kind of training
all violations stronger at retention		
all violations stronger at retention		
all violations stronger at retention		
		proficiency
reement and auxiliary omission violations		proficiency
reement and auxiliary omission violations		proficiency
		proficiency (no WM)
		nonnativeness
ıs more central		proficiency
ıs more central		proficiency
ıs number>gender		proficiency (not L1)

olations	
ns number>gender	
learners all violations	proficiency (not kind of training)
learners all violations	proficiency (not kind of training)
learners all violations	
learners all violations	
learners all violations	
learners all violations	
learners all violations	
learners all violations	
ns	proficiency, individual neural profile
minant all violations	
minant all violations	
ns	proficiency
ns	proficiency
	L1
	L1
	proficiency
d combined violations but not pure gender	proficiency
olations but all violations as far as their subj	proficiency
olations but all violations as far as their subj	proficiency
olations but all violations as far as their subj	proficiency
olations but all violations as far as their subj	proficiency
ns (weaker demonstrative-noun number ag	proficiency (not L1)
ns (weaker demonstrative-noun number agreement)	
ns (weaker demonstrative-noun number agreement)	
ns (weaker demonstrative-noun number ag	proficiency (not L1)
ns (weaker demonstrative-noun number agreement)	
ns (weaker demonstrative-noun number agreement)	
zed>silent violations	proficiency
zed>silent violations	proficiency
at clefted noun	proficiency
event+estar violation	proficiency
event+estar violation	proficiency
	proficiency
	proficiency
	proficiency
	proficiency
LPP inconsistent spe	proficiency
LPP inconsistent spe	proficiency
LPP inconsistent spe	proficiency
	structure-specific proficiency

nly all violations		
	LPP immoral senten	proficiency
		proficiency
		proficiency
		proficiency
intermediately related>highly related		proficiency?
b agreement violations		L1 (not AO nor proficiency for features absent in the L1
e violation		L1 (not AO nor proficiency for features absent in the L1
ergative case violations		L1 (not AO nor proficiency for features absent in the L1
ergative case violations		L1 (not AO nor proficiency for features absent in the L1
nd double violations stronger		proficiency>L1
nd double violations stronger		proficiency>L1
nd double violations stronger		proficiency>L1
nd double violations stronger		
nd double violations stronger		
nd double violations		
nd double violations		
nd double violations		
rived words		specific proficiency
pseudo-derived words		
pseudo-derived words		
all violations		proficiency
all violations		proficiency
all violations		proficiency
all violations		proficiency
all violations		proficiency
all violations		proficiency
istributed		proficiency
istributed		proficiency
istributed		proficiency
r N400 in the L1		individual neural profile
olations in subjects with earlier P600 in the		individual neural profile
olations in subjects with earlier P600 in the		individual neural profile
mantically related	LPC form-related>pr	proficiency
mantically related	LPC form-related>pr	proficiency
		proficiency, L1
world knowledge violations>unknown sen		proficiency
world knowledge violations>unknown sen		proficiency
world knowledge violations>unknown sen		proficiency
world knowledge violations>unknown sen		proficiency
world knowledge violations>unknown sen		proficiency
world knowledge violations>unknown sen		proficiency
L and 2 violations		proficiency, bilingualism
L and 2 violations		proficiency, bilingualism
2 violations (preceded by anterior positivity)		
noun violation		proficiency

hors>literal, English>Chinese	proficiency
hors>literal, English>Chinese, stronger than	high proficiency
hors>literal, English>Chinese	proficiency
hors>literal, English>Chinese, stronger than	high proficiency
increasing proficiency	proficiency
ting verb in no-boundary conditions with i	proficiency (not L1)
oun in superfluous boundary condition	weaker
oun in superfluous boundary condition	weaker
ting verb in no-boundary conditions with i	proficiency (not L1)
oun in superfluous boundary condition	weaker
oun in superfluous boundary condition	weaker
ting verb in no-boundary conditions with i	proficiency (not L1)
oun in superfluous boundary condition	weaker
oun in superfluous boundary condition	weaker
negative-dominant group at baseline and f	proficiency, individual neural profile
negative-dominant group at baseline and follow-up all violations	
negative-dominant group at baseline and follow-up all violations	
negative-dominant group at baseline and follow-up all violations	
up all violations	proficiency, procedural memory, WM
ominant group at follow-up all violations (at baseline more anterior positivity)	
ominant group at follow-up all violations (at baseline more anterior positivity)	
s within-phrase>across-phrase (unlike Aler	proficiency
s within-phrase>across-phrase (unlike Aler	proficiency
s within-phrase>across-phrase (unlike Aleman Banon 2014)	
agreement violations	
in so, although and full stop conditions, N	nonnativeness
in so, although and full stop conditions, N	nonnativeness
ns	structure-specific proficiency
	proficiency
	nonnativeness and unfamiliarity with the accent

ed only	nonnativeness and unfamiliarity with the accent
guating regions all violations plausible>implausible fillers	
guating regions all violations plausible>implausible fillers	
olations only but also implausible sentence	nonnativeness
no-conflict>conflict condition	proficiency, language distance
no-conflict>conflict condition	
violations no-conflict only	
violations no-conflict only	
ficiency all violations	proficiency, L1
ficiency all violations	proficiency, L1
ficiency all violations	
nd double violations, syntactic only at high	daily usage, proficiency, WM (not AO)
nd double violations, syntactic only at high	daily usage, proficiency, WM (not AO)
nd double violations, syntactic only at high	daily usage, proficiency, WM (not AO)
nd double violations, syntactic only at high	daily usage, proficiency, WM (not AO)
nd double violations, syntactic only at high	daily usage, proficiency, WM (not AO)
nd double violations, syntactic only at high	daily usage, proficiency, WM (not AO)
ral nouns violations	proficiency
ral nouns violations	proficiency
ral nouns violations	proficiency
ns	proficiency
ns	proficiency
ns	proficiency
ns	proficiency
l incorrect paste tense delayed	
l incorrect paste tense delayed	
	proficiency, input reliability
	proficiency, input reliability
violations only	proficiency, input reliability

AUTHORS	TITLE	YEAR	JOURNAL	DOI	CROSS-REF	DESIGN	MEMBER	PROFICIEN
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Dowens, M	Morphosyn	2010.00	Journal of C	10.1162/jocn.2009.213		cross-sectional		high
Foucart, A.,	Grammatic	2011.00	Bilingualism	10.1017/S1366728910		cross-sectional		high
Foucart, A.,	Grammatic	2011.00	Bilingualism	10.1017/S1366728910		cross-sectional		high
Foucart, A.,	Grammatic	2011.00	Bilingualism	10.1017/S1366728910		cross-sectional		high
Foucart, A.,	Can late L2	2012.00	Journal of M	10.1016/j.jml.2011.07.		cross-sectional		high
Foucart, A.,	Can late L2	2012.00	Journal of M	10.1016/j.jml.2011.07.		cross-sectional		high
Foucart, A.,	Can late L2	2012.00	Journal of M	10.1016/j.jml.2011.07.		cross-sectional		high
Dallas, A., D	An Event-R	2013.00	Language L	10.1111/lang.12026		cross-sectional		high
Martin, C.D	Bilinguals r	2013.00	Journal of M	10.1016/j.jml.2013.08.		cross-sectional		high
Nickels, S.,	ERPs show	2013.00	Neuroscien	10.1016/j.neulet.2013.		cross-sectional		high
Nickels, S.,	ERPs show	2013.00	Neuroscien	10.1016/j.neulet.2013.		cross-sectional		high
Gabriele, A	Examining s	2013.00	Linguistic A	10.1075/lab.3.2.04gab		cross-sectional		high
Gabriele, A	Examining s	2013.00	Linguistic A	10.1075/lab.3.2.04gab		cross-sectic	intermediat	intermediat
Gabriele, A	Examining s	2013.00	Linguistic A	10.1075/lab.3.2.04gab		cross-sectic	low proficie	low
Gabriele, A	Examining s	2013.00	Linguistic A	10.1075/lab.3.2.04gab		cross-sectional		high
Gabriele, A	Examining s	2013.00	Linguistic A	10.1075/lab.3.2.04gab		cross-sectic	intermediat	intermediat
Gabriele, A	Examining s	2013.00	Linguistic A	10.1075/lab.3.2.04gab		cross-sectic	low proficie	low
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectional		high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectional		high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectional		high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectional		high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectic	explicit trai	high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectic	explicit trai	high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectic	explicit trai	high
Batterink, L	Implicit and	2013.00	Journal of C	10.1162/jocn_a_00354		cross-sectic	explicit trai	high
Tanner, D.,	Individual c	2013.00	Bilingualism	10.1017/S1366728912		cross-sectional		high
Tanner, D.,	Individual c	2013.00	Bilingualism	10.1017/S1366728912000302			low proficie	low
Tanner, D.,	Individual c	2013.00	Bilingualism	10.1017/S1366728912000302			low proficie	low
Bowden, H.	Native-like	2013.00	Neuropsych	10.1016/j.neuropsycho		cross-sectional		high
Bowden, H.	Native-like	2013.00	Neuropsych	10.1016/j.neuropsycho		cross-sectional		high
Bowden, H.	Native-like brain processing of syntax can be attained by university foreign langu							high
Bowden, H.	Native-like	2013.00	Neuropsych	10.1016/j.neuropsychologia.2013.			low proficie	low
Bowden, H.	Native-like brain processing of syntax can be attained by university foreign langu							low
Foucart, A.,	Can bilingua	2014.00	Journal of E	10.1037/a0036756		cross-sectional		high
Xue, J., Yan	Chinese-En	2014.00	Cognitive P	10.1007/s10339-014-0		cross-sectional		intermediat
Xue, J., Yan	Chinese-En	2014.00	Cognitive P	10.1007/s10339-014-0		cross-sectional		intermediat
Rossi, E., Kr	Clitic prono	2014.00	Neuropsych	10.1016/j.neuropsycho		cross-sectional		high
Rossi, E., Kr	Clitic prono	2014.00	Neuropsych	10.1016/j.neuropsycho		cross-sectional		high
Lemhöfer, I	Idiosyncrat	2014.00	Journal of C	10.1162/jocn_a_0060		cross-sectional		intermediat
Lemhöfer, I	Idiosyncrat	2014.00	Journal of C	10.1162/jocn_a_0060		cross-sectional		intermediat
Lemhöfer, I	Idiosyncrat	2014.00	Journal of C	10.1162/jocn_a_0060		cross-sectional		intermediat
Lemhöfer, I	Idiosyncrat	2014.00	Journal of C	10.1162/jocn_a_0060		cross-sectional		intermediat
Carrasco-O	Phonologica	2014.00	Front Psych	10.3389/fpsyg.2014.00		cross-sectional		intermediat
Carrasco-O	Phonologica	2014.00	Front Psych	10.3389/fpsyg.2014.00		cross-sectional		intermediat

Reichle, R.	Processing	2014.00	Studies in S	10.1017/S0272263113		cross-sectional		high
Reichle, R.	Processing	2014.00	Studies in S	10.1017/S0272263113		cross-sectic	low proficie	low
Dussias, P.	Processing	2014.00	Revista Esp	10.1075/resla.27.1.03		cross-sectional		high
Dussias, P.	Processing	2014.00	Revista Esp	10.1075/resla.27.1.03		cross-sectional		high
Dussias, P.	Processing	2014.00	Revista Esp	10.1075/resla.27.1.03		cross-sectic	low proficie	low
Foucart, A.,	Does the s	2015.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		high
Foucart, A.,	Does the s	2015.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		high
Foucart, A.,	Does the s	2015.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		high
Foucart, A.,	Does the s	2015.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		high
Foucart, A.,	Does the s	2015.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		high
Foucart, A.,	Does the s	2015.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		high
Foucart, A.,	Integration	2015.00	Acta Psych	10.1016/j.actpsy.2015.		cross-sectional		high
Paulmann,	Neurophysi	2015.00	Bilingual Fi	10.1017/CBO97811393		cross-sectional		high
Foucart, A.,	Discourse c	2016.00	Brain and L	10.1016/j.bandl.2016.		cross-sectional		high
Kaan, E., Ki	Prediction	2016.00	Bilingualism	10.1017/S1366728914		cross-sectional		high
Kaan, E., Ki	Prediction	2016.00	Bilingualism	10.1017/S1366728914		cross-sectional		high
Dekydtspot	ERP Correla	2017.00	Proceedings of the 41st Annual Bo			cross-sectional		high
Bañón, J.A.	Morpholog	2017.00	Journal of E	10.1037/xlm0000394		cross-sectional		high
Bañón, J.A.	Morpholog	2017.00	Journal of E	10.1037/xlm0000394		cross-sectional		high
Bañón, J.A.	Morpholog	2017.00	Journal of E	10.1037/xlm0000394		cross-sectional		high
Bañón, J.A.	Morpholog	2017.00	Journal of E	10.1037/xlm0000394		cross-sectional		high
Jessen A, F	Native and	2017.00	Journal of F	10.1007/s10936-017-9		cross-sectional		high
Jessen A, F	Native and	2017.00	Journal of F	10.1007/s10936-017-9		cross-sectional		high
Jessen A, F	Native and	2017.00	Journal of F	10.1007/s10936-017-9		cross-sectional		high
Qi, Z., Beac	Native-lang	2017.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		NA
Qi, Z., Beac	Native-lang	2017.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		NA
Qi, Z., Beac	Native-lang	2017.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		NA
Carrasco-O	The role of	2017.00	Internation	10.1016/j.ijpsycho.201		cross-sectional		high
Carrasco-O	The role of	2017.00	Internation	10.1016/j.ijpsycho.201		cross-sectional		high
Romero-Ri	World know	2017.00	Bilingualism	10.1017/S1366728915		cross-sectional		high
Romero-Ri	World know	2017.00	Bilingualism	10.1017/S1366728915		cross-sectional		high
Romero-Ri	World know	2017.00	Bilingualism	10.1017/S1366728915		cross-sectional		high
Romero-Ri	World know	2017.00	Bilingualism	10.1017/S1366728915		cross-sectional		high
Romero-Ri	World know	2017.00	Bilingualism	10.1017/S1366728915		cross-sectional		high
Romero-Ri	World know	2017.00	Bilingualism	10.1017/S1366728915		cross-sectional		high
Liang, L., W	Gender cor	2018.00	Journal of N	10.1016/j.jneuroling.2		cross-sectional		intermediat
Wang, Q.	Neural mec	2018.00	Chinese Jo	10.1515/cjal-2018-000		cross-sectional		high
Wang, Q.	Neural mec	2018.00	Chinese Jo	10.1515/cjal-2018-000		cross-sectic	low proficie	low
Wang, Q.	Neural mec	2018.00	Chinese Jo	10.1515/cjal-2018-000		cross-sectional		high
Wang, Q.	Neural mec	2018.00	Chinese Jo	10.1515/cjal-2018-000		cross-sectic	low proficie	low
Gosselke B	Neural proc	2018.00	Journal of N	10.1016/j.jneuroling.2		cross-sectional		low
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectional		NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectic	L1	NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectic	L1	NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectional		NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectic	L1	NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectic	L1	NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectional		NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectic	L1	NA
Nickels, S.,	Prosody–sy	2018.00	Second Lan	10.1177/02676583166		cross-sectic	L1	NA
Bañón, J.A.	Using even	2018.00	PLoS ONE	10.1371/jo	Aleman-Ba	cross-sectional		high
Bañón, J.A.	Using even	2018.00	PLoS ONE	10.1371/jo	Aleman-Ba	cross-sectional		high

Bañón, J.A.,	Using even	2018.00	PLoS ONE	10.1371/jo	Aleman-Ba	cross-sectional		high
Bañón, J.A.,	Using even	2018.00	PLoS ONE	10.1371/journal.pone.		cross-secti	low profici	low
Bañón, J.A.,	Using even	2018.00	PLoS ONE	10.1371/journal.pone.		cross-secti	low profici	low
Xu, X., Pan,	How refere	2019.00	Second Lan	10.1177/02676583187		cross-sectional		high
Xu, X., Pan,	How refere	2019.00	Second Lan	10.1177/02676583187		cross-sectional		high
Jessen, A.,	Reanalysin	2019.00	Second Lan	10.1177/02676583177		cross-sectional		high
Jessen, A.,	Reanalysin	2019.00	Second Lan	10.1177/02676583177		cross-sectional		high
Zheng, X., L	The “sema	2019.00	Neuropsyc	10.1016/j.neuropsych		cross-sectional		intermedia
Mickan, A.,	Tracking sy	2019.00	Journal of	10.1162/jocn_a_0152		cross-sectional		high
Mickan, A.,	Tracking sy	2019.00	Journal of	10.1162/jocn_a_0152		cross-secti	intermedia	intermedia
Mickan, A.,	Tracking sy	2019.00	Journal of	10.1162/jocn_a_0152		cross-secti	low profici	low
Mickan, A.,	Tracking sy	2019.00	Journal of	10.1162/jocn_a_0152		cross-secti	low profici	low
Andersson,	Language b	2019.00	Bilingualis	10.1017/S1366728918		cross-sectional		high
Andersson,	Language b	2019.00	Bilingualis	10.1017/S1366728918		cross-sectional		high
Andersson,	Language b	2019.00	Bilingualis	10.1017/S1366728918		cross-sectic	L1	high
Fromont, L.	Growing Ra	2020.00	Brain and L	10.1016/j.bandl.2020.		cross-sectional		low
Fromont, L.	Growing Ra	2020.00	Brain and L	10.1016/j.bandl.2020.		cross-sectional		low
Fromont, L.	Growing Ra	2020.00	Brain and L	10.1016/j.bandl.2020.		cross-sectional		low
Fromont, L.	Growing Ra	2020.00	Brain and L	10.1016/j.bandl.2020.		cross-sectional		low
Fromont, L.	Growing Ra	2020.00	Brain and L	10.1016/j.bandl.2020.		cross-sectional		low
Fromont, L.	Growing Ra	2020.00	Brain and L	10.1016/j.bandl.2020.		cross-sectional		low
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Dowens, M	Morphosyn	2010	Journal of	10.1162/jocn.2009.21304				native spea
Foucart, A.,	Grammatic	2011	Bilingualis	10.1017/S136672891000012X				native spea
Foucart, A.,	Grammatic	2011	Bilingualis	10.1017/S136672891000012X				native spea
Foucart, A.,	Grammatic	2011	Bilingualis	10.1017/S136672891000012X				native spea
Foucart, A.,	Can late L2	2012	Journal of	10.1016/j.jml.2011.07.007				native spea
Foucart, A.,	Can late L2	2012	Journal of	10.1016/j.jml.2011.07.007				native spea
Foucart, A.,	Can late L2	2012	Journal of	10.1016/j.jml.2011.07.007				native spea
Nickels, S.,	ERPs show	2013	Neuroscien	10.1016/j.neulet.2013.10.019				native spea
Nickels, S.,	ERPs show	2013	Neuroscien	10.1016/j.neulet.2013.10.019				native spea
Dallas, A.,	An Event-R	2013	Language L	10.1111/lang.12026				native spea
Bowden, H.	Native-like	2013	Neuropsyc	10.1016/j.neuropsychologia.2013.09.004				native spea
Bowden, H.	Native-like	2013	Neuropsyc	10.1016/j.neuropsychologia.2013.09.004				native spea
Bowden, H.	Native-like	2013	Neuropsyc	10.1016/j.neuropsychologia.2013.09.004				native spea
Tanner, D.,	Individual	2013	Bilingualis	10.1017/S1366728912000302				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Batterink, L	Implicit an	2013	Journal of	10.1162/jocn_a_00354				native spea
Gabriele, A	Examining	2013	Linguistic A	10.1075/lab.3.2.04gab				native spea
Gabriele, A	Examining	2013	Linguistic A	10.1075/lab.3.2.04gab				native spea

Martin, C.D	Bilinguals r	2013	Journal of N	10.1016/j.jml.2013.08.001	native spea
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671	native spea
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671	native spea
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671	native spea
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671	native spea
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671	native spea
Alemán Baí	Morphosyn	2014	Second Lan	10.1177/0267658313515671	native spea
Xue, J., Yan	Chinese-En	2014	Cognitive P	10.1007/s10339-014-0621-5	native spea
Xue, J., Yan	Chinese-En	2014	Cognitive P	10.1007/s10339-014-0621-5	native spea
Xue, J., Yan	Chinese-En	2014	Cognitive P	10.1007/s10339-014-0621-5	native spea
Reichle, R.V	Processing	2014	Studies in S	10.1017/S0272263113000594	native spea
Rossi, E., Kr	Clitic prono	2014	Neuropsych	10.1016/j.neuropsychologia.2014.07.002	native spea
Rossi, E., Kr	Clitic prono	2014	Neuropsych	10.1016/j.neuropsychologia.2014.07.002	native spea
Foucart, A.,	Can bilingu	2014	Journal of E	10.1037/a0036756	native spea
Dussias, P.E	Processing	2014	Revista Esp	10.1075/resla.27.1.03dus	native spea
Dussias, P.E	Processing	2014	Revista Esp	10.1075/resla.27.1.03dus	native spea
Lemhöfer, I	Idiosyncrat	2014	Journal of C	10.1162/jocn_a_00609	native spea
Lemhöfer, I	Idiosyncrat	2014	Journal of C	10.1162/jocn_a_00609	native spea
Lemhöfer, I	Idiosyncrat	2014	Journal of C	10.1162/jocn_a_00609	native spea
Carrasco-O	Phonologic	2014	Front Psych	10.3389/fpsyg.2014.00888	native spea
Carrasco-O	Phonologic	2014	Front Psych	10.3389/fpsyg.2014.00888	native spea
Paulmann,	Neurophysi	2015	Bilingual Fi	10.1017/CBO9781139342100.013	native spea
Foucart, A.,	Integration	2015	Acta Psycho	10.1016/j.actpsy.2015.09.009	native spea
Foucart, A.,	Integration	2015	Acta Psycho	10.1016/j.actpsy.2015.09.009	native spea
Foucart, A.,	Does the sp	2015	Neuropsych	10.1016/j.neuropsychologia.2015.06.027	native spea
Foucart, A.,	Does the sp	2015	Neuropsych	10.1016/j.neuropsychologia.2015.06.027	native spea
Kaan, E., Ki	Prediction a	2016	Bilingualism	10.1017/S1366728914000844	native spea
Foucart, A.,	Discourse c	2016	Brain and L	10.1016/j.bandl.2016.09.001	native spea
Bañón, J.A.,	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea
Bañón, J.A.,	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea
Bañón, J.A.,	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea
Bañón, J.A.,	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea
Bañón, J.A.,	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea
Bañón, J.A.,	Morpholog	2017	Journal of E	10.1037/xlm0000394	native spea
Carrasco-O	The role of	2017	Internation	10.1016/j.ijpsycho.2017.04.008	native spea
Carrasco-O	The role of	2017	Internation	10.1016/j.ijpsycho.2017.04.008	native spea
Romero-Riv	World know	2017	Bilingualism	10.1017/S1366728915000905	native spea
Qi, Z., Beac	Native-lang	2017	Neuropsych	10.1016/j.neuropsychologia.2016.10.005	native spea
Qi, Z., Beac	Native-lang	2017	Neuropsych	10.1016/j.neuropsychologia.2016.10.005	native spea
Qi, Z., Beac	Native-lang	2017	Neuropsych	10.1016/j.neuropsychologia.2016.10.005	native spea
Jessen A, Fe	Native and	2017	J Psycholing	10.1007/s10936-017-9496-9	native spea
Jessen A, Fe	Native and	2017	J Psycholing	10.1007/s10936-017-9496-9	native spea
Dekydtspot	ERP Correla	2017	Proceedings of the 41st Annual Boston University Confere		native spea
Gosselke Be	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea
Gosselke Be	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea
Gosselke Be	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea
Gosselke Be	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea
Gosselke Be	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea
Gosselke Be	Neural proc	2018	Journal of N	10.1016/j.jneuroling.2017.09.001	native spea
Nickels, S.,	Prosody–sy	2018	Second Lan	10.1177/0267658316649998	native spea
Nickels, S.,	Prosody–sy	2018	Second Lan	10.1177/0267658316649998	native spea
Nickels, S.,	Prosody–sy	2018	Second Lan	10.1177/0267658316649998	native spea

Liang, L., WGender cor	2018 Journal of N	10.1016/j.jneuroling.2017.08.001	native spea
Liang, L., WGender cor	2018 Journal of N	10.1016/j.jneuroling.2017.08.001	native spea
Andersson, Language b	2019 Bilingualism	10.1017/S1366728918000573	native spea
Andersson, Language b	2019 Bilingualism	10.1017/S1366728918000573	native spea
Jessen, A., IReanalysing	2019 Second Lan	10.1177/0267658317753030	native spea
Jessen, A., IReanalysing	2019 Second Lan	10.1177/0267658317753030	native spea
Xu, X., Pan, How refere	2019 Second Lan	10.1177/0267658318756948	native spea
Xu, X., Pan, How refere	2019 Second Lan	10.1177/0267658318756948	native spea
Zheng, X., LThe "semar	2019 Neuropsycl	10.1016/j.neuropsychologia.2019.02.010	native spea
Mickan, A., Tracking sy	2019 Journal of C	10.1162/jocn_a_01528	native spea
Fromont, L.Growing Ra	2020 Brain and L	10.1016/j.bandl.2020.104770	native spea
Fromont, L.Growing Ra	2020 Brain and L	10.1016/j.bandl.2020.104770	native spea

L1	TL	TLGEN	TLFAM	L1GEN	L1FAM	TARGET LE	TLEVEL	TARGET FE
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun n
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun n
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-adj nu
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-adj nu
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-adj ge
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-adj ge
German	French	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
German	French	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-adj ge
German	French	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	adj-noun ge
English	French	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-adj ge
English	French	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	adj-noun ge
English	French	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	noun-predi
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	semantic co
Spanish	English	German	Indo-Europ	Romance	Indo-Europ	semantics	semantics	semantic co
German	English	German	Indo-Europ	German	Indo-Europ	syntax-pros	interface	prosodic-sy
German	English	German	Indo-Europ	German	Indo-Europ	syntax-pros	interface	prosodic-sy
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number agr
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number agr
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number agr
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agre
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agre
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agre
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun n
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	subject-ver
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun n
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	subject-ver
English	Mini-Frencl	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
English	German	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	subject-ver
English	German	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	subject-ver
English	German	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	subject-ver
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
French	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics	semantics	semantic co
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	temporal sp
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	temporal sp
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agre
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number agr
German	Dutch	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun n
German	Dutch	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun n
German	Dutch	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
German	Dutch	German	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	det-noun g
Spanish	French	Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	morphosyn	subject-ver
Spanish	French	Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	morphosyn	singular sub

English	French	Romance	Indo-Europ	German	Indo-Europ	syntax-disc	interface	focus struc
English	French	Romance	Indo-Europ	German	Indo-Europ	syntax-disc	interface	focus struc
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic c
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic c
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic c
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic c
German	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic c
Swedish	Spanish	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic c
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	pragmatics	pragmatics	pragmatic
German	Spanish	Romance	Indo-Europ	German	Indo-Europ	pragmatics	pragmatics	pragmatic
Swedish	Spanish	Romance	Indo-Europ	German	Indo-Europ	pragmatics	pragmatics	pragmatic
French	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	pragmatics	pragmatics	pragmatic
Arabic	English	German	Indo-Europ	Semitic	Afro-Asiati	syntax-sem	interface	verb-prepo
Spanish	English	German	Indo-Europ	Romance	Indo-Europ	semantics-	interface	semantic a
Dutch	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	noun ellips
Dutch	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	noun ellips
English	French	Romance	Indo-Europ	German	Indo-Europ	syntax-disc	interface	anaphora
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number ag
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number ag
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agr
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agr
German	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	filler gap se
German	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	filler gap se
German	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	filler gap se
English	Mini-langu	NA	NA	German	Indo-Europ	semantics	semantics	semantic c
English	Mini-langu	NA	NA	German	Indo-Europ	morphosyn	morphosyn	subject-ver
English	Mini-langu	NA	NA	German	Indo-Europ	syntax	syntax	syntactic ca
Spanish	French	Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	morphosyn	noun-adjec
Spanish	French	Romance	Indo-Europ	Romance	Indo-Europ	morphosyn	morphosyn	noun-adjec
Italian	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics-	interface	pragmatic
Italian	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics-	interface	pragmatic
Italian	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics-	interface	pragmatic
Italian	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics-	interface	pragmatic
Italian	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics-	interface	pragmatic
Italian	Spanish	Romance	Indo-Europ	Romance	Indo-Europ	semantics-	interface	pragmatic
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	syntax-disc	interface	reflexive pr
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	metaphors
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	metaphors
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	metaphors
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics	semantics	metaphors
German	Swedish	German	Indo-Europ	German	Indo-Europ	(morpho)sy	interface	morphosyn
German	English	German	Indo-Europ	German	Indo-Europ	(morpho)sy	interface	prosodic-sy
Mandarin,	English	German	Indo-Europ	Chinese	Sino-Tibeta	(morpho)sy	interface	prosodic-sy
Cantonese	English	German	Indo-Europ	Chinese	Sino-Tibeta	(morpho)sy	interface	prosodic-sy
German	English	German	Indo-Europ	German	Indo-Europ	(morpho)sy	interface	prosodic-sy
Mandarin,	English	German	Indo-Europ	Chinese	Sino-Tibeta	(morpho)sy	interface	prosodic-sy
Cantonese	English	German	Indo-Europ	Chinese	Sino-Tibeta	(morpho)sy	interface	prosodic-sy
German	English	German	Indo-Europ	German	Indo-Europ	(morpho)sy	interface	prosodic-sy
Mandarin,	English	German	Indo-Europ	Chinese	Sino-Tibeta	(morpho)sy	interface	prosodic-sy
Cantonese	English	German	Indo-Europ	Chinese	Sino-Tibeta	(morpho)sy	interface	prosodic-sy
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agr
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agr

English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number agr
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	gender agre
English	Spanish	Romance	Indo-Europ	German	Indo-Europ	morphosyn	morphosyn	number agr
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics-p	interface	NP referenc
Mandarin	English	German	Indo-Europ	Chinese	Sino-Tibeta	semantics-p	interface	NP referenc
German	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	direct objec
German	English	German	Indo-Europ	German	Indo-Europ	syntax	syntax	direct objec
German	Dutch	German	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
German	Dutch	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
German	Dutch	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
German	Dutch	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
German	Dutch	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
German	Swedish	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
German	Swedish	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
English	Swedish	German	Indo-Europ	German	Indo-Europ	syntax	syntax	word order
English	French	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	syntactic ca
English	French	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	syntactic ca
English	French	Romance	Indo-Europ	German	Indo-Europ	syntax	syntax	syntactic ca
English	French	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
English	French	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
English	French	Romance	Indo-Europ	German	Indo-Europ	semantics	semantics	semantic co
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj nu
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj nu
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj ge
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj ge
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj ge
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	adj-noun ge
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj ge
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	adj-noun ge
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-predi
English	English	German	Indo-Europ	Indo-Europ	German	syntax-pros	interface	prosodic-sy
English	English	German	Indo-Europ	Indo-Europ	German	syntax-pros	interface	prosodic-sy
English	English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic co
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic co
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order
German	German	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	subject-ver
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	subject-ver
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	subject-ver
French	Mini-Frencl	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agre

English	English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic cc
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj nu
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-predi
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun n
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adj ge
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-predi
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	det-noun g
Mandarin	Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	semantics	semantics	temporal sp
Mandarin	Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	semantics	semantics	temporal sp
Mandarin	Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	semantics	semantics	temporal sp
French	French	Romance	Indo-Europ	Indo-Europ	Romance	syntax-disc	interface	focus struct
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agre
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc
Dutch	Dutch	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	det-noun n
Dutch	Dutch	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	det-noun n
Dutch	Dutch	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	det-noun g
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	subject-ver
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	singular sub
English	English	German	Indo-Europ	Indo-Europ	German	syntax-sem	interface	verb-prepo
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	pragmatics	pragmatics	pragmatic c
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	pragmatics	pragmatics	pragmatic c
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics	semantics	semantic cc
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	pragmatics	pragmatics	pragmatic c
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	noun ellipsi
English	English	German	Indo-Europ	Indo-Europ	German	semantics-p	interface	semantic ar
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	number agr
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agre
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agre
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	gender agre
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adjec
French	French	Romance	Indo-Europ	Indo-Europ	Romance	morphosyn	morphosyn	noun-adjec
Spanish	Spanish	Romance	Indo-Europ	Indo-Europ	Romance	semantics-p	interface	semantic-p
English	English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic cc
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	syntactic ca
English	English	German	Indo-Europ	Indo-Europ	German	morphosyn	morphosyn	subject-ver
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	filler gap se
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	filler gap se
French	French	Romance	Indo-Europ	Indo-Europ	Romance	syntax-disc	interface	anaphora r
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	gender agre
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	gender agre
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	gender agre
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	number agr
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	number agr
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	(morpho)sy	interface	number agr
English	English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	metaphors
English	English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	metaphors
English	English	German	Indo-Europ	Indo-Europ	German	semantics	semantics	metaphors

Mandarin	Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	(morpho)sy	interface	prosodic-sy
Mandarin	Mandarin	Chinese	Sino-Tibeta	Sino-Tibeta	Chinese	(morpho)sy	interface	prosodic-sy
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	syntax-disc	interface	reflexive pr
Swedish	Swedish	German	Indo-Europ	Indo-Europ	German	syntax-disc	interface	reflexive pr
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	word order
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	word order
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	direct objec
English	English	German	Indo-Europ	Indo-Europ	German	syntax	syntax	direct objec
Dutch	Dutch	German	Indo-Europ	Indo-Europ	German	syntax-disc	interface	NP referenc
Dutch	Dutch	German	Indo-Europ	Indo-Europ	German	semantics	semantics	semantic co
French	French	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order
French	French	Romance	Indo-Europ	Indo-Europ	Romance	syntax	syntax	word order

TFEAT	CONTRAST	PRO MEAS	AO	WM	KACQ	PRESENTA	TASK	COMPONE
number agr	native-non	questionna	20.00		immersion	visual	AJT	LAN
number agr	native-non	questionna	20.00		immersion	visual	AJT	P600
gender agr	native-non	questionna	20.00		immersion	visual	AJT	LAN
gender agr	native-non	questionna	20.00		immersion	visual	AJT	P600
number agr	native-non	questionna	20.00		immersion	visual	AJT	P600
number agr	native-non	questionna	20.00		immersion	visual	AJT	LNEG
gender agr	native-non	questionna	20.00		immersion	visual	AJT	P600
gender agr	native-non	questionna	20.00		immersion	visual	AJT	LNEG
gender agr	native-non	questionnaire, grammar test, DELF			immersion	visual	AJT	P600
gender agr	native-non	questionnaire, grammar test, DELF			immersion	visual	AJT	NA
gender agr	native-non	questionnaire, grammar test, DELF			immersion	visual	AJT	NA
gender agr	native-non	questionna	13.40		immersion	visual	AJT	P600
gender agr	native-non	questionna	13.40		immersion	visual	AJT	N400
gender agr	native-non	questionna	13.40		immersion	visual	AJT	NA
semantic c	native-non	questionna	12.10	alphabet sp	immersion	visual	AJT	N400
semantic c	native-non	questionna	10.00		immersion	visual	comprehen	N400
other	native-non	questionna	11.70		instructed	auditory	AJT	N400
other	native-non	questionna	11.70		instructed	auditory	AJT	P600
number agr	native-non	native, proficiency level: low-intern			instructed	visual	AJT	P600
number agr	native-non	native, profi	>11		instructed	visual	AJT	P600
number agr	native-non	native, profi	>11		instructed	visual	AJT	NA
gender agr	native-non	native, proficiency level: low-intern			instructed	visual	AJT	P600
gender agr	native-non	native, proficiency level: low-intern			instructed	visual	AJT	NA
gender agr	native-non	native, proficiency level: low-intern			instructed	visual	AJT	NA
number agr	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
gender agr	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
verb agreer	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
word order	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
number agr	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
gender agr	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
verb agreer	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
word order	native-non	native, training: explicit-implicit			lab training	visual	AJT	P600
verb agreer	native-non	native, proficiency level: low-high			immersion	visual	AJT	P600
verb agreer	native-non	native, proficiency level: low-high			immersion	visual	AJT	N400
verb agreer	native-non	native, proficiency level: low-high			immersion	visual	AJT	P600
semantic c	native-non	questionna	12.40		immersion	visual	AJT	N400
semantic c	native-non	questionna	12.40		immersion	visual	AJT	P600
word order	native-non	questionna	12.40		immersion	visual	AJT	LAN
semantic c	native-non	questionna	14.10		instructed	visual	AJT	N400
word order	native-non	questionna	14.10		instructed	visual	AJT	NA
semantic c	native-non	questionna	14.00		immersion	visual	comprehen	N400
other	native-non	questionnaire			instructed	visual	AJT	P2
other	native-non	questionnaire			instructed	visual	AJT	N400
gender agr	native-non	questionna	>14		instructed	visual	AJT	NA
number agr	native-non	questionna	>14		instructed	visual	AJT	P600
number agr	native-non	questionna	19.20		immersion	visual	comprehen	LAN
number agr	native-non	questionna	19.20		immersion	visual	comprehen	P600
gender agr	native-non	questionna	19.20		immersion	visual	comprehen	LAN
gender agr	native-non	questionna	19.20		immersion	visual	comprehen	P600
verb agreer	native-non	questionna	16.80		immersion	visual	AJT	P600
verb agreer	native-non	questionna	23.60		immersion	visual	AJT	P600

other	native-non	questionna	14.75	instructed	visual	AJT	N400
other	native-non	questionna	16.00	instructed	visual	AJT	P2
semantic c	native-non	questionnaire, DELE, verbal fluenc		immersion	visual	AJT	P600
semantic c	native-non	questionnaire, DELE, verbal fluenc		immersion	visual	AJT	LNEG
semantic c	native-non	questionnaire, DELE, verbal fluenc		instructed	visual	AJT	NA
semantic c	native-non	questionna	13.00	immersion	auditory	comprehen	N400
semantic c	native-non	questionna	13.00	immersion	auditory	comprehen	N400
semantic c	native-non	questionna	13.00	immersion	auditory	comprehen	N400
other	native-non	questionna	13.00	immersion	auditory	comprehen	LPOS
other	native-non	questionna	13.00	immersion	auditory	comprehen	LPOS
other	native-non	questionna	13.00	immersion	auditory	comprehen	LPOS
other	native-non	questionna	13.70	immersion	visual	AJT	LPOS
other	native-non	questionna	8.00	immersion	visual	comprehen	N400
other	native-non	questionnaire, language test		instructed	visual	AJT	LNEG
other	native-non	questionna	10.00 backward a	instructed	visual	AJT	P600
other	native-non	questionna	10.00 backward a	instructed	visual	AJT	LNEG
other	native-non	questionna	>10	immersion	visual	comprehen	NA
number agr	native-non	questionna	14.00	immersion	visual	AJT	P600
number agr	native-non	questionna	14.00	immersion	visual	AJT	LNEG
gender agr	native-non	questionna	14.00	immersion	visual	AJT	P600
gender agr	native-non	questionna	14.00	immersion	visual	AJT	LNEG
other	native-non	questionna	10.30	instructed	visual	comprehen	LAN
other	native-non	questionna	10.30	instructed	visual	comprehen	N400
other	native-non	questionna	10.30	instructed	visual	comprehen	P600
semantic c	native-non	native within		lab training	auditory	AJT	N400
verb agree	native-non	native within		lab training	auditory	AJT	P600
other	native-non	native within		lab training	auditory	AJT	P600
gender agr	native-non	questionna	15.00	instructed	visual	AJT	N400
gender agr	native-non	questionna	15.00	instructed	visual	AJT	N400
other	native-non	questionna	19.23	immersion	auditory	comprehen	N400
other	native-non	questionna	19.23	immersion	auditory	comprehen	N400
other	native-non	questionna	19.23	immersion	auditory	comprehen	N400
other	native-non	questionna	19.23	immersion	auditory	comprehen	LNEG
other	native-non	questionna	19.23	immersion	auditory	comprehen	LNEG
other	native-non	questionna	19.23	immersion	auditory	comprehen	LNEG
other	native-non	questionnaire, TEM-4		instructed	visual	AJT	P600
other	native-non	questionnaire		instructed	visual	semantic ju	N400
other	native-non	questionnaire		instructed	visual	semantic ju	N400
other	native-non	questionnaire		instructed	visual	semantic ju	P600
other	native-non	questionnaire		instructed	visual	semantic ju	P600
other	native-non	questionna	>10	immersion	auditory	sentence b	ANEG
other	native-non	questionna	11.80	instructed	auditory	AJT	P2
other	native-non	questionna	13.30	immersion	auditory	AJT	P2
other	native-non	questionna	13.30	immersion	auditory	AJT	P2
other	native-non	questionna	11.80	instructed	auditory	AJT	N400
other	native-non	questionna	13.30	immersion	auditory	AJT	N400
other	native-non	questionna	13.30	immersion	auditory	AJT	N400
other	native-non	questionna	11.80	instructed	auditory	AJT	P600
other	native-non	questionna	13.30	immersion	auditory	AJT	P600
other	native-non	questionna	13.30	immersion	auditory	AJT	P600
gender agr	native-non	questionna	14.27	immersion	visual	AJT	LAN
gender agr	native-non	questionna	14.27	immersion	visual	AJT	P600

number agr	native-non	questionna	14.27	immersion	visual	AJT	P600
gender agr	native-non	questionna	14.27	immersion	visual	AJT	NA
number agr	native-non	questionna	14.27	immersion	visual	AJT	P600
other	native-non	questionna	>10	instructed	visual	comprehen	P2
other	native-non	questionna	>10	instructed	visual	comprehen	ANEG
other	native-non	questionna	10.30	instructed	visual	comprehen	N400
other	native-non	questionna	10.30	instructed	visual	comprehen	P600
semantic c	native-non	questionna	>10 reading spa	immersion	visual	AJT	P600
word order	native-non	questionna	>10	immersion	visual	AJT	P600
word order	native-non	questionnaire, LexTALE, language		immersion	visual	AJT	P600
word order	native-non	questionnaire, LexTALE, language		immersion	visual	AJT	N400
word order	native-non	questionnaire, LexTALE, language		immersion	visual	AJT	LNEG
word order	native-non	questionna	21.50	immersion	visual	AJT	ANEG
word order	native-non	questionna	21.50	immersion	visual	AJT	P600
word order	native-non	questionna	23.20	immersion	visual	AJT	P600
other	native-non	questionna	12.50 backward a	immersion	visual	AJT	N400
other	native-non	questionna	12.50 backward a	immersion	visual	AJT	ANEG
other	native-non	questionna	12.50 backward a	immersion	visual	AJT	P600
semantic c	native-non	questionna	12.50 backward a	immersion	visual	AJT	N400
semantic c	native-non	questionna	12.50 backward a	immersion	visual	AJT	ANEG
semantic c	native-non	questionna	12.50 backward a	immersion	visual	AJT	P600
number agreement					visual	AJT	LAN
number agreement					visual	AJT	P600
gender agreement					visual	AJT	LAN
gender agreement					visual	AJT	P600
number agreement					visual	AJT	LAN
number agreement					visual	AJT	P600
gender agreement					visual	AJT	LAN
gender agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
other					auditory	AJT	N400
other					auditory	AJT	P600
semantic consistency					visual	AJT	N400
semantic consistency					visual	AJT	N400
word order					visual	AJT	LAN
word order					visual	AJT	LNEG
verb agreement					visual	AJT	P600
number agreement					visual	AJT	LAN
gender agreement					visual	AJT	LAN
verb agreement					visual	AJT	LAN
word order					visual	AJT	LAN
number agreement					visual	AJT	P600
gender agreement					visual	AJT	P600
verb agreement					visual	AJT	P600
word order					visual	AJT	P600
number agreement					visual	AJT	P600
gender agreement					visual	AJT	P600

semantic consistency	visual	comprehen	N400
number agreement	visual	AJT	P600
number agreement	visual	AJT	P600
number agreement	visual	AJT	P600
gender agreement	visual	AJT	P600
gender agreement	visual	AJT	P600
gender agreement	visual	AJT	P600
other	visual	AJT	P2
other	visual	AJT	N400
other	visual	AJT	P600
other	visual	AJT	LAN
gender agreement	visual	AJT	P600
number agreement	visual	AJT	P600
semantic consistency	visual	comprehen	N400
semantic consistency	visual	AJT	P600
semantic consistency	visual	AJT	LNEG
number agreement	visual	comprehen	LAN
number agreement	visual	comprehen	P600
gender agreement	visual	comprehen	P600
verb agreement	visual	AJT	P600
verb agreement	visual	AJT	P600
other	visual	comprehen	N400
other	visual	AJT	N400
other	visual	AJT	LPOS
semantic consistency	auditory	comprehen	N400
other	auditory	comprehen	LPOS
other	visual	AJT	P600
other	visual	AJT	N400
number agreement	visual	AJT	LAN
number agreement	visual	AJT	P600
number agreement	visual	AJT	LNEG
gender agreement	visual	AJT	LAN
gender agreement	visual	AJT	P600
gender agreement	visual	AJT	LNEG
gender agreement	visual	AJT	P600
gender agreement	visual	AJT	P600
other	auditory	comprehen	N400
semantic consistency	auditory	AJT	N400
other	auditory	AJT	P600
verb agreement	auditory	AJT	P600
other	visual	comprehen	N400
other	visual	comprehen	P600
other	visual	comprehen	ANEG
gender agreement	auditory	sentence b	N400
gender agreement	auditory	sentence b	ANEG
gender agreement	auditory	sentence b	P600
number agreement	auditory	sentence b	N400
number agreement	auditory	sentence b	ANEG
number agreement	auditory	sentence b	P600
other	auditory	AJT	P2
other	auditory	AJT	N400
other	auditory	AJT	P600

other	visual	AJT	LAN
other	visual	AJT	P600
other	visual	AJT	LAN
other	visual	AJT	P600
word order	visual	comprehen	N400
word order	visual	comprehen	P600
other	visual	comprehen	P2
other	visual	comprehen	ANEG
other	visual	AJT	P600
semantic consistency	visual	AJT	P600
word order	visual	AJT	N400
word order	visual	AJT	P600

GENCON	FAMCON	P2	LAN	N400	ANTERIOR	P600	LATE NEGA	LATE POSIT
y	n		in first position (det-noun) only, number>gender					
y	n					all violations, number>gender		
y	n		in first position (det-noun) only, number>gender					
y	n					all violations, number>gender		
y	n					all violations, number>gender		
y	n						second position (noun-	
y	n					all violations, number>gender		
y	n						second position (noun-	
y	n					all violations		
y	n							
y	n							
y	n					all violations		
y	n			all violations				
y	n							
y	y			violations in no-gap sentences only				
y	n			unexpected nouns only				
n	n			superflous boundary		all violations more central		
n	n			superflous boundary		all violations more central		
y	n					all violations number>gender		
y	n					number violations		
y	n							
y	n					all violations number>gender		
y	n							
y	n							
y	n					successful learners all violations		
y	n					successful learners all violations		
y	n					successful learners all violations		
y	n					successful learners all violations		
y	n					successful learners all violations		
y	n					successful learners all violations		
y	n					successful learners all violations		
y	n					successful learners all violations		
n	n					all violations		
n	n			negative-dominant all		positive dominant all violations		
n	n			negative-dominant all		positive dominant all violations		
y	n			semantic violations		all violations		
y	n			semantic violations		all violations		
y	n		word order violations					
y	n			semantic violations distributed				
y	n							
n	n			unexpected articles				
y	y		spatial violations only	spatial violations only				
y	y		spatial violations only	spatial violations only				
y	n							
y	n					number and combined violations b		
n	n		number violations delayed but all			number violations but all violation		
n	n		number violations delayed but all			number violations but all violation		
n	n		number violations delayed but all			number violations but all violation		
n	n		number violations delayed but all			number violations but all violation		
n	n					orally realized>silent violations		
n	n					orally realized>silent violations		

y	n		contrastive focus>informative focus+positive shift at cleft			
y	n	positive shift at clefted noun				
y	n			object+ser	event+estar violation	
y	n			object+ser	event+estar violation	
y	n					
y	n		semantic violations more anterior			
y	n		semantic violations more anterior			
y	n		semantic violations more anterior			
y	n					LPP inconsi
y	n					LPP inconsi
y	n					LPP inconsi
n	n					LPP immora
y	y		phrasal verbs reduced			
y	n				intermediately related:	
n	n			"of" violatic	all violations	
n	n			"of" violatic	all violations	
y	n					
y	n			number>ge	all violations	
y	n			number>ge	all violations	
y	n			number>ge	all violations	
y	n			number>ge	all violations	
n	n	long lasting	unexpected arguments	filled-gap distributed		
n	n	long lasting	unexpected arguments	filled-gap distributed		
n	n	long lasting	unexpected arguments	filled-gap distributed		
y	y		semantic violations stronger in subjects with higher N400			
y	y			syntactic violations in subjects witl		
y	y			syntactic violations in subjects witl		
n	n		all violations			
n	n		gender overlap noun violations only			
n	n		world knowledge violations and ur	world knowledge viola		
n	n		world knowledge violations and ur	world knowledge viola		
n	n		world knowledge violations and ur	world knowledge viola		
n	n		world knowledge violations and ur	world knowledge viola		
n	n		world knowledge violations and ur	world knowledge viola		
n	n		world knowledge violations and ur	world knowledge viola		
y	y			gender pronoun violation		
y	y		metaphors>literal, Eng	LPC metaphors>literal, English>Ch		
y	y		metaphors>literal, Eng	LPC metaphors>literal, English>Ch		
y	y		metaphors>literal, Eng	LPC metaphors>literal, English>Ch		
y	y		metaphors>literal, Eng	LPC metaphors>literal, English>Ch		
n	n		mid-distributed word accent only with increas			
n	n	CPS with increasing prc	detached noun in supe	disambiguating verb in no-bounda		
y	y	CPS with increasing prc	detached noun in supe	detached noun in superfluous bou		
y	y	CPS with increasing prc	detached noun in supe	detached noun in superfluous bou		
n	n	CPS with increasing prc	detached noun in supe	disambiguating verb in no-bounda		
y	y	CPS with increasing prc	detached noun in supe	detached noun in superfluous bou		
y	y	CPS with increasing prc	detached noun in supe	detached noun in superfluous bou		
n	n	CPS with increasing prc	detached noun in supe	disambiguating verb in no-bounda		
y	y	CPS with increasing prc	detached noun in supe	detached noun in superfluous bou		
y	y	CPS with increasing prc	detached noun in supe	detached noun in superfluous bou		
y	n		all number agreement violations	all violations within-phrase>across		
y	n		all number agreement violations	all violations within-phrase>across		

y	n		all violations within-phrase>across
y	n		
y	n		all number agreement violations
y	y	so, and>although, full stop at pron	Nref stronger than natives at pronouns in so, a
y	y	so, and>although, full stop at pron	Nref stronger than natives at pronouns in so, a
n	n	at V implausible fillers	at disambiguating regions all violat
n	n	at V implausible fillers	at disambiguating regions all violat
n	n		semantic violations only but also ir
n	n		violations no-conflict>conflict conc
n	n		violations no-conflict>conflict conc
n	n	violations no-conflict>conflict conc	violations no-conflict o
n	n	violations no-conflict>conflict conc	violations no-conflict o
n	n	all violation	higher proficiency all violations
n	n	all violation	higher proficiency all violations
n	n		higher proficiency all violations
y	n	all violation	sustained nsemantic and double violations, sy
y	n	all violation	sustained nsemantic and double violations, sy
y	n	all violation	sustained nsemantic and double violations, sy
y	n	all violation	sustained nsemantic and double violations, sy
y	n	all violation	sustained nsemantic and double violations, sy
y	n	all violation	sustained nsemantic and double violations, sy

FACTOR(S)
proficiency, L1 transfer
proficiency, L1 transfer
proficiency, L1 transfer
proficiency, L1 transfer
proficiency, L1 transfer
proficiency, L1 transfer
proficiency, L1 transfer
proficiency, L1 transfer
proficiency
proficiency
proficiency
proficiency, L1 transfer
proficiency (no WM)
nonnativeness
proficiency
proficiency
proficiency (not L1)
proficiency (not kind of training)
proficiency (not kind of training)
proficiency, individual neural profile
proficiency
proficiency
L1
L1
proficiency
proficiency
proficiency
proficiency
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proficiency
proficiency

proficiency

proficiency
proficiency

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proficiency
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proficiency
proficiency
proficiency
proficiency
individual neural profile
individual neural profile
individual neural profile

proficiency, L1
proficiency
proficiency
proficiency
proficiency
proficiency
proficiency
proficiency
proficiency
inese, stronger than high proficiency
proficiency
inese, stronger than high proficiency
proficiency
proficiency (not L1)
ndary condition weaker
ndary condition weaker
proficiency (not L1)
ndary condition weaker
ndary condition weaker
proficiency (not L1)
ndary condition weaker
ndary condition weaker
proficiency
proficiency

s-phrase (unlike Aleman Banon 2014)

nonnativeness

nonnativeness

tions plausible>implausible fillers

tions plausible>implausible fillers

nonnativeness

proficiency, language distance

dition

nly

nly

proficiency, L1

proficiency, L1

daily usage, proficiency, WM (not AO)

daily usage, proficiency, WM (not AO)

daily usage, proficiency, WM (not AO)

daily usage, proficiency, WM (not AO)

daily usage, proficiency, WM (not AO)

daily usage, proficiency, WM (not AO)

Native speakers only: https://rpubs.com/GiadA/Native_speakers

Learners only: https://rpubs.com/GiadA/Learners

Native speakers and learners: https://rpubs.com/GiadA/NativeSpeakers_Learners_directContrast

Additional model testing: https://rpubs.com/GiadA/Additional_model_testing