Workshop on Syntax Processing

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Book of Abstracts

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Locality effects in children and adults

L. Rizzi

University of Geneva, University of Siena

Young children experience selective difficulties with the production and comprehension of certain A-bar dependencies in which an object moves across a subject. Much recent work stemming from Friedmann, Belletti & Rizzi 2009 and inspired by Grillo's 2008 approach to agrammatism has addressed this issue by interpreting the observed difficulties as cases of intervention, tracing back the effect to the featural version of Relativized Minimality. In this talk I would like to rethink some conceptual issues and empirical problems raised by such a grammar-based approach to a developmental problem: what varies between child and adult systems? What determines the observed development? How do the observed intervention effects relate to familiar intervention effects in adult grammars, e.g., violations of Weak Islands?

5 June
10.00 am

Agreement and (illusion of) disagreement: reconciling theoretical analyses and sentence processing data

S. Mancini

Basque Center on Cognition, Brain and Language

5 June
10.30 am

The study of agreement from a theoretical and psycholinguistic perspective has typically focused on the analysis and comparison of grammatical and ungrammatical patterns across many different languages and experimental techniques (Italian: De Vincenzi et al. 2003; English: Braze et al. 2002; Ni et al. 1998; Osterout & Mobley, 1995; Pearlmutter et al. 1999;Spanish: Hinojosa et al. 2003; Mancini et al. 2011; Silva-Pereyra & Carreiras, 2007; German: Rossi et al. 2007; Hebrew: Deutsch & Bentin, 2001; Hindi: Nevins et al. 2007 see Molinaro et al. 2011 for a review). While the processing system can be best understood when dealing with mistakes (Wagers et al. 2009), recent studies on agreement comprehension (Mancini, Molinaro, Rizzi & Carreiras, 2011; Mancini, Molinaro & Carreiras, 2013; Mancini, Molinaro, Davidson, Avilés & Carreiras, 2014) have capitalized on the relevance that the study of grammatical mismatches have for the understanding of agreement representation and processing. Such is the case of unagreement (Hurtado, 1985), an agreement phenomenon available in Spanish, and other null-subject languages (see also Höhn, Silvestri & Squillaci, 2016 for southern Italian dialects). Theoretical accounts converge on assuming that what allows these agreement patterns is the distinct internal structure that characterizes the subject DP (Torrego & Laka, 2015) and its person feature specifications (Höhn, 2016) in unagreement compared to non-unagreement languages. While these analyses predict that unagreement is rather an instance of regular agreement, electrophysiological and behavioral studies in Spanish and Basque consistently report a stark mismatch effect for unagreement relative to standard agreement sentences, which is suggestive of "non-regular" agreement processing. In this talk I will review recent theoretical approaches and experimental findings to the study of unagreement and will attempt to provide an account that can reconcile grammar and performance data.

Interference effects in processing reflexives: A role for logophoricity

S. Sloggett and B. Dillon

University of Massachusetts

Starting with Sturt (2003), there have been a number of demonstrations that the comprehension of reflexive pronouns in English (e.g. himself) is largely constrained by Principle A: comprehenders do not appear to consider syntactically illicit referents when searching for a reflexive's antecedent (Nicol & Swinney, 1989; Cunnings & Sturt, 2014 Dillon et al., 2013; Sturt, 2003; Xiang et al., 2009; among many others, see Jaeger et al, 2017). However, recently, Parker and Phillips (2017) show that comprehenders sometimes do consider antecedents which would be unlicensed under Principle A. We present two sets of studies that investigate the contexts in which comprehenders show sensitivity to these syntactically illicit referents. We find that the degree of sensitivity is increased when the intruding antecedent is the subject of a speech verb, and decreased when there is an indexical pronoun (e.g. I, you) that intervenes between the reflexive and the intruding antecedent. Together, our results suggest that Principle A incompatible behavior isn't (purely) a function of morphpsyntactic feature matching, but rather the product of an alternative, logophoric use of reflexive pronouns. Furthermore, we suggest that in contrast to well known grammatical illusions like "agreement attraction", these apparent "attraction" effects for reflexives shouldn't be seen as errors of the sentence processing mechanism, but rather as a consequence of alternative grammatical constraints on reflexive reference.

The role of structural constraints during the attachment (and integration) of temporal adverbs

N. Biondo[1], F. Vespignani[1] and B. Dillon [2]
[1]University of Trento; [2]University of Massachusetts

Cue-based models of sentence processing posit that syntactic processing relies on cue-based memory retrieval mechanisms [1], but linguistic relations seem to differ in how they weight retrieval cues in comprehension. For example, subject-verb agreement is highly sensitive to morphological cues, and it is prone to interference from syntactically inaccessible but feature-matched constituents [2], while reflexive anaphors are less so, and they weight syntactic cues more highly [3]. Overall, it seems that some linguistic relations are 'fallible' in retrieving the right antecedent, whereas others are not [4].

We extend this debate by investigating the processing of temporal adverbs such as *last month* in sentences as in (1), in which the adverbial should be attached to the main clause's domain [5] and concord with the main verb's temporal information.

(1) The agent *leased*(V1:MATCH) / *will lease*(V1:MISMATCH) the apartment [that *was*(V2:MATCH) / *will be*(V2:MISMATCH) renovated] to a young couple **last month** after several meetings.

We conducted two eye tracking studies (*n*=34, *n*=43), including 24 sentences as in (1) combined with 76 fillers. We manipulated two factors: whether the adverb matched the tense features of the syntactically accessible verb (V1) and/or the tense features of a syntactically inaccessible verb (V2). If the attachment of an adverb relies on the

use of semantic tense cues, we expect to observe an interaction of V1/V2 match or a main effect of V2 match. If instead syntactic cues strongly constrain the processing of the adverbial, we expect a main effect of V1 match.

Data show that readers are strongly sensitive to grammaticality (i.e. V1 match) both in early (first-pass) and late (total time) measures. We find only limited evidence of interference from V2's tense features: interference was found only in a post-hoc data analysis with data from both experiments, in very late stages of processing (i.e. total time of the spillover region).

These results offer new evidence for a more fine-grained analysis of the retrieval cues weighted during the processing of linguistic relations: the attachment and the integration of a temporal adverb is mainly guided by structural constraints [5], while the morpho-semantic cues play a smaller role.

Does argument structure affect the processing of subject-verb agreement? Preliminary ERPs evidence from Italian

F. Vespignani, E. Bergamini and N. Biondo
University of Trento

Within the debate about the reliability of LAN as a stable correlate of syntactic violations, subject-verb agreement in Italian is relatively understudied. We tested whether the fact that Italian allows null and post-verbal subjects could affect the way a mismatch between a DP and a following inflected verb is processed. Namely, the mismatch can trigger the possibility that the parsed DP represents a pre-verbal object. This possibility can be explored by the parser only if the verb allows a direct object argument (i.e. is transitive).

When processing the inflected verb, the relative timing of number checking and of the retrieval of verb-steam information about argument structure could interplay in the 300-400ms interval, giving rise to differences in the presence, onset, amplitude and topographic distribution of the LAN. We ran an ERPs experiment in which participants (N=24) were asked to judge the acceptability of sentences (N=160, total) in four conditions (1,2) counterbalanced for subject number feature. Our hypothesis was that the pre-verbal object hypothesis can be explored by the parser in (2) (i.e. transitive verbs) but not in (1) (i.e. unergative verbs) and thus we expect a typical LAN+P600 in (1) and a different pattern in (2).

ERPs at the verb (underlined) show a broader topography of the LAN in the 300-400ms interval and a reduced P600 for the transitive verbs (2), with respect to unergative verbs (1). This shows that thematic structure of the verb and alternative structural options are considered by the parser from the earlier stages of processing of a number mismatch.

(1.a) Il comico scherza spesso su questioni serie.
    (The comedian jokes often upon serious topics)
(1.b) *Il comico scherzano spesso su questioni serie.
    (The comedian joke often upon serious topics)
(2.a) ll bambino rincorre i cani per tutto il giardino.
    (The child chases the dogs all over the garden)
(2.b) *ll bambino rincorrono i cani per tutto il giardino.
    (The child chase the dogs all over the garden)

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ERP correlates of syntactic processing in cochlear implant users: A preliminary report

L. Artesini,[1] M. Dighero[1], V. Giannelli[1], D. Musola[4], F. Pavani*[1,2,3] and F. Vespignani*[2]

[1]CIMeC, Center for Mind/Brain Sciences, University of Trento; [2]DiPSCo, Department of Psychology and Cognitive Science, University of Trento; [3]Centre de Recherche en Neuroscience de Lyon, France; [4]Cooperativa Logogenia, Italy

* These authors contributed equally to the paper

Studies on linguistic abilities of cochlear implant (CI) users revealed issues in complex syntactic structures rather than lexical, semantic and phonological knowledge (for studies in Italian see Guasti et al., 2012; Caselli et al., 2012). Previous studies on hearing monolinguals and bilinguals showed that ERPs are sensitive to differences in processing of syntactic relationship (e.g., Tanner & Van Hell, 2014) even when language proficiency is comparable. The purpose of our experiment is to use real-time and behavioral measures to evaluate how the CI impacts on language. To this aim we tested CI users and age-matched hearing controls with a rapid visual word-by-word sentence presentation while recording the EEG signal. Participants were presented with 320 sentences, half of them containing either a syntactic agreement (subject-verb) or a semantic violation. The experimental design was tuned to allow for subsequent analyses both at the single subject level and at group level. Participants also underwent behavioral assessment aimed at evaluating their competence. This preliminary report focuses on the results of 7 CI users (aged: 12, 16, 16, 20, 33, 50, and 63 yo; 3 with pre-verbal and 4 with post-verbal deafness onset), and 35 normal hearing (NH) controls (N=5 aged 12-17 yo; N=13 aged 18-28 yo; N=11 aged 29-44 yo; N=6 aged 45-65 yo). Both CI users and NH controls showed N400 and P600 in response to semantic and syntactic violations respectively. Despite our small and non-homogenous CI group, CI users showed a different pattern in the early stage of detection of syntactic violations. While NH controls showed a LAN, CI users showed a larger P2 in an earlier time window (180-220 ms) at left-frontal sites ((DFn=2, DFd=80), F=3.601, p=0.003). P2 has been linked to attention-related processes (Luck & Hillyard, 1994) and its amplitude may reflect context-induced expectations (Su et al., 2016) or enhanced processing at an orthographic level. These results may provide initial indications that CI users pay more attention on upcoming morphological features of words. This might be due to their altered phonology which modifies the cerebral pathways that allow the processing of functional aspects of speech.

Processing long distance dependencies: exploring null subject-antecedent relations

I. de-Dios-Flores,[1,2] C. Acuña-Fariña[1] and M. Carreiras[2,3,4]

[1]University of Santiago de Compostela; [2]BCBL, Basque Center on Cognition, Brain and Language; [3]Ikerbasque, Basque Foundation for Science; [4]University of the Basque Country

To accurately compute grammatical relations, it is necessary to relate information that, in many cases, is not adjacent (i.e. long distance dependencies). Therefore, the

parser must preserve this information over time to license different relations between words and phrases. Interestingly, some dependencies are subject to interference from structurally irrelevant but feature-matching items, giving rise to illusions of grammaticality (Phillips et al. 2011). This includes, among others, agreement dependencies or the licensing of negative polarity items. Here we investigate the processing of null subject-antecedent relations in complement control constructions in Spanish. This dependency, illustrated in (1), involves an interpreted anaphoric relation between the null subject of the infinitive (Ø, also known as PRO) and its controller (either the subject (1a) or the object (1b) of the matrix clause, depending on the control properties of the matrix verb).

(1) a. El **abogado$_i$ prometió** a la secretaria$_j$ Ø ser **cuidadoso$_i$** con los documentos.
The **lawyer.M$_i$** promised the secretary.F$_j$ Ø to be **careful.M$_i$** with the documents.
b. El abogado$_i$ **aconsejó** a la **secretaria$_j$** Ø ser **cuidadosa$_j$** con los documentos.
The lawyer.M$_i$ advised the **secretary.F$_j$** Ø to be **careful.F$_j$** with the documents.

The aim of this study is twofold: on the one hand, we are interested in how control information is used to recover the antecedent of PRO. On the other hand, we are interested in whether this dependency is subject to interference from irrelevant items. Findings from previous research show a mixed profile of interference in anaphoric dependencies (Dillon et al. 2013; Parker et al. 2015). Conflicting results are also found in studies focusing on controlled PROs (Nicol and Swinney, 1989; Betancort et al. 2005). By manipulating the gender of the matrix clause NPs and the adjective that follows the infinitive, we created 8 experimental conditions, crossing the following factors: type of CONTROL VERB (subject/object), GRAMMATICALITY (grammatical/ungrammatical) and presence of a DISTRACTOR NP (distractor/no distractor). Results from a pilot speeded acceptability study are discussed against current theories on the processing of long distance dependencies and linguistic theories of control.

When subject-verb agreement is influenced by object-verb agreement: ERP evidence from Basque

A. Nevins

University College London, Universidade Federal do Rio de Janeiro

5 June
2.45 pm

Previous cross-linguistic research has found that comprehenders are immediately sensitive to various kinds of agreement violations across languages (e.g., *Sally runs/*run*) Molinaro, Barber & Carreiras (2011); Nevins, Dillon, Malhotra & Phillips (2007) . Many studies have examined how comprehenders compute agreement based on different features (e.g., person, number, gender) and between different constituents (e.g., subject-verb vs. object-verb agreement), but much less is known about the relationship between agreement processing and the grammatical properties of the constituents involved. For example, how does sensitivity to subject-verb (S-V) agreement violations vary as a function of verb transitivity? We focus on Basque, an SOV ergative language with both S-V and object-verb (O-V) agreement and hypothesize that S-V agreement processing (specifically, agreement with the ergative) may be affected by the presence vs. absence of O-V agreement. We found that S-V agreement violations elicited qualitatively different event-related brain

potential (ERP) responses in transitive (ergative+absolutive) vs. intransitive (absolutive only) sentences. This provides evidence for distinct real-time agreement computations between ergative subjects (the grammatically-marked subjects of transitive verbs) and absolutive subjects (the grammatically-marked subjects of intransitive verbs), and leverages the typological contribution of a language in which they are morphosyntactically distinguished.

Brain electrical correlates of morphosyntactic change in the gender system of a southern Italo-Romance dialect

5 June
3.15 pm

P. Canal*,[1] V. Bambini*[2] F. Breimeier[3] D. Meo[3] D. Pescarini[3] and M. Loporcaro[3]

[1]Scuola Normale Superiore, Pisa; [2]School of Advanced Studies (IUSS), Pavia;
[3]University of Zurich
* Co-first authors

We investigated grammatical gender agreement in a Central-Southern Italo-Romance dialect, spoken by 5000 inhabitants in Agnone (Molise). Compared to Italian, the Agnonese dialect shows a more complex grammatical gender system, signaling three values of gender on determiners featuring a neuter form (*lə* DEF.N), contrasting with both masculine (*ru* DEF.M.SG) and feminine (*la* DEF.F.SG). The class of neuter nouns is numerically weak (only 2% of the noun lexemes), and hosts only mass nouns, referring to unbounded substances. Moreover, the gender system is undergoing a process of morpho-syntactic change, enhanced by standard Italian, by which the mass neuter is slowly merging with the masculine. We aimed at providing new evidence on a) the status of the neuter gender as reflected in agreement, compared to feminine and masculine, and b) whether it is possible to find a brain signature of the diachronic change merging the neuter into the masculine.

To do so we exploited the Event-Related brain Potentials (ERP) technique, commonly used to investigate grammatical agreement processes, and we focused on the behavior of the P600 and the Left Anterior Negativity (LAN) components. We used a determiner-noun agreement violation paradigm and recorded the ERPs while 30 speakers of Agnonese listened to short sentences. The experimental design was a 3 X 3 design, in which Noun Gender and Determiner Gender were crossed, determining one Agreement and two Disagreement conditions for each value of Noun Gender.

A prominent P600 effect for agreement violations was found across all levels of noun gender supporting the view of neuter as an autonomous value of the system. Moreover, a moderate LAN effect was mainly associated with feminine nouns possibly due to the transparent *a*-ending. Finally, not only masculine-neuter (MN) combinations showed reduced P600 effects compared to feminine-neuter (FN) combinations, but also the P600 effect to MN was correlated with proficiency: more proficient speakers showed more similar P600 amplitude for FN and MN, whereas less proficient speakers showed P600 effects for FN only, suggesting that they may be the first loosing the grammatical distinction between masculine and neuter.

Grammatical creativity: When children do most what they hear less

A. Belletti

University of Geneva, University of Siena

Based on recent experimental findings on the acquisition of Italian, I will illustrate two grammatical domains in which young Italian speaking children (4 to 5 y.o.) appear to systematically resort to grammatical options/constructions which are only marginally present in the adult language (Belletti & Manetti 2016). The first case has to do with the fact they very often mark a pre-posed direct object topic with a (light) preposition (a/to), the second case with the fact that they often resort to a type of passive which is rarely present in the adult language, a reflexivecausative type passive. Hence, children appear to creatively overextend grammatical options. A number of reasons - formal, discourse, possibly lexical, that I will not (be able to) address in any detail - most likely lead children to preferably access these structures. I hypothesize that a crucial role is played by the grammatical pressure of coping with computations that are known to be hard for young children to master as they involve an intervention configuration, in which the object crosses over the subject (Rizzi 1990, 2004; Friedmann, Belletti; Rizzi 2009; Belletti & Manetti 2016). One aspect of these results deserves special mention: they clearly indicate that some internal pressure, most likely due to some factor of computational complexity, appears to lead children to be grammatically creative, not simply mirroring adult production.

Effects of prosodic cues on the processing of garden-path sentences: a study with L2 learners of English

C. Contemori,[1] L. Pozzan[2] P. Galinsky[3] and P.E. Dussias[3]
[1]University of Texas at El Paso; [2]University of Pennsylvania; [3]Pennsylvania State University

Research on L2 sentence processing has suggested that differences between L2 learners and native speakers may be found in the revision process. In particular, when processing temporary syntactic ambiguities, L2 learners may not be able to revise an initial interpretation as efficiently as native monolingual speakers (e.g., Pozzan & Trueswell, 2015). In the present study we explore the role of prosody on how L2 learners of English interpret PP attachment ambiguities (e.g., Put the frog on the napkin in the box). The role of prosody in processing has gone largely overlooked in L2 research (Dekydtspotter et al., 2010). Yet a body of research has shown that prosody can be an important factor in L1 sentence processing (e.g., Snedeker & Trueswell, 2003).

Twenty-two English monolinguals and 26 Spanish-English speakers highly proficient in English were recruited. The materials were similar to those used by Trueswell et al. (1999). Eye-movements were recorded while participants looked at four pictures presented on a computer screen that included either one or two referents, and listened to temporally ambiguous and unambiguous sentences (e.g., Put the frog (that's) on the napkin onto the box). The audio files were manipulated in order to create prosodic disambiguation (high PP attachment) in ambiguous sentences. Participants moved objects around the screen with a mouse according to the instructions.

The sum of looks to the incorrect location (e.g., the empty napkin) were analyzed in the 2000ms following the onset of the first prepositional phrase (e.g., on the napkin). The eye-tracking data did not show any main effect or interactions, due to the small amount of looks to the incorrect location.

The off-line accuracy results (i.e., the actions performed by dragging the objects with a mouse) showed that L2 speakers performed significantly more incorrect goal actions (e.g., move the frog on the empty napkin and then into the box) than the natives in the ambiguous contexts ($\beta=0.07$, *SD*=0.02, t=2.653, p<0.01). The results demonstrate that although L2 learners integrate the prosodic information to guide sentence interpretation, they use prosodic cues less consistently than native monolingual speakers even at the highest levels of proficiency.

Effects of L2 age of onset on morphology and syntax

L. Cilibrasi

University of Cambridge

In the study of L2 acquisition there has been some debate regarding the roles of syntax and morphophonology in the explanation of the divergence of native speakers and bilinguals (Tsimpli & Dimitrikapoulou, 2007). While some proposals assume that the syntactic structures are solid in bilingual speakers also in the non-dominant language, and the divergence is due to problems in the morphophonological mapping of these structures (Goad and White, 2004), others claim that the divergence is due to incompleteness of the syntactic structures in the non-dominant language (Tsimpli & Dimitrikapoulou, 2007).

This study aims at contributing to this debate with syntactic and morphophonological data obtained from 3 groups of bilingual children with different age of onset of the L2. 45 bilingual children were tested with a syntactic comprehension task with Subject and Object relatives (SR vs OR) developed by Adani et al. (2014) and with a morphosyntactic task involving discrimination of minimal pairs of nonwords with and without morphological information developed by Cilibrasi et al. (2017).

Children belonged to three different groups: simultaneous, early sequentials (English from nursery) and late sequentials (English from primary school). All children had Czech as L1. In the analysis of the syntactic test a SR vs OR effect was observed in simultaneous and only marginally in early sequentials (no effect in late sequentials), with children having more difficulties with OR, as consistently reported in previous studies (i.e. Friedmann et al., 2009). Morphological mismatch played a role in the 3 groups, corroborating findings from Adani et al. (2014): All children were able to better understand the sentences when the NPs involved in the action differed in number.

The analysis of the morphosyntactic test shows rather mixed results, with phonology (rather than morphology as observed in monolinguals) as being most likely the best predictor of the RTs. Importantly, we did not observe any clear difference between the 3 groups. Together, these results suggest that both morphophonological and syntactic processing may differ in bilinguals when compared to monolinguals, but that only syntactic processing may be significantly affected also by the age of onset of the L2.

Language (non) selective effects in the domain of syntax: data from language acquisition and language impairment

M. Garraffa

Department of Psychology Heriot-Watt University

In his seminal book on the *"Biological Foundations of Language"* Eric Lenneberg describes four hallmarks for language acquisition, defined as a maturationally controlled emergence behavior (MCB): (1) a regular sequence of milestones correlated with age and other developmental factors; (2) an environmental stimulation as an opportunity for use; (3) the emergence of the behavior before of its use and (4) the evidence that this is not a sign of a goal-directed practice. In this paper, a similar framework will be adopted to address the late emergence of grammatical based intervention structures as examples of MCB, looking at potentialities of a grammatical behavior more than solely to its representation.

Data from developmental language disorders and people with aphasia will be presented, investigating which internal changes in the language organism rather than in the environment must at once endeavor grammar.

The role of the environmental stimulation will be then integrated for the case of children growing up with more than one language, where grammatical based intervention structures can evolve differently compare to monolinguals due to a more diverse set of grammatical options.

Finally a measure for tracking grammatical development of intervention structures based on evidence from structural priming will be proposed for the investigation of the deficit in language implicit learning mechanisms in children with developmental language disorders (DLD).

Effects of dyslexia on the production of complex Wh-Questions

F. Mantione,[1] M. Vender[2] C. Melloni[2] and D. Delfitto[2]
[1]University of Trento; [2]University of Verona

It is well known that Developmental Dyslexia (DD) involves much more than merely reading difficulties. Studies on the acquisition of different languages reported many cases in which dyslexics exhibit specific grammatical deficits in production and comprehension of complex syntactic structures such as relative clauses (Bar-Shalom et al., 1993; Laikin and Assayag-Bouskila, 2004; Robertson and Joanisse; Wiseheart et al., 2009, a. o.), passive sentences (Robertson and Joanisse, 2010; Stein et al., 1984; Wiseheart et al., 2009, a. o.) and structures containing morphological agreement (Rispens et al., 2004) and pronouns (Waltzman and Cairns, 2000). Italian is no exception to these findings.

Our study provides a contribution to the current research line dealing with the issue of oral language deficits in Italian children with DD (Arosio et al., 2016; Guasti et al., 2015; Mantione, 2016; Vender et al., submitted). Through an elicitation task, we investigated the ability of 27 dyslexic children (aged 8-12), compared to 23 age-matched typically developing controls, in the production of Wh-Questions requiring pied-piping of prepositions. The experimental sentences involved different levels of morphosyntactic complexity based on (i) the type of wh-element (e.g. *A chi/A quale studente sta portando il libro il professore?*) and (ii) the number match/mismatch

between wh-phrase and verb (e.g. *Per chi sta preparando/stanno preparando la torta la nonna/le nonne?*).

Our goal was twofold. First, we evaluated whether and to what extent dyslexia affects the oral production of this particular type of Wh-Questions. Then, we aimed at investigating whether potential dyslexics deficits can be due to morphosyntactic reasons.

Overall, results highlight that dyslexic children have significant difficulties with Wh-Questions involving pied-piping of prepositions. As a group, they performed significantly worse than controls. Moreover, the analysis of individual data showed that 96% of children with dyslexia were below the mean of their control peers. The extensive resort to non-target strategies especially when they were asked to produce which-questions with number mismatch revealed clear morphosyntactic difficulties in dyslexics.

Our study can be considered as a contribution to the literature on the relationship between dyslexia and language and provide further evidence for morphosyntactic problems in children diagnosed with DD.

Clitic production: How bilingualism and dyslexia interact

M. Vender,[1] D. Delfitto[1] S. Hu[2] F. Mantione[3] and C. Melloni[1]
[1]University of Verona; [2]Xiamen University; [3]University of Trento

The production of direct-object clitics (clitics henceforth) requires a quite sophisticated linguistic competence, entailing different levels of complexity on the phonological, morphosyntactic and pragmatic level. As a consequence, clitics are acquired later than other pronouns (Guasti 1993/1994) and remain challenging for children suffering from Specific Language Impairment (Bortolini et al. 2006; Arosio et al. 2014) and Developmental Dyslexia (Arosio et al. 2016; Mantione 2016; Zachou 2013; Avram et al. 2013). Similarly, early second language learners (EL2) display problems in clitic production: specifically, Vender et al. (2016) found that preschool EL2 children with 1 year of exposure to Italian underperformed monolinguals and that their difficulties were related to their amount of exposure to the L2. Conversely, the relation between bilingualism, dyslexia and clitic production has been less investigated.

Our study aims at addressing this issue, by comparing 4 groups of children in a clitic elicitation task: 25 Italian monolingual dyslexic children (mean age 10;08 years old), 33 Italian monolingual typically developing children (9;99 y.o.), 25 bilingual dyslexic children with Italian as L2 (10;31 y.o.) and 29 bilingual typically developing children with Italian as L2 (10;30 y.o.). All bilingual children had at least 3 years of consecutive scholastic attendance in Italy and had a good competence in Italian, as assessed by means of the PPVT-R (Dunn and Dunn 1981; Stella et al. 2000); complete information about their current and past exposure to Italian were also collected.

Results revealed that both groups of control children showed a very accurate and similar performance, indicating that clitics are completely mastered by bilingual typically developing children with at least three years of exposure to Italian. Conversely, both groups of dyslexic children performed worse that their control peers, with bilingual dyslexics underperforming monolingual dyslexics, confirming that clitic production is challenging in dyslexia, and indicating that bilingualism could exacerbate the difficulties. Moreover, the performance of the bilingual dyslexics was related to their current quantity of exposure to Italian, indicating that children with a

higher exposure produced more target structures. The correlation between performance in clitic production, phonological awareness, morphological awareness and working memory will be also discussed.

Animacy does not affect the production of relative clauses: evidence from French

K. Martini

University of Geneva

A well-known finding from acquisition, adult processing and pathological populations is that object relatives are more difficult to parse, comprehend and produce than subject relatives. The featural Relativized Minimality approach (fRM, Rizzi 1990, 2004, Starke, 2001, Friedmann et al. 2009) ascribes this asymmetry to a grammatical constraint bearing on intervention configurations. Headed object relatives with a preverbal lexical subject involve an inclusion configuration between the feature specification of the target and the intervener, which is particularly difficult to compute. A manipulation of the features (relevant for fRM) of target and intervener, such as modulating the inclusion configuration, facilitates the computation of the structure.

We present the results from an elicited production study carried out with 68 French-speaking children aged 3;2-9;2 (within subject design). Children were divided into three age groups: the 3 y.o. group (20 participants aged 3;2-4;5, MA: 3;8), the 7 y.o. group (27 participants aged 6;6-7;4, MA: 7;0) and the 8 y.o. group (21 participants aged 8;4-9;2, MA: 8;8). We elicited the production of subject and object relatives using a preference task, inspired by Friedmann and Novogrodsky 2006. The animacy feature of the subject and the object was manipulated, in order to obtain the four possible combinations in both SRs and ORs. All the other morphosyntactic features were in a match condition.

If animacy in French belongs to features relevant for fRM, we expect to find out better performances in the mismatch conditions (intersection configuration) compared to the match conditions (inclusion configuration). As grammar is involved in both modalities of performance, features relevant for fRM should affect both comprehension and production.

The results clearly show that a match or mismatch in animacy between target and intervener does not affect either SRs or ORs production. As well attested in the literature, in place of the elicited ORs children produce structures in which intervention is totally absent: subject relatives and passive object relatives/PORs. Thus, animacy does not seem to play a role in manipulating intervention or if it does, its effect is overwhelmed in production by the availability of more optimal structures.

A competence model for parsing complex non-local dependencies

C. Chesi

IUSS Pavia

Interpreting the head of an Object Cleft (the banker, (1.a)) as the correct argument of the lexical verb (avoided, (1.a)) is a critical step for comprehending this construction. This dependency has been deeply studied both from the theoretical/competence

perspective (Friedmann et al 2009, Belletti & Rizzi 2012 a.o.) and from the psycholinguistic/performance one (Gordon et al 2004 a.o.), especially when an intervening similar DP (i.e. the subject of the cleft, e.g. the lawyer in (1.a) vs. Dan or we, (1.b)) is processed between the head and the lexical verb (Warren and Gibson 2005).

(1)   a. it was [**the banker**]$_i$ that [**the lawyer**] *avoided* $_i$ at the party
        b. it was [**the banker/Pat/you**]$_i$ that [**the lawyer/Dan/we**] *avoided* $_i$ at the party
        c. it was [**the/you banker**]$_i$ that [**the/you lawyer**] *avoided* $_i$ at the party

The goal of this talk is twofold: on the one hand, I want to discuss an extra piece of evidence by presenting the results of some (on-line and off-line) studies on Italian focusing on person feature mismatch (3rd (default) vs. 2nd person, (1.c)) when the lexical restriction is present (Chesi & Canal 2017); on the other, I want to discuss a feature-based complexity metric that predicts parsing asymmetries in more precise and graded way compared to alternative approaches, eventually attempting at reconciling a formal theory of competence and the psycholinguistic performance.
Here I adopt a left-right (top-down) derivational minimalist model (Chesi 2015) where the non-local dependency is computed, coherently with featural relativized minimality (Friedmann et al 2009), using a Feature Retrieval Cost (FRC) function: as in cue-based memory retrieval (Van Dyke & McElree 2006) effects on the verb are predicted (this is not evident using a standard bottom-to-top minimalist derivation!). In case of mismatch (higher accuracy in comprehension questions), the processing cost is (correctly) predicted to be lower. On matching conditions, pro-pro 2nd person (vs. default 3rd person) matching condition pays the highest cost (two distinct logophoric agents should be instantiated in the left periphery, Sigursson 2004), while art-pro (vs. pro-art) condition is easier to be interpreted (the salience of the 2nd person triggering verb agreement is rewarded) though it requires longer time to encode person feature (longer fixation times on the subject cleft segment).

The weighting of formal cues during agreement processing: does language experience matter?

S. Caffarra
Basque Center on Cognition, Brain and Language

6 June
3.30 pm

Extracting a systematic mapping between the formal and the functional level facilitates grammar acquisition. It is still unclear whether form-function mappings can have an impact on comprehension processes once a language has been already acquired. We took into account the case of grammatical gender in order to examine the role of form-function regularities during reading. The talk will describe the weight of formal gender cues in agreement processes and assess whether this weight changes with language experience. Three experimental samples will be taken into account: Spanish monolingual, Basque-Spanish bilinguals and Spanish deaf readers. Experimental sentences were presented in Spanish, a Romance language with a strong gender-to-ending consistency (70% of singular nouns have an ending that is informative of grammatical gender, i.e., transparent nouns). Short-distance gender agreement violations (determiner-noun, noun-adjective) involving transparent and opaque nouns (whose ending is uninformative of gender) were presented during

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reading and ERPs to the target words were compared. In Spanish monolinguals, the presence of formal gender cues did not affect the time course of agreement processing. Both transparent and opaque nouns showed a similar LAN-P600 pattern in response to agreement violations. This suggests that monolinguals have an entrenched lexical representation of the grammatical gender feature, which can be easily accessed and used during agreement analysis for both transparent and opaque nouns. However, bilinguals and deaf readers showed different ERP violation effects for transparent and opaque nouns. In Basque-Spanish bilinguals, gender violations with transparent nouns elicited a LAN-P600 effect, while opaque nouns showed a P600 effect. In deaf readers, transparent nouns showed a P600 effect, while opaque nouns showed an N400 effect. These results reveal that with a non-dominant language (i.e., second spoken language for bilinguals, written language for deaf readers) gender-to-ending correspondences do have an impact on agreement analysis. In this case, having a weak lexical representation of the grammatical gender might lead to treating transparent and opaque nouns differently and over-relying on formal cues to compute agreement dependencies. These results suggest that the weight of formal gender cues during agreement processing is not fixed and can change depending on our language experience.