

De Vincenzi Fellowship - Final Report

1. Name of the post-doctoral fellow

Dr. Carla Contemori

2. Title of the project

Syntactic processing in child first and second language acquisition

3. Time and location

I was granted the De Vincenzi Fellowship for the academic year 2011-2012. I conducted my research at the School of Psychology and Clinical Language at the University of Reading (UK), (supervisor prof. Theo Marinis). My visit took place between October, the 1st 2011 and August, the 31st 2012.

4. Goals

As part of my postdoctoral research, I conducted research on the on-line processing of morphosyntax in adults and children.

First of all, I received training on eye-tracking methodology at the School of Psychology and Clinical Language at the University of Reading (UK). Secondly, I designed two studies that investigate the on-line comprehension of *Wh-subject* and *object* questions and collected data with monolingual English children and adults¹.

4.1 Study 1

The first study investigates *what* object questions and *yes-no* questions, such as (1) and (2), and *who* subject and object questions, such as (3) and (4). A visual word paradigm is used to measure eye-movements to a visual display in response to spoken stimuli involving narratives and questions posed about the narratives (Tanenhaus et al., 1995). The stories provided contexts which unambiguously defined the participants and their roles with regard to the action described by the main verb of the question, as in the following examples.

Story: In the morning, a bear was very clumsy. He dropped a glass under the table and it broke. The bear was sorry that he broke the glass.

(1) What did the bear drop the glass under?

¹ Originally, the two studies of the present research were designed to test sequential bilingual children in comparison to monolingual English-speaking children. However, the original plan was not pursued, due to some delays in the recruitment of the bilingual children and the early conclusion of the fellowship.

Expected answer: the table

- (2) Did the bear drop the glass under the table?

Expected answer: yes

Story: Yesterday, a spider gave a gift to the tortoise. The tortoise liked the gift a lot.

- (3) Who did the spider give the gift to?

Expected answer: the tortoise

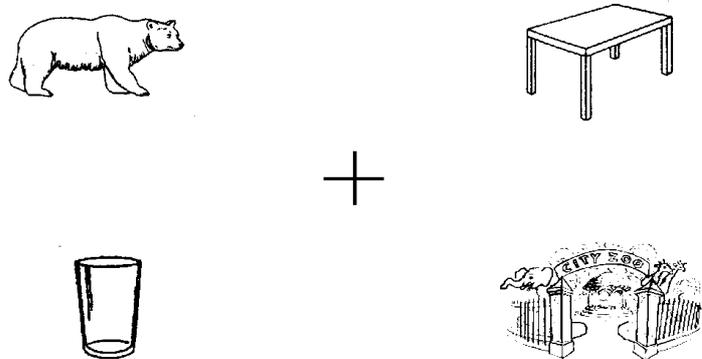
- (4) Who gave the gift to the tortoise?

Expected answer: the spider

While listening to the narrative and the question, participants looked at a display containing four pictures.

For the *what* object and *yes-no* questions, the display contained both the object that had been defined in the story as the direct object of the main verb of the question (*the glass* in example 1), and an object that played another role in the same action and that would eventually be the correct response to the *wh*-question (*the table* in (1)), as illustrated in Figure 1².

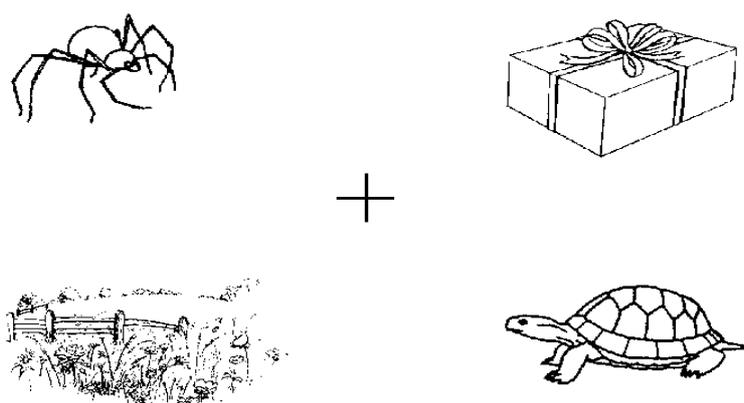
Figure 1.



For *who* subject and object questions, the display contained the characters that played the role of subject and indirect object (*the spider* and *the tortoise* in example 3-4) and the object that had been defined in the story as the direct object (*the gift* in example 3-4), as illustrated in Figure 2.

² See Sussman & Sedivy (2003) and Dickey et al. (2007) for a similar design used with adults and aphasic patients.

Figure 2.



Thirty monolingual English children aged 5;0-7;11 participated in Study 1. Prior to the study, children were tested with a standard test for reception of grammar (TROG) and vocabulary (BPVS). They were also administered a working memory and a short term memory task, in order to discriminate between low and high span participants.

Thirty monolingual English adult also participated in the study.

4.2 Study 2

The second study focuses on the comprehension of *which-subject* and *object* questions in English-speaking monolingual adults and children.

An eye-tracking while listening task was designed to examine the time course and accuracy of *which-object* and *subject* questions' comprehension. The goal of the study was two-fold. First it aimed at determining if monolingual adults and children detect the syntactic dependency in *which-object* questions (e.g., examples 7 and 8) compared to *which-subject* questions (e.g., examples 5 and 6), by actively searching for the antecedent at the site of the gap, and successfully assign the correspondent thematic role. The second aim was to investigate the role of number features in *which-object* questions, by manipulating the number features of the subject and object DPs (e.g., examples 7 and 8), to observe if monolingual children make use of the number cues in on-line processing (see Adani et al. 2010 and Friedmann et al., 2009, on the use of features in long-distance dependencies by monolingual children).

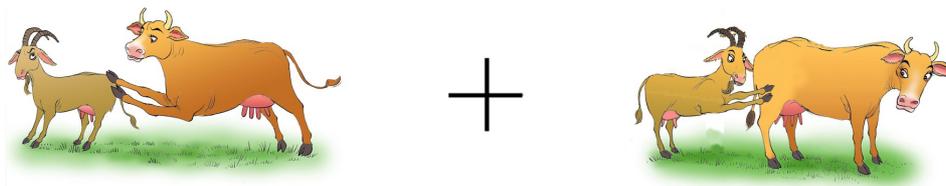
The following four conditions were tested:

- (5) Subject question, Singular-Singular: Which cow is pushing the goat?
- (6) Subject question, Plural-Singular: Which cows are pushing the goat?
- (7) Object question, Singular-Singular: Which cow is the goat pushing?
- (8) Object question, Singular-Plural: Which cow are the goats pushing?

While listening to the question, participants looked at a display containing two pictures. The first of each pair of pictures showed a figure carrying out an action on another figure, while the second picture showed the same figures with the roles reversed. An example of a picture is given in Figure 3.

Figure 3

(9) Subject question, Singular-Singular: Which cow is pushing the goat?



The same participants as in Study 1 took part in Study 2.

4.3 Outcomes

Eye-tracking training was provided by the University of Reading (Dr. Theo Marinis and Dr. Vesna Stojanovic) and was complemented by external workshops (Dr. Juhani Jarvikivi, December 2011, Acuity ETS, Reading; Dr. Walker, March 2012, Royal Holloway University, London). The training provided theoretical understanding and practical advice on how to design an experiment, how to use a Tobii eye-tracker with E-prime extensions, how to record and analyse the collected data.

Eye-movement data were collected with adults and children at the University of Reading and will be analysed using mixed modelling by the end of August 2012.

5. Conclusions

The two main aims of the post-doctoral fellowship at the University of Reading were accomplished. I designed the two studies investigating wh-questions, I collected data with monolingual adults and children and acquired expertise with the eye-tracking technique³.

The De Vincenzi Fellowship gave me the opportunity to make a significant contribution to my academic research work. It also helped me consolidating the collaboration with my supervisor (prof. Theo Marinis) and the host university (School of Psychology and Clinical Language Sciences, Reading).

³ The analysis of the data will continue during the last weeks of the project.

References

Adani, F., van der Lely, H.K.J., Forgiarini, M. & Guasti, M.T. (2010) Grammatical feature dissimilarities make relative clauses easier: a comprehension study with Italian children. *Lingua*.

Dickey, M. W., Choy, J. J & Thompson, C. (2007) Real-time comprehension of wh-movement in aphasia: Evidence from eyetracking while listening. *Brain and Language*, 100, 1-22.

Friedmann, N., Belletti, A. & Rizzi, L. (2009) Relativized relatives: Types of intervention in the acquisition of A-bar dependencies. *Lingua* 119, 67–88.

Sussman, R. S., & Sedivy, J. C. (2003). The time-course of processing syntactic dependencies: Evidence from eye movements. *Language and Cognitive Processes* 18, 143–161.

Tanenhaus, M., Spivey-Knowlton, M., Eberhard, K., & Sedivy, J. (1995). Integration of visual and linguistic information during spoken language comprehension. *Science*, 268, 1632–1634.