Scientific Report - Short Visit Grant

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Host institution: Dr. Nicola Molinaro, Basque Center on Cognition, Brain and Language – San Sebastian-Donostia, Spain.
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My short visit was aimed to start a new research collaboration with a foreign partner. The visit was thus focused on starting a cross-linguist project to investigate the role of phonology in reading. In particular, the research questions I was interested in were the following: Does the activation of phonological codes occur also when the linguistic task to perform does not specifically require it? And, if it is the case, how fast is such phonological activation? The questions are particular relevant for the current debate as they point to understand to what extent phonological information plays a role since the early stages of word reading. Moreover, the project is conducted in two transparent languages, in which the impact of phonological information on word reading is weaker than in opaque languages, as in the former orthographic information seems to play the main role in the first stages of word recognition and lexical access.

To answer the above questions, during my visit at the BCBL I had the chance to work together with Dr. Nicola Molinaro and to design some experiments that will be run in both Italian and Spanish. The work with Dr. Nicola Molinaro has been very stimulating and it has led to design a study different from the one I suggested in the initial proposal. The change was motivated by the the fact that the experimental manipulation I suggested was too tiny and specific to test my experimental question and thus no suitable for a MEG (magnetoencefalography) experiment. Thus, we decided to keep on investigating the theoretical questions I initially proposed, but we decided to look for a simpler experimental manipulation to test the issue at first behaviorally and then with MEG.

We decided to start running two behavioral experiments, in which we will visually present pairs

of pseudoword to our participants. In the first experiment, the task will be a rhyme judgment (Do the two stimuli rhyme?), whereas in the second experiment participants will perform a font discrimination task (Are the two stimuli written with the same font?). Our experimental manipulation will regard the first phoneme of each pair, which will be manipulated in terms of orthography-to-phonology consistency. In particular, in each pair, the two pseudoword may start with: a) a different grapheme/different phoneme unit (e.g., tibolo – pabolo); b) a same grapheme/different phoneme unit (cibolo – cabolo, as in both Spanish and Italian the pronunciation of <c> depends on the following letter [Spanis: in <ci>, <c> = /θ/; in <ca>, <c> = /k/; Italian: in <ci>, <c> = /t͡ʃ/; in <ca>, <c> = /k/;]); c) a <b/v> condition, in which Italian and Spanish differ from one each other. Specifically, while in Italian the condition c) is identical to the condition b), in Spanish the condition c) involves different graphemes that are mapped into the same phoneme (<b,v> = /b/). Our prediction for the two experiments are the followings: If phonological information is activated when performing task with linguistic stimuli that are visually presented, the task should be easier for target that share initial phonological information than for those that do not share. Moreover, if the activation of phonological codes is automatic, the two experiments should show exactly the same pattern.

The behavioral experiments will allow us to test to what extent the activation of phonological information is automatic and whether such activation is visible also in a purely orthographic task (Experiment 2: font discrimination). Moreover, the comparison between the two languages will be of particular interest as it allows us to dissociate between the orthographic and the phonological component of the effect we look at.

After these two experiments, we have planned to run a third experiment in which we will record neurophysiological activity with MEG. The experiment will be designed basing on the behavioral results and adapting the paradigm we used in the first two experiments. The aim of the study will be to investigate the time course of phonological activation and to compare it with the pattern elicited by the orthographic manipulation.

During my short visit I had the opportunity to work not only together with Dr. Nicola Molinaro, but also with other researchers. In particular, the project has benefited from a long meeting with Prof. Manuel Carreiras, with whom I discussed the initial research questions. Moreover, prof. Carreiras gave us very useful suggestions about the experimental design.

The visit was also an opportunity to discuss my other works with other experts in the field of word recognition and word reading. At this regard, I had a research meeting with Dr. Jon Andoni

Duñabeitia, with whom I discussed data of three lexical decision experiments I recently ran in Italy: As an expert of the field, Dr. Jon Andoni Duñabeitia gave me very useful feedback on several aspects of my study and his suggestions helped me to design two follow experiments, one of which will probably involve EEG recording.

Aside the research meeting, I had the opportunity to give a talk at the BCBL. The talk was about some recent behavioral studies on reading aloud, and it was a good test for the study and the theory behind him. Finally, during my short visit, there were two important guests at the BCBL, that is Prof. William Marslen-Wilson and Prof. Lorraine Tyler and I could see both of them giving a talk: Prof. Marslen-Wilson spoke about the functional architecture of visual word recognition, whereas prof. Tyler spoke about how the brain goes from object perception to object meaning.

To conclude the short visit was a good experience for my research activity, as it gave me the chance both to set up a cross-linguistic study with new collaborators, and to have very productive discussions on my previous works.

Simone Sulpizio