Variability has been attested in the processing of referential dependencies in both native and learner populations (Daneman & Carpenter, 1980; Sorace & Filliacci, 2006). Resolving a referential dependency (e.g., David shot at John as he fell) requires tracking linguistic information over the span of the sentence and integrating that information upon encountering the pronoun.

In ambiguous contexts, recent studies using ERPs have shown variability in the processing of pronominal ambiguity in English and Spanish native speakers. Individual differences in the processing of pronominal ambiguity in English and Spanish: An ERP investigation

INTRODUCTION

EX. 1 RESULTS: REFERENTIAL AMBIGUITY

All English Participants (n=35): No Effect

All Spanish Participants (n=30): Nref

Group 1 English (n=18): Nref

Group 1 Spanish (n=17): Nref

• Group 1 English: Higher working memory related to larger negativities

Group 2 English (n=17): Positivity

Group 2 Spanish (n=13): No Effect

• Group 2 Spanish: Higher working memory related to larger negativities

EX. 2 RESULTS: REFERENTIAL FAILURE

All English Participants (n=35): Positivity

Group 1 English: Higher working memory

Group 1 Spanish (n=17): Positivity

Group 1 Spanish: Higher working memory

Group 2 Spanish (n=13): No Effect

• Group 2 Spanish: Higher working memory related to larger negativities

METHOD

Participants

• 35 native English speakers recruited from university population (21 females, mean age 20, range: 18-26)

• 30 native Spanish speakers (data collection ongoing) recruited from university population (18 females, mean age 26.6, range: 19-38), from various L1 backgrounds (Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Paraguay, Peru, Spain, Uruguay, Venezuela). Tested in the U.S., no significant exposure to English before the age of 12.

Procedure

• Sentences presented one word at a time using RSVP (450ms word/300ms pause), with a fill-in-the-blank recall question following 1/3 of the sentences

• Stimulus presentation: Paradigm (Tagliamenz, 2005)

• EEG continuously recorded using Synamps2 amplifier (Compumedics Neuroscan, Inc.) and 32-channel Ag/AgCl electrode cap (Electro-Cap International, Inc.)

Individual Differences

• Participants were also tested on two measures of working memory:

Reading Span (Conway et al., 2003)

• Counting Span (Conway et al., 2005)

RESULTS AND DISCUSSION

Summary of Results

Experiment 1: Referential Ambiguity (500-1400ms)

English

• Nref did not emerge in the overall analysis, but follow-up analyses were conducted following Nieuwland and Van Berkum (2008).

• Nref was observed only for a subset of participants; in Group 1, higher working memory is related to larger negativities.

• Group 2 showed a significant positivity.

Spanish

• Nref (p=.084) emerged in the overall analysis (n=30) but the effect was robust only for some participants (Group 1).

• Group 2 showed no significant effects of referential ambiguity. However, within this group, higher working memory is related to larger negativities.

Experiment 2: Referential Failure (600-900ms)

English

• A posteriori positivity emerged in the overall analysis (n=35).

Spanish

• A significant positivity for referential failure emerged only in the group who was sensitive to referential ambiguity (Group 1).

Discussion

• In both English and Spanish, sensitivity to referential ambiguity emerges in only a subset of participants and is related to working memory. The ability to track and integrate the linguistic information relevant to evaluating multiple candidates during referential processing is related to individual differences in processing skills.

• In Spanish, sensitivity to referential failure emerged only in those participants who were also sensitive to referential ambiguity.

• As a first step, we have shown that the variability in the processing of referential ambiguity in English and Spanish native speakers is similar. Our next step is to examine variability within-brain, examining the processing of the L1 (English/Spanish) and L2 (English/Spanish) within the same individuals in order to better understand whether variability in the L1 is predictive of successful comprehension in the L2.