Gender marking and pronoun resolution in early bilingual children

Vasiliki Koukoulioti (Free University of Berlin), Maria Vomva (Potsdam University), Stavroula Stavrakaki (Aristotle University of Thessaloniki), Flavia Adani (Free University of Berlin)
vasiliki.koukoulioti@fu-berlin.de

Previous studies have shown that monolingual and bilingual typically developing Greek-speaking children (L1TD and L2TD, respectively) differ with respect to the course of the acquisition of clitic pronouns. It has been reported that L2TD children 1) produce fewer (3rd person) clitics than the L1TD (Chondrogianni et al., 2015; Tsimpli and Mastropavlou, 2007) and 2) present longer reaction times but similar on-line processing patterns to L1TD (Chondrogianni et al., 2015). Third-person clitics have been suggested to be more difficult because they bear only uninterpretable features (Tsimpli and Mastropavlou, 2007 among others). However, the specific contribution of uninterpretable features has been largely ignored. Gender is one of the uninterpretable phi-features of clitics and the aim of this study is to investigate the effect of gender marking during clitic production and processing in L1TD and L2TD.

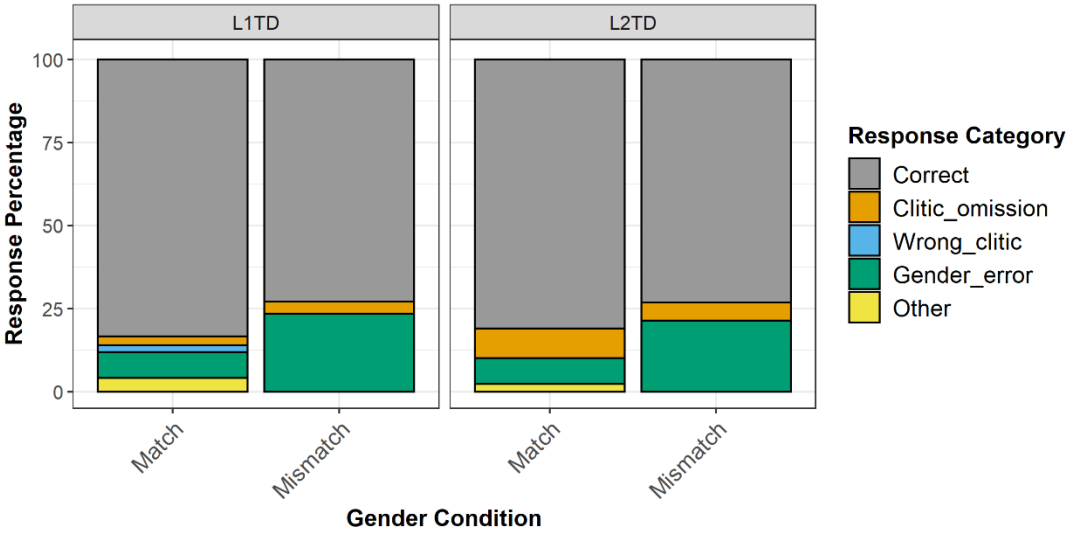
The following two groups of participants have been tested: a) Greek- speaking L1TD (N=16, mean age=5;6) and b) (successive) L2TD (with L1 German and L2 Greek, N=14, mean age=5;3). The acquisition of Greek for the L2TD began in the kindergarten (3 years). The groups were matched for age, verbal (Vogindroukas, Protopapas and Stavrakaki, 2010) and non-verbal (Raven, Raven & Court, 1998) intelligence and verbal working memory (Stavrakaki and Tsimpli, 2000). Two tests targeting the production and processing of clitics were used: a picture-naming task for production and a self – paced listening task with picture verification for comprehension. In the production task the participants saw a picture with two animals participating in an action denoted by a transitive verb. The animals were introduced by the experimenter and the participants were asked "What is the X doing to the Y?", which typically elicits a clitic pronoun in the answer. Gender match was manipulated, with the two nouns being of the same or different gender (see stimuli examples and expected answer in 1 and 2). In the comprehension task, each picture depicted two animals involved in one action expressed by a transitive verb. The object animal was also performing another intransitive action (e.g. cry). The picture was described by a conjoined sentence. A comprehension question appeared every three trials asking which animal is involved in the intransitive action. Gender match and grammaticality were manipulated, with ungrammatical sentences containing gender violations of the clitic pronoun (see examples 3 and 4 for the gender match condition and 5 for a comprehension question).

(Generalized) linear mixed models were used to analyze the data. In production, both groups performed more accurately in the Gender-match condition (Ex. 1) compared to Gender-mismatch (Ex. 2), in which they were more likely to produce pronouns marked with the wrong gender (see figure). Moreover, a three-way interaction was found: the higher the verbal intelligence score the better the performance in the mismatch condition for the L2TD group. Visual inspection of the performance in each gender suggests similar patterns in both groups, although the default gender is different in L1 and in L2. In comprehension, L2TD children are overall slower than L1TD. However, a slow-down in the ungrammatical, Gender-match condition (Ex. 4) was detected in the segment following the clitic in both groups.

In conclusion, we did not replicate the differences in clitic production found in previous studies, as the two groups did not differ either quantitatively nor qualitatively. However, in accordance with previous research our data suggest similar processing with longer reaction times compared to L1. The data suggest that gender marking modulates the production and processing of clitic pronouns in Greek in a way that seems to be qualitatively similar in L1 and early L2 learners. Finally, a high proficiency in the L2 (as attested by the verbal intelligence score) helps L2 learners to process gender information similarly to L1 speakers.

Examples of the experimental stimuli for elicited production (1-2) and self-paced listening (3-4; the slashes indicate the segments of the auditive stimuli)

Gender-match (1) Ti kani o gaidarosMASC ston kokoraMASC? TonMASC filaei. What do3sing the donkey to the rooster? Him kiss3sing. 'What is the donkey doing to the rooster?' 'He is kissing him.'	
Gender-mismatch (2) Ti kani to provatoNEU stin ageladaFEM? TinFEM klotsai. What do3sing the sheep to the cow? Her kicks3sing 'What is the sheep doing to the cow?' 'He is kicking her'.	
Grammatical + Gender-match (3) O vatrachosMASC pezi ke/ o kokorasMASC/tonMASC/ vafi/ me ta chromata. The frog play3sing and/ the rooster/ him/ paint3sing/ with the colors. 'The frog is playing and the rooster is painting him with the colors.'	
Ungrammatical + Gender-match (4) *O vatrachosMASC pezi ke/o kokorasMASC / tin-FEM/ vafi/ me ta chromata. The frog play3sing and/the rooster/ her/ paint3sing/ with the colors. 'The frog is playing and the rooster is painting her with the colors.'	
Comprehension question after (3) or (4): (5) Pjos pezi? Who play3sing? 'Who is playing?'	



References:
Chondrogianni et al., Applied Psycholinguistics, 2015
Raven et al. Raven's progressive matrices and vocabulary scales, 1998
Stavrakaki and Tsimpli, Diagnostic Verbal IQ Test for Greek preschool and school age children, 2000
Tsimpli and Mastropavlou, In Liceras, Zobl and Goodluck (eds), 2007
Vogindroukas et al. (2010) *The Greek Version of the Action picture Test*

Background information on German and Greek

German, the L1 of the bilingual participants and Greek, the L2 for the bilingual participants and language of examination, distinguish among three genders: masculine (MASC), feminine (FEM) and neuter (NEU). However, the two languages differ with respect to the default gender, as the unmarked gender in Greek is the neuter and in German the feminine.