

Structural and Discourse Factors in Romanian L2 English Learners' Interpretation of Pronouns^{*}

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In this paper we report on the interpretation of English definite pronouns by Romanian-speaking learners of English. To our knowledge the particular grammatical contrasts we examine here have not been previously examined with respect to second language acquisition. We find that for two subtle effects - one attributable to Principle C of the binding theory and the other to d(iscourse)-linking of a *wh*-phrase - the L2 learners of English perform in a manner very similar, both qualitatively and quantitatively, to English native speakers, at least by an intermediate level of L2 learning.

1. Experiment 1: Sensitivity to a Principle C effect

1.1 *A Principle C contrast*

The sentences in (1) illustrate a contrast that has been quite extensively studied in the adult psycholinguistic and first language acquisition literature,

- (1)a He saw the boy when the gardener cut the hedge
b The boy saw him when the gardener cut the hedge

(1a) is ungrammatical on the reading where 'he' and 'the gardener' refer to the same person. By contrast, in (1b) coreference is permitted between 'him' and 'the gardener'. Although some speakers are reluctant to accept (1b) on the coreferential reading, several experiments with adult speakers of English and with preschool children support the claim that coreference is possible (Gerken 1982, Gerken and Bever 1986, Goodluck and Solan 2000, Solan 1983). The contrast between (1a) and (1b) is explained as a Principle C effect in the standard binding theory of Chomsky 1981: because the adjunct clause is attached high in the tree, outside V'/VP, the R-expression 'the gardener' is c-commanded by 'he' and Principle C blocks coreference. In (1b) 'him' is dominated by the VP and hence does not c-command 'the gardener', and coreference is thus possible¹.

1.2 *Experimental materials*

The experiment was a written questionnaire task, in which subjects responded to sentences followed by a question; the subject checked a box next to the answer s/he chose. Sample materials for this experiment are given in (2a-d).

- (2)a He saw the boy when the gardener cut the hedge

Who saw the boy?
< The gardener
< Someone else

^{*} This research was supported by Social Sciences and Humanities Research Council of Canada grant # 410-2001-0458 to Helen Goodluck and Eithne Guilfoyle.

¹ This account can be translated into more recent accounts of Binding Theory effects (e.g. Reinhart and Reuland 1993; Grodzinsky and Reinhart 1993), but to our understanding such translation in this case entails reference to the same constructs (c-command and structural position of argument vs. adjunct clauses) as the standard account.

- b The boy saw him when the gardener cut the hedge

Who did the boy see?

- < The gardener
- < Someone else

- c He told the boy that the gardener cut the hedge

Who told the boy?

- < The gardener
- < Someone else

- d The boy told him that the gardener cut the hedge.

Who did the boy tell?

- < The gardener
- < Someone else

As explained above, co-reference is blocked in (2a), but permitted in (2b). The embedded clause in conditions (2c,d) is a complement to the V, and thus the pronoun *c*-commands the subject of the embedded clause in both cases, blocking co-reference. (2c,d) were included to check that any contrast obtained between (2a) and (2b) derived from the structural position of the pronoun, rather than from its morphological form. The materials were organized into booklets with two items on each page: one from this experiment and one from experiment 2, reported below. There were twenty-four sentence frames each of which occurred in each of the four conditions. Four questionnaires were constructed, such that each frame occurred in only one of the four versions per questionnaire and each subject responded to six tokens of each sentence type.

1.3 Subjects

Seventy-five Romanian high-school students aged 15-18 years took part in the study. They were tested during regular class periods in their school. The subjects were grouped into three levels on the basis of a 52 item Cloze test. The Advanced group (n=26) scored 74% or more correct, the Intermediate group (n=21) scored between 50%-75%, and the Low group (n=28) scored 49% or less correct.

1.4 Results

The results are presented in Table 1, in terms of the percentage co-referential interpretations of the pronoun.

Table 1
Percentage Co-referential Interpretations of Pronoun
Principle C Experiment

| Clause type Pronoun position | Adjunct Subject (2a) | Adjunct Object (2b) | Complement Subject (2c) | Complement Object (2d) |
|---------------------------------|----------------------------|---------------------------|-------------------------------|------------------------------|
| Group | | | | |
| Advanced | 02 | 28 | 06 | 09 |
| Intermediate | 08 | 25 | 11 | 06 |
| Low | 12 | 29 | 13 | 22 |

It is clear from the figures in Table 1 that both the Advanced and Intermediate learners distinguished between the adjunct object condition and the remaining three conditions. For the lower level learners, a distinction is made between subject and object position, with more coreference allowed in the latter

case. There were highly significant main effects of complement type and of pronoun position and a significant complement type x pronoun position interaction ($p < .001$ in all cases)². The interaction between complement type, pronoun position and group approached significance ($p = .067$). The level of permitted coreference for condition (2b) for all three groups is approximately the same as that for native speakers of English and French in previous studies (Goodluck and Solan 1995, 2000).

2. Experiment 2: Processing D(iscourse)-linked phrases

2.1 D-linking and coreference

In a questionnaire study, Frazier and Clifton (2002) found that a d(iscourse)-linked (+DL) phrase such as 'which brother' in (3b) "attracted" reference to the pronoun subordinate subject 'he'. Subjects were asked to choose between the two possible sentence internal referents for the pronoun (for 3, either 'Rick' or 'the person Janice sang a song to', see 7 below). The pronoun was made coreferential with 'which brother' in (3b) more frequently than it was made coreferential with 'who' in (3a). The same effect was found with direct questions (4a,b). Frazier and Clifton argue that a d-linked phrase sets up a discourse referent that is a salient target for the referentially ambiguous pronoun.

- (3) a Rick knew who Janice sang a song to before he went to sleep.
 b Rick knew which brother Janice sang a song to before he went to sleep.
- (4) a Who did Bradley send a rifle to when he was threatened?
 b Which guy did Bradley send a rifle to when he was threatened?

Diaconescu and Goodluck (2002) translated Frazier and Clifton's materials into Romanian. Romanian is a pro-drop language (5). An overt pronoun in a sentence-initial subordinate clause is taken as disjoint from the main clause subject (6a,b) (Mallinson 1987; Dobrovie-Sorin 1994), but for a sentence-final subordinate clause coreference with the main clause subject is possible although dispreferred (7a,b).

- (5) *pro* cântă
 sing-PRESENT-3sg
 'he sings'
- (6) a Când *pro*_i lucrează, Ion_i nu bea.
 b Când el_{k/∗i} lucrează, Ion_i nu bea.
 'When he works, Ion does not drink'
- (7) a Ion_i nu bea când *pro*_i lucrează.
 b Ion_i nu bea când el_{k/∗i} lucrează.
 'When he works, Ion does not drink'

In our adaptation of Frazier and Clifton's study, we tested both overt and null pronouns in the subordinate subject position. We found that both for null and overt pronoun subjects the d-linking attraction effect held for Romanian. For overt pronoun subjects the percentages of coreference were remarkably similar to those in English (for both languages, approximately 55% for d-linked phrases, compared to just over 40% for non-d-linked phrases). For null subjects there was also a d-linking effect, but with an overall considerably higher proportion of coreference (77% vs. 66%)³.

² 'Significant' here and below refers to the results of repeated measures Anova at the .05 level.

³ Note that our results with null subjects argue that the English d-linking attraction effect cannot be attributed to gender match between the pronoun and the d-linked phrase.

2.2 Second language learners' interpretation of d-linked phrases

The subjects were the same as those for Experiment 1. The subjects received the same materials as in Frazier and Clifton's study, intermixed with the materials for Experiment 1. The subject read a sentence and then had to make a choice between two answers to a question, as illustrated in (8).

(8) Rick knew who/which brother Janice sang a song to before he went to sleep.

Who went to sleep?

< Rick

< The person Janice sang a song to

There were twenty-four sentence frames, 12 with embedded and 12 with non-embedded questions. Two questionnaires were constructed such that each frame occurred with both a d-linked and a non-d-linked wh-phrase, and no subject saw the same frame twice. Subjects responded to six tokens of each sentence type (embedded question -d-linked, embedded question +d-linked, non-embedded question -d-linked, non-embedded question +d-linked).

2.3 Results

The results are given in Table 2. The advanced and intermediate groups show the d-linking attraction effect. All groups have levels of coreference similar to that of native speakers of English and to speakers of Romanian for overt pronouns in Romanian. There was no main effect of embedded vs. direct questions. There was a significant main effect of d-linking ($p = .004$) and of group ($p = .013$). No interactions were significant, although embedding by group and d-linking by group approach significance ($p < .08$ and $p < .07$, respectively). The overall slight reverse effect of d-linking for the low group is due to the results for main questions. Overall in these experiments, there is a tendency for embedded questions to produce a greater d-linking effect than main questions, and thus the performance of the low group is not as aberrant as it might appear.

Table 2
Percentage Choice of *Wh*-phrase as Antecedent
D-linking Experiment

| Group | +DL | | | -DL | | |
|--------------|-----|----|-----------|-----|----|-----------|
| | EQ | MQ | ALL | EQ | MQ | ALL |
| Advanced | 47 | 38 | 43 | 35 | 35 | 35 |
| Intermediate | 62 | 52 | 57 | 54 | 42 | 48 |
| Low | 51 | 34 | 42 | 48 | 46 | 47 |

EQ = embedded question

MQ = main question

3. Discussion

In all, there is nothing particularly surprising in our results. The native-like performance of our L2 learners in the Principle C experiment is to be expected, to the extent that the contrast we tested relies on phrase structure configurations and associated principles that we can assume to be language invariant - to our knowledge temporal adjuncts in configurational languages are universally associated with projections above the V'/VP. The experiment was intended as a baseline measure of skill in pronoun interpretation that we could compare with the results of the D-linking experiment. The English-like performance of our subjects in the D-linking experiment is also not surprising, when we

take into account the performance of Romanian speakers in Romanian (section 2.1 above). Our learners do not treat an overt pronoun in English as if it were *pro* in Romanian, i.e. they do not accord an English definite pronoun the high level of coreference with the *wh*-phrase that Romanian speakers give to *pro*. Nor would we expect them to, given that it has been argued that overt pronouns in English may be treated as contrastive by speakers of pro-drop languages (Lujan 1986). It may well be, however, that under different experimental circumstances Romanian L2 learners of English and native speakers of English would begin to look less alike. In the d-linking study, we gave our subjects only a two-way choice between candidate referents for the pronoun, and both candidates were in the test sentence. If the choice had included a sentence external referent also, it may be that Romanian speakers would have chosen this option more often than English speakers, given that sentence internal reference for an overt pronoun subject of a subordinate clause is highly dispreferred/ungrammatical in Romanian.

More generally, we hope with our d-linking study to have initiated research into a new area with respect to L2 learners' skill with constructions at the syntax/discourse interface of pronominal interpretation. There is now a substantial body of literature on child first language acquisition that argues that children experience difficulty in circumstances that require external reference for pronominal elements, and more generally in computing relationships between syntax and discourse. This difficulty has been attributed to lack of knowledge of discourse-related pragmatic constraints and/or to a lesser quantitative capacity for sentence processing (see, for example, Avrutin 2000, Chien and Wexler 1991, Goodluck 1990, Goodluck, Terzi and Chocano Díaz 2001, Grodzinsky and Reinhart 1993). On the one hand, we can anticipate that the L2 learner may bring L1 syntactic and pragmatic knowledge to his treatment of the pronominal elements in the second language, which may or may not result in a correct analysis of the L2. On the other hand, the L2 learner's developed processing mechanism should give him a leg up into the L2 system; the similarity of results between L1 speakers and L2 learners at the quantitative level in the experiments reported here argues that this is the case.

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Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002): L2 Links

edited by Juana M. Liceras,
Helmut Zobl, and Helen Goodluck

Cascadilla Proceedings Project Somerville, MA 2003

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Proceedings of the 6th Generative Approaches to Second Language Acquisition
Conference (GASLA 2002): L2 Links

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Diaconescu, Constanta Rodica and Helen Goodluck. 2003. Structural and Discourse Factors in Romanian L2 English Learners' Interpretation of Pronouns. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002)*, ed. Juana M. Liceras et al., 71-75. Somerville, MA: Cascadilla Proceedings Project.

or:

Diaconescu, Constanta Rodica and Helen Goodluck. 2003. Structural and Discourse Factors in Romanian L2 English Learners' Interpretation of Pronouns. In *Proceedings of the 6th Generative Approaches to Second Language Acquisition Conference (GASLA 2002)*, ed. Juana M. Liceras et al., 71-75. Somerville, MA: Cascadilla Proceedings Project. www.lingref.com, document #1030.