

# Minimalism, interfaces, and attrition

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# Key issues from recent attrition research

- Selectivity
- Directionality
- Parallels with other domains of bilingual language development.

# Assumption

- Attrition as a principled process of language development in a contact situation.
- The contact situation is a catalyst for an interplay of language transfer and universal processes, both of which are affected by external factors and stochastic properties of the input.

# Outline

- Selectivity: “interfaces” as a privileged locus of attrition.
- Convergences with other developmental domains
- Representational vs. competence-external factors causing attrition.
- Input factors: individual attrition paving the way for diachronic change.

# Contribution of Minimalism

- It directly addresses the question of interfaces between language and language-external systems.
- It accounts for variation in terms of features and lexical choices.
- It formalizes discourse conditions on syntactic realization.
- It allows a differentiation among different interfaces in terms of LF relevance.
- **BUT: a theory of language processing is also needed to explain attrition.**

# THE SYNTAX-DISCOURSE INTERFACE

## Null vs. overt subjects in Italian and English

- Italian are [+null subject], English is [-null subject]:

(1) a. E' partito.

Is gone-masc.

- In Italian, the option of a null or overt subject is conditioned by discourse features.

(2) Gianni<sub>i</sub> ha salutato Pietro<sub>k</sub> quando *pro*<sub>i</sub> / lui<sub>\*i</sub>/<sub>k/j</sub> l'ha visto.

Gianni has greeted Pietro when pro / he him-saw

“Gianni greeted Pietro when he saw him.”

# Postverbal subjects

- Postverbal subjects are possible in null subject languages as a consequence of the [+null subject] value of the parameter.
- They are motivated by the need to focalize ([+Focus]).
- The choice of postverbal over preverbal subjects is further regulated by (i) the definiteness of subject (cf. Belletti, 1988) and (ii) the thematic properties of the verb (Pinto, 1997).



- (3) a. Sono arrivati alcuni studenti  
Arrived-3p some students
- b. Gli studenti sono arrivati.  
The students arrived.
- (4) a. Qui lavora Gianni  
Here works Gianni
- b. ?\*Qui Gianni lavora.  
Here Gianni works
- (5) a. Alla fine del film Gianni ha riso.  
At the end of the movie G. laughed.
- b. ?\*Alla fine del film ha riso Gianni.  
At the end of the movie laughed Gianni

# Partitive interpretation of indefinite preverbal subjects

- The interpretation of preverbal indefinite subjects are interpreted as ‘old’ information (topic) whereas postverbal subjects are ambiguous between the two readings.

- (6) Il mio vicino del terzo piano ha due gemelli.  
“My neighbour on the third floor has twins”
- a. la notte scorsa un bambino piangeva.  
Last night one baby was-crying (= one of the twins)
  - b. La scorsa notte piangeva un bambino.  
Last night was-crying one baby (one of the twins OR some other baby)

# Pronominal subjects under attrition

- Italian speakers who have been exposed to English for a long time optionally produce (1b), where a monolingual Italian speaker would produce (1c).

- (7) a. Perchè Giorgio non è venuto alla festa?  
why Giorgio not is come to the party?  
*Why didn't Paolo come to the party?*
- b. Perchè **lui** è troppo timido.  
because he is too shy
- c. Perchè \_\_\_ è troppo timido.  
because is too shy

## Unattested errors

In contrast, these errors are unattested:

- (8) a. Perché Paolo non è venuto alla festa?  
b. \*  $\emptyset$  (= Gianni) non l'ha neanche invitato.  
 *$\emptyset$  (= Gianni) didn't even invite him*
- (9) a. Maria ha detto che andava da Paolo?  
*Maria has said that she was going to Paolo's?*  
b. \*No,  $\emptyset$  (= Paolo) ha detto che andava da lei.  
*No,  $\emptyset$  (= Paolo) said that he was going to her.*
- (10) a. Why didn't Paolo come to the party?  
b. \*  $\emptyset$  was sick.

# (Mis)interpretation of overt pronominal subjects in anaphora

- Italian speakers under attrition may interpret the overt pronominal subject of the embedded clause as coreferential with the lexical subject of the main clause:

- (11) a. Maria<sub>i</sub> telefonerà quando *pro*<sub>i/?j</sub> ne avrà voglia
- b. ?\*Maria<sub>i</sub> telefonerà quando lei<sub>?\*/i/j</sub> ne avrà voglia

## Subject placement under attrition

- Italian speakers under attrition optionally produce (12b), where a monolingual Italian speaker would produce (11c):

- (11)
- a. Che cosa è successo?  
*‘What happened?’*
  - b. Gianni è arrivato.  
Gianni is-3s arrived
  - c. E’ arrivato Gianni  
is-3s arrived Gianni

- The same speakers may also overuse preverbal subjects (often stressed) in contexts in which it would be more natural to use a postverbal subject because the DP is in narrow focus, as in (13).

(13) Chi è partito?            “*who has left?*”  
Un mio amico è partito.  
a friend of mine has left



# Interpretation of preverbal indefinite subjects

- Attrited speakers may also interpret the preverbal subject in (14) as conveying new information (i.e. as referring to a different ship), instead of a partitive reading in which the sunk ship is one of the three already mentioned in the previous sentence (Pinto 1997).

(14) Il governo ha mandato tre navi nel Golfo.  
Una portaerea è affondata.  
the government has sent three ships to the Gulf.  
An aircraft carrier has sunk.

# An asymmetric overgeneralization

- Overt subject pronouns/preverbal subjects may replace null subjects/postverbal subjects in both production and interpretation, but not vice versa.
- Native Italian speakers under attrition from English have maintained a null-subject grammar: they can still use null subjects and postverbal subjects correctly.

# Where does the problem lie?

- Their indeterminacy is at the level of the **discourse conditions** on the distribution of pronominals and on the placement of subjects.

# Subject realization in null-subject languages

- Null subjects are syntactically licensed but their distribution is governed by discourse-pragmatic factors.

# “Narrow” vs. “Interface” syntax

Two different classes of features:

- **Non-interpretable** features in ‘narrow syntax’ drive syntactic derivations (and may be parameterized).
- **Interpretable** features in interface syntax ‘exploit’ parametric options and have interpretive effects; they can be ‘read’ by the conceptual/intentional systems of cognition.
- **Non-interpretable features are stable in individual attrition but interpretable features are not.**

# Loss of specificity, widening of choices

- The Italian grammar before attrition:

OVERT = STRONG = [+TS]

NULL = WEAK = [-TS]

- The Italian grammar after attrition:

OVERT = STRONG = [+TS]

OVERT = WEAK = [-TS]

NULL = WEAK = [-TS]

- Consistent with Adger & Smith's (2005) account of variation within Minimalism.
- Attrition makes more lexical choices available.
- Two forms with the same feature composition and the same semantic interpretation come to co-exist in the L1 grammar.

# The rise of optionality

- L1 attrition involves interpretable features linked to a parametric choice that differs between the L1 and the L2.
- An interpretable feature that is specified in L1 in a particular syntactic structure become unspecified due to the absence of a similar interpretable feature in L2 in the same syntactic context.
- This underspecification gives rise to ambiguity and optionality.



- Attrited grammars are then expected to show more “ambiguity” in the interpretation of lexical items (null or overt) since conflicting options associated with L1 and L2 will be accessible at the interface.
- In contrast, uninterpretable feature values that distinguish between the parametric choices of L1 and L2 are not affected by attrition
- No optional “syntax” is expected to be found.

# Convergence with other domains of language development

- The same phenomena are found in very advanced (“near-native”) L1 English speakers of L2 Italian.
- **Interfaces are developmentally unstable**  
(= difficult to acquire completely in L2;  
prone to attrition in L1).

# Constraints on optionality

- Directionality of crosslinguistic effects: the language that instantiates the most “economical” option affects the other, but not vice versa.
- Attrition involves neutralization of native distinctions towards the less restrictive L2 options.

## For example...

- Italian attrited speakers have a wider range of options available to them for the realisation of pronominal subjects than native speakers typically have;
- Crucially, there is no formal incompatibility between these options and the positive setting of the null subject parameter.

# A prediction

- In a symmetrical attrition situation of L1-English speakers of L2 Italian, the extension of the pro option to English should be impossible, since it would be incompatible with the negative value of the null subject parameter.

## More on the “null subject parameter”: a hypothesis for future research

- Research on near-native L2 speakers of Italian has shown a dissociation between the availability of null subject-*pro* and the availability of postverbal subjects (Belletti & Leonini 2004; Belletti, Bennati & Sorace, 2005).
- Postverbal subjects are produced significantly less frequently than null subjects.
- The availability of null-subject *pro* is a necessary, but not a sufficient condition to license postverbal subjects.

# An interpretation in the 'cartographic' framework

- The postverbal subject, which is the focus of new information, fills a dedicated position in the VP periphery of the clause. In these structures the (relevant) preverbal subject position is filled by a silent *pro*.

- (15) a. Chi parlerà?  
Who will talk
- b. Parlerà Gianni  
Will talk Gianni

- The formal conditions licensing *pro* are a prerequisite for VS; but the postverbal subject crucially requires the activation of the VP periphery in specific discourse conditions.
- Postverbal subjects are “more complex” than null subjects.
- The two properties - the formal licensing condition and the discourse condition – can be dissociated in non-native grammars.



- Preliminary data suggest that the two properties may be dissociated in attrited grammars too.
- Attrition may initially affect the likelihood of activating the VP internal position required by (discourse-motivated) postverbal subjects.

# Other attrition studies

- Other studies on attrition may be interpreted in the light of the distinction used here, e.g:
- Montrul (2004) on subject and object realization in Spanish heritage speakers; Sanchez (2004) for the expression of progressive tense in Quechua-Spanish older bilingual children; Polisky (1995, 2003) on the possessive/reflexive pronominal distinction in Russian.
- In these studies, interpretive conditions on the realization of syntactic options appear to be affected by attrition.

# The lexicon-syntax interface

# The unaccusative-unergative distinction

- Two sides of split intransitivity:
- A syntactic side: a configurational difference between the position of the subject of unaccusative verbs and that of unergative verbs.
- An interface side: aspectual and lexical-semantic features of verbs that modulate the distribution of verbs in the two classes, allowing for different degrees of dependence on contextual variables and different degrees of variation.

# The Split Intransitivity Hierarchy

CHANGE OF LOCATION (+telic)

unacc.

CHANGE OF STATE

STATE

NON-AGENTIVE ACTIVITY

AGENTIVE ACTIVITY (+agentive)

unerg.



## Montrul's (2005) data

- Heritage Spanish speakers retain knowledge of the syntactic reflexes of unaccusativity, e.g:

*Bare plurals:*

- Han pasado camiones  
have passed trucks

*Absolutive constructions:*

- Muerto el perro, se acabó la rabia  
dead the dog, stopped the rabies

- However, heritage Spanish speakers lose sensitivity to the Split Intransitivity Hierarchy, i.e. to the lexical specification of verbs and their (different degrees of) interaction with context.
- Their intuitions are determinate only for core verbs.

- The diachronic loss of some syntactic reflexes of unaccusativity (e.g. auxiliary selection in Romance) follows a path that roughly corresponds to the Split Intransitivity Hierarchy.



## Are all interfaces prime candidates to attrition?

- Possibly not. A plausible distinction among interfaces is in terms of their LF-relevance.
- LF-relevant phenomena (such as Focus in Hungarian and Greek) have visible grammatical effects (syntactic reordering).
- They don't seem to be affected by attrition.

# Processing factors in attrition at interfaces

# Another perspective on these phenomena

- Constructions requiring the integration of syntactic knowledge and knowledge from other domains are more demanding than constructions requiring syntactic knowledge only.
- Attrited speakers may have emerging problems in coordinating / integrating different types of knowledge.

# “Complexity”

- Referential pronouns in Italian qualify as complex, since they demand the simultaneous mastery of both morphosyntactic properties and discourse conditions;
- In contrast, referential subject pronouns in English are less complex because they are not conditioned by discourse factors (on the choice of pronominal forms, although discourse factors condition the presence or absence of stress).

# Constraints on L1 influence

- L1 influence is NOT expected to apply in all cases, but only when the L1 instantiates the most ‘economical’ (= less complex) option.
- Crosslinguistic influence takes place unidirectionally, from less complex to more complex grammars, whenever two coexisting grammars are in conflict with respect to syntactic complexity.

# Possible causes of integration problems

- It is possible that integration difficulties in bilingual speakers under attrition are due to the fact that syntactic information - even if it is still in place -- is not processed in the same way as in monolinguals.

# “Sub-optimal processing”

- Attrited speakers may have any of these problems (none of which implies deficient representations):
  - Inefficient access to syntactic information.
  - Inefficient coordination of multiple knowledge systems.
  - ‘Shallow’ on-line syntactic computations.

# Shallow syntactic processing

- Clahsen & Felser (in press): syntactic representations in (advanced) L2 comprehension may be shallower and less detailed than for native speakers.
- Shallow processing is an option available to the human processor system, but it is used sparingly by adult monolinguals.



# Shallow processing and subject placement

- L2 speakers of Italian whose L1 is English may fail to activate the VP-internal focus position required by focalization in Italian:

(6) [CP ...[TP *pro*...è...partito ...[TopP [FocP un mio amico [TopP [VP  
....]]]]]

(see Belletti 2005; Belletti, Bennati & Sorace 2005 for details)

- The result is the use of **focus in-situ**: an L1-based strategy that is more economical because it involves an “activated” DP-internal focus position (as the one overtly manifested in a sentence like “John himself came”).

# Shallow processing and subject pronouns

- The over-production and misinterpretation of overt subject pronouns may be at least partly due to shallow processing of the interface features governing the use of overt subjects (e.g. the obligatory mapping of the feature ‘topic shift’; see Tsimpli et al 2004).

# Where does this leave L1 influence?

- Overt pronouns may (also) be a default form to relieve processing overload.
- Supporting evidence comes from studies of Spanish learners of Italian (Bini 1993) whose overproduction of overt subject pronouns cannot be due to L1 transfer.
- If this is true, one would expect native speakers to occasionally make the same errors in situations of processing pressure. Control data from several studies suggest that this may be the case.

# Individual attrition, diachronic change, and stochastic properties of the input

## **The diachronic loss of null subjects: input and change through competition**

- Sprouse and Vance (1999): two forms are in competition iff they make the same contribution to semantic interpretation (see also Kroch's idea of 'double grammar').
- Speakers tend to match the frequencies of each in the input.

- For the monolingual Italian speaker, overt and null pronouns are not in competition with one another because they have different referential properties.
- But the attrited Italian speaker is be exposed both to null pronouns referring to a topic antecedent (in Italian) and to overt pronouns referring to a topic antecedent (in English, and also in the Italian of other attrited speakers).

- In this situation, the null subject option is dispreferred; according to S&V, because it is more likely to lead to processing difficulties.
- Individual attrition paves the way for language change.



# Input and defaults

- Evidence of ‘correct’ uses of referential pronouns drops below a certain (quantitative and qualitative) threshold.
- Environments favouring competition among null and overt pronouns increase.
- Processing of syntax is not optimally efficient.
- Speakers resort to overt pronouns as default forms.

# Does reduced/non-target input affect representations or processing abilities?

- Quantitative differences are likely to affect processing abilities (because of fewer opportunities to integrate syntax and pragmatics in interpretation and production).
- Qualitative differences may affect representations (because of insufficient evidence for interface mappings).

- Attrition starts from interfaces at the individual level.
- Over time, and with more and more reduced use/exposure to the L1, it may eventually affect narrow syntax.

# Conclusions

- Attrited speakers' emerging difficulties with interface phenomena may result from both inadequate grammatical processing resources and representational changes.
- These difficulties may be solved either:
  - (a) by resort to a more economical L2 form.
  - (b) by resort to a default form.

- Processing and structural factors interact: shallow processing and ‘deep’ processing favour different syntactic options among those that become available to the speaker in an attrition situation.

# The wider picture

- Research on attrition can only benefit if it is put in the wider context of research on bilingualism and language development.

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