Labile verbs in Maltese

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Background

The causative-inchoative alternation

1. *Ħija kisser il-vażun*
    'My brother broke the vase'
2. *Il-vażun inkiser*
    'The vase broke'

- Pairs of transitive/causative and intransitive/inchoative verbs; the subject of the intransitive alternant bears the same semantic relation to the verb as the object of the transitive
- Change-of-state verbs (*break*, *melt*) and some activity verbs (*bounce*, *roll*) take part in the alternation

Morphological marking and the direction of derivation

- Haspelmath (1993) - morphological complexity: the alternant carrying less morphology is simple/basic, while the alternant taking extra morphology is derived

Five formal types:

Directed
| 1. | Causative | saħan | ➜ | saħħan | 'warm' |
| 2. | Anticausative | nħall | ⬅ | ħall | 'melt' |

Non-directed
3.	Equipollent	nkiser	=	kisser	'break'
4.	Labile	għama	=	għama	'go/make blind'
5.	Suppletion	miet	=	qatel	'die/kill'

- Comrie (2006) builds on this analysis by establishing a profile for each language based on the marking of verbal notions

- Haspelmath-Comrie list:
  31 verbal notions *break, melt, close, open, split…*
  across 24 languages, including Maltese

- Maltese predominantly anticausative. It prefers to derive the inchoative from the causative:

tgħawweġ	għawweġ	'bend'
nfetaħ	fetaħ	'open'
ngħalaq	għalaq	'close'
nqasam	qasam	'split'

- Comrie (2006) also traces the historical stability of patterns of causative-inchoative pairs in the lexicon
- He argues that Maltese is time stable, favoring anticausative alternations like Arabic

- Spagnol (to appear) argues that the alternation is not (that) stable diachronically in Maltese:

templatic verbs   **concatenative verbs**

1a. It-tifel fetaħ il-bieb   2a. It-tifla ċċarġjat il-batterija
     'The boy opened the door'   'The girl charged the battery'
1b. Il-bieb infetaħ   2b. Il-batterija ċċarġjat
     'The door opened'   'The battery charged'

- It is directed (anticausative) in templatic verbs (= 30 verbs in H-C list)
- It is non-directed (labile) in concatenative verbs (1 verb in H-C list)

- Concatenative verbs such as

ċċarġja 'recharge'   *ffriża* 'freeze'   *sploda* 'explode'
ttowja 'thaw'   *ċċattja* 'flatten'   *ssikka* 'tighten'
    kkalma 'calm down'   *skura* 'darken'   *llixxa* 'straighten'
bbawnsja 'bounce'   *ċċara* 'lighten'   *żvojta* 'empty'

most of which are more recent loan verbs, tend to display labile behaviour

- Verb pairs use the same form as causative and inchoative:

1. *Missieri kkalma lil ħija*
   'My father calmed down my brother'
2. *Ħija kkalma*
   'My brother calmed down'

- How come this revision in the formal encoding of the causative-inchoative alternation in Maltese?

- **Italian**
  anticausative *-si* (svilupparie - svilupparsi) is neutralized in Maltese *żviluppa* 'develop'

- **English**
  predominantly labile (*impruvja* 'improve', *ddifrostja* 'defrost')

- **Language contact** must be responsible for the emergence and expansion of labile verbs
- Language internal mechanisms such as analogy and reanalysis might have speeded up the process of labilization

- Two main views have been proposed concerning the derivational relationship (if any) between the causative and inchoative alternant:

- **Causaviziation** (transitivization) - inchoatives are basic and causatives derived (Lyons 1968; Lakoff 1970; Pinker 1989; Jackendoff 1990)

- **Anticausativization** (detranstivization) - the order of derivation is reversed (Chierchia 1989; Levin & Rappaport Hovav 1995): inchoatives are derived from basically dyadic causatives via "lexical binding" of the causer argument of the causative verb.

  i.e. An intransitive construction such as *The window broke* is a derivation of the underlying transitive structure, implying that someone or something broke the window.

- Are labile verbs (which lack overt morphological marking) basically transitive or intransitive?

- **Historical approach**: trace the earliest recorded appearances of the items to determine whether they started out as transitive or intransitive verbs.
- The idea is that the more salient type would be the basic type in an argument structure alternation and that it will be the first to appear in the language.
- Such an exercise is difficult to conduct for languages without a long written tradition like Maltese.
- Besides, there is no good reason why a diachronic sequence should necessarily translate into synchronic preeminence of one of the senses of the current polysemous, labile verbs.

Study 1　　Sentence creation

Rationale
- If verbs evince in/transitivity bias, sentence creation under time pressure with these verbs should result in:
- Transitive frames where verbs have a transitive bias
- Intransitive frames where verbs have an intransitive bias
- No preference where verbs display no bias.

Method
- Online study with native speakers of Maltese.
- Task: write a sentence using the verb within 60 seconds.

Questions
- Are biases statistically evident and do they differ across verbs?
- Are biases evinced in sentence creation related to biases in corpus data?

- 40 verbs were selected for this study

- All verbs were labile.

- In this presentation, we focus our attention on one class of verbs (N=29).

- All verbs belong to the *-aj-* (vs. *-ej-*) conjugation class, such as:

  - evapora (to evaporate)
  - ċċarġja (to charge)
  - ssoda (to strengthen)

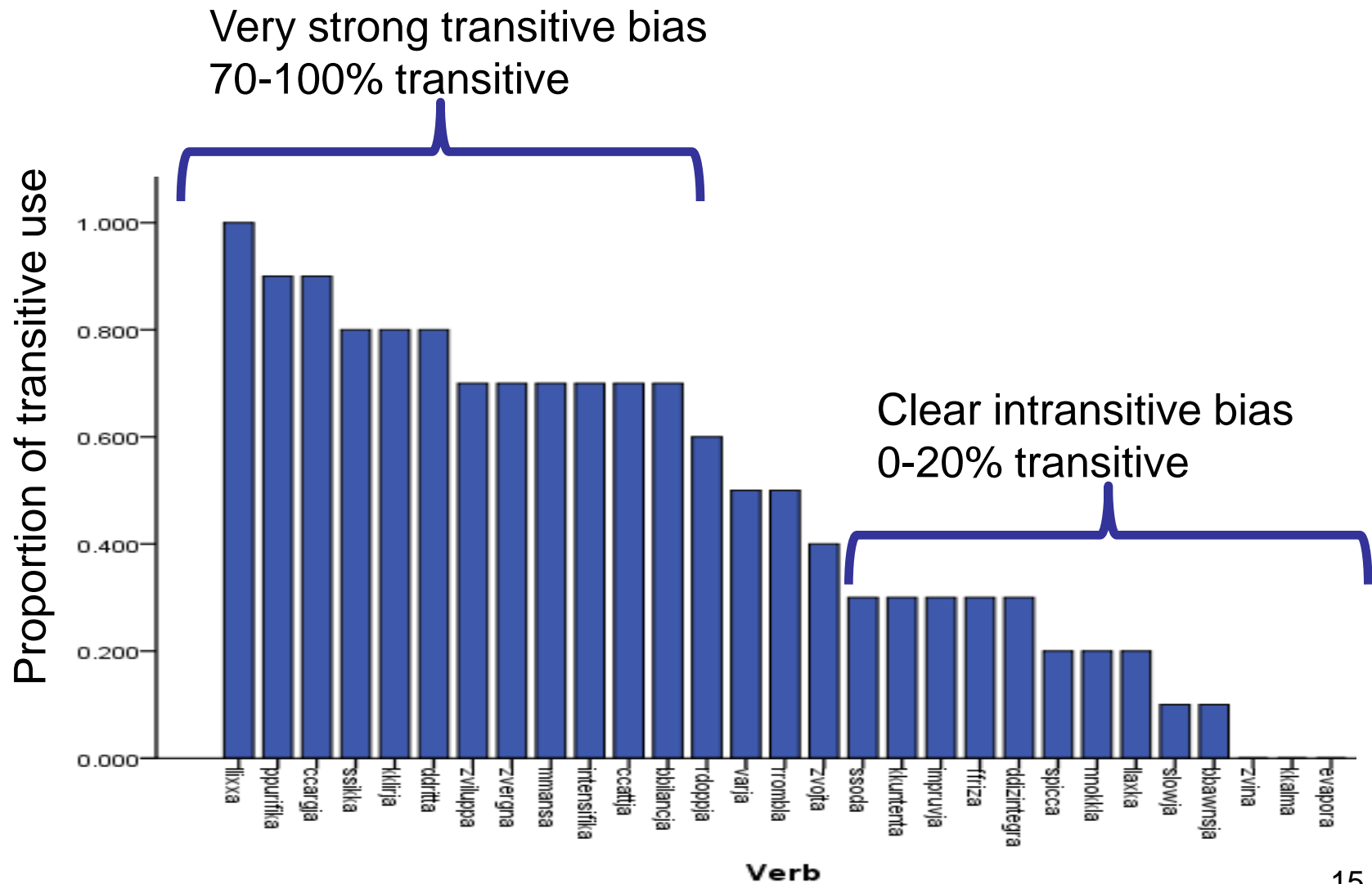**Din hija kelma numru 8**

Ikteb sentenza b'din il-kelma: ddisintegra

Kollox iddisintegra bit-terremot.

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kompli

- Each participant wrote sentences for 8 verbs + 32 filler items.
- 60 second countdown (time pressure ensures spontaneity)
- Each verb seen by 10 participants.
- Classification of created sentences as transitive/intransitive/other

Is the difference between transitive and intransitive reliable?
- Chi-square tests comparing transitive vs intransitive use.

Intransitive bias	Transitive bias	No bias	
bbawnsja	ċċarġja	bbilanċja	nnokkla
ddiżintegra	ċċattja	ddifrostja	rdoppja
evapora	kklirja	ddritta	rrombla
kkalma	llixxa	ffriża	ssoda
slowja	mmansa	impruvja	ttowja
spiċċa	ppurifika	intensifika	varja
żvina	ssikka	kklirja	żverġna
		kkuntenta	żviluppa
		llaxka	żvojta

Is the difference between transitive and intransitive reliable?

- For a number of verbs, there is a clear, statistically reliable bias towards transitive or intransitive use.

- For a number of others, we find no significant difference. There are many possible reasons for this:
  - Possibly, we don't have enough data for these verbs (10 examples are insufficient). This is especially the case for verbs where a percentage of transitive/intransitive responses is lowered because there are "other" responses.

  - But in some cases, the trend is unambiguous: *varja* (to vary), *rrombla* (to roll) and others show a 50-50 split.

  - Clearly, there are verbs that exhibit no preference either way.

Study 2 　　　Corpus data

Rationale
- Labile verbs may display different biases towards in/transitivity.
- Frequency/usage should reflect this bias (and potentially reinforce the bias among language learners)

Method
- Find labile verbs in corpus data (all conjugations + pronominal suffixes)
- Classify instances as transitive/intransitive/other.
- Omit instances which are not actually verbs (e.g. participles used adjectivally)

Data
- For this presentation, we focus on the same class of verbs as the experiment (N=29)
- MLRS Corpus (ca. 70m words; various text genres) + Web crawl data
- One verb removed as only one instance found in the corpus (bbawnsja/to bounce)

Very strong transitive bias
70-100% transitive

Clear
intransitive bias
0-20% transitive

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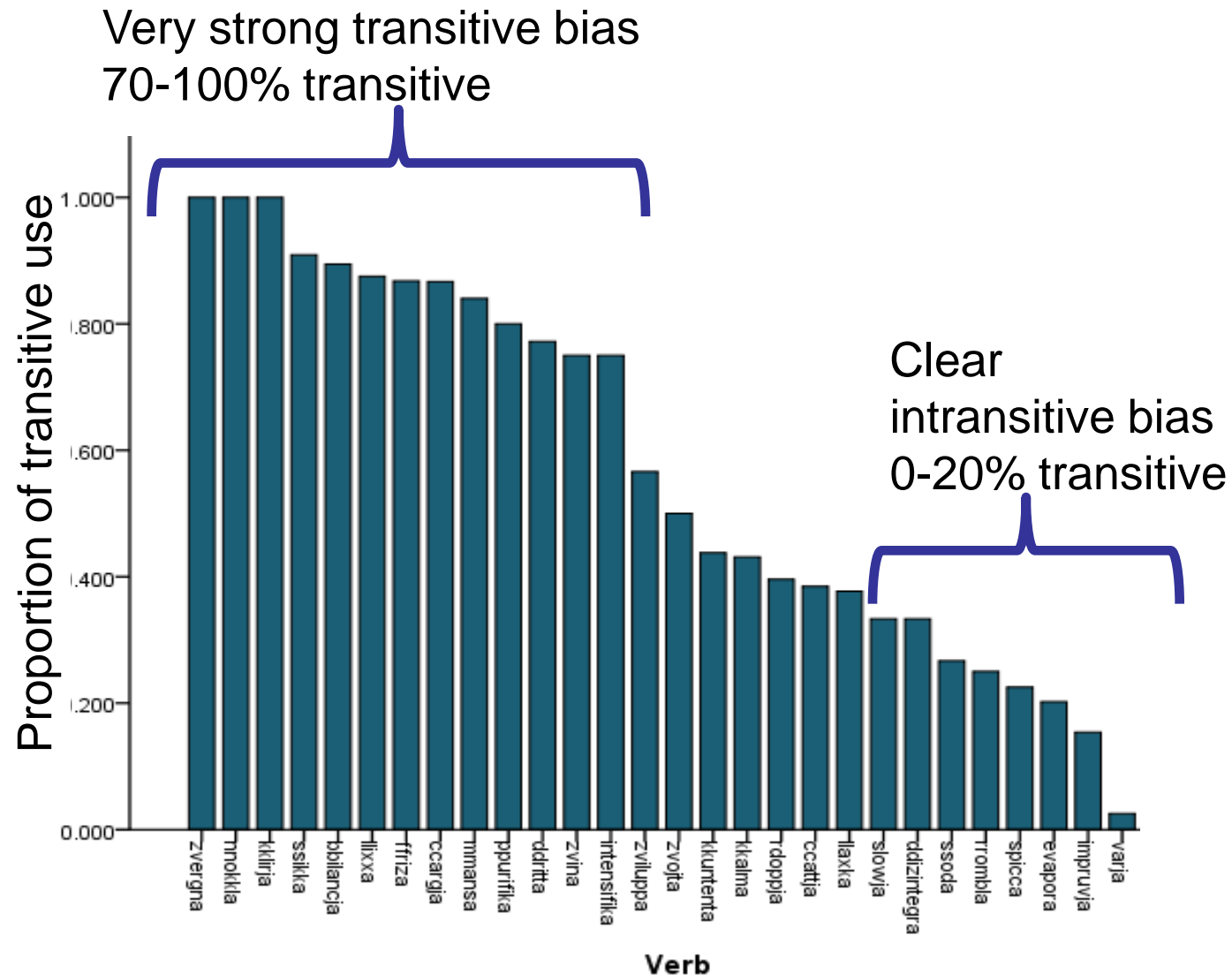
To what extent do the corpus and experimental data tally?

- We compared arcsin-transformed proportions of transitive and intransitive usages for each verb in the corpus and the experimental data.

- Significant positive correlations:
  - **Transitive: *r = 0.5; p = .05***
  - **Intransitive: *r = 0.5; p = .05***

- This suggests that naturally occurring data and experimentally elicited data concur.

- However, correlation is far from perfect.

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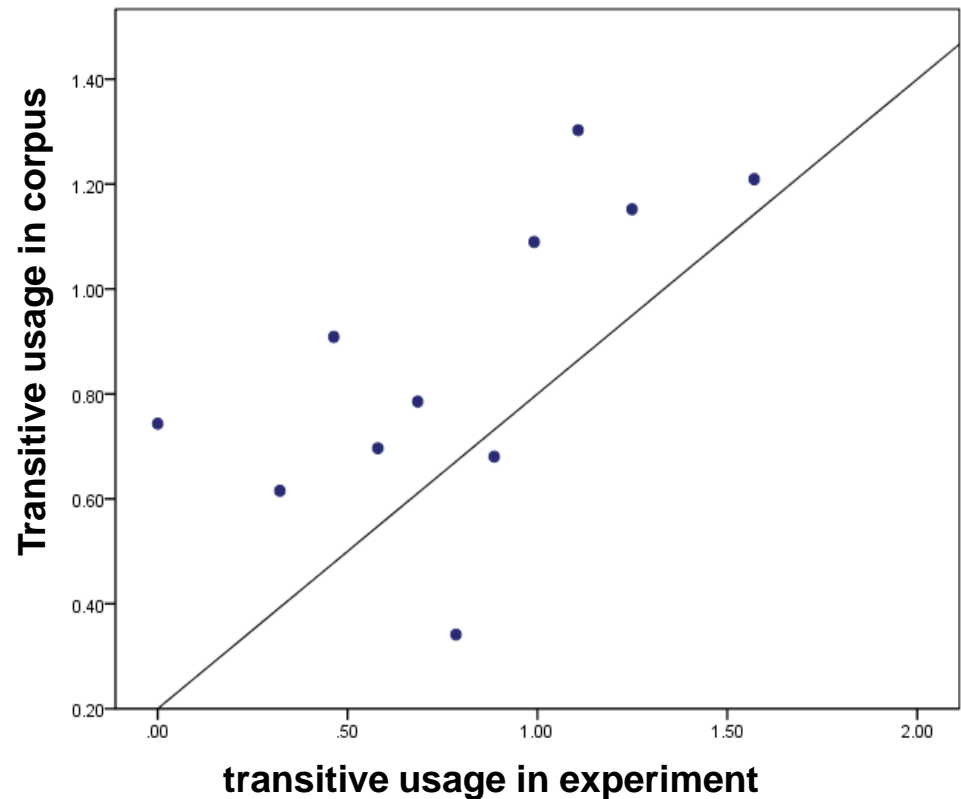
Comparing significant biases
- Chi-square tests comparing transitive vs intransitive use.
- Comparison of verbs found to have a bias in the corpus vs the experiment

Experiment				Corpus		
Intrans.	Trans.	No bias		Intrans	Trans	No bias
bbawnsja	ċċarġja	bbilanċja	nnokkla	evapora	bbilanċja	ċċattja
ddiżintegra	ċċattja	ddifrostja	rdoppja	impruvja	ċċarġja	ddiżintegra
evapora	kklirja	ddritta	rrombla	kkalma	ddritta	kkuntenta
kkalma	llixxa	ffriża	ssoda	rdoppja	ffriża	żvojta
slowja	mmansa	impruvja	ttowja	rrombla	intensifika	llaxka
spiċċa	ppurifika	intensifika	varja	spiċċa	kklirja	slowja
żvina	ssikka	kklirja	żverġna	ssoda	llixxa	
		kkuntenta	żviluppa	varja	mmansa	
		llaxka	żvojta	żviluppa	nnokkla	
					ppurifika	
					ssikka	
					żvina	
					żverġna	

Experiment				Corpus		
Intrans.	Trans.	No bias		Intrans	Trans	No bias
ddiżintegra evapora kkalma slowja spiċċa żvina	ċċarġja ċċattja kklirja llixxa mmansa ppurifika ssikka	bbilanċja ddifrostja ddritta ffriża impruvja intensifika kklirja kkuntenta llaxka	nnokkla rdoppja rrombla ssoda ttowja varja żverġna żviluppa żvojta	evapora impruvja kkalma rdoppja rrombla spiċċa ssoda varja żviluppa	bbilanċja ċċarġja ddritta ffriża intensifika kklirja llixxa mmansa nnokkla ppurifika ssikka żvina żverġna	ċċattja ddiżintegra kkuntenta żvojta llaxka slowja

- Where there are biases, the corpus and experimental data are largely in agreement.
- Exception: *żvina* (to bleed to death)
  - Corpus data has 11 transitive uses; 4 intransitive
  - Could be due to data sparseness
  - But many transitives are "metaphorical" extensions: *Żvina l-poplu* (they've bled the people to death)

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Conclusions

- We have restricted attention to one class of verbs, although data is being classified for a larger set.

- The corpus data is noisy:
  - Searching for many of these verbs gives rise to serious data sparseness problems
  - We have had to rely on web data (which is less controlled)

- Experimental data is (so far) limited:
  - Our experiment uses sentences elicited from 10 participants per verb
  - We are in the process of extending this study to include more participants

- In spite of the data sparseness, our results do show that some labile verbs hav clear biases in favour of a transitive/causative or intransitive/inchoative use.

- Other verbs are clearly unbiased. For others, more data is needed.

- The correlation between corpus and experimental data suggests that this isn't a reflex of the "artificiality" of a sentence creation task.

- Why should some verbs evince a particular bias?

- In derivational studies, it is generally assumed there is one direction of (syntactic) derivation for all alternating verbs: causativization or anticausativization

- The data we presented suggests there is a difference in direction of derivation for two main classes of verbs:
  impruvja-type   basically intransitive
  ċċarġja-type   basically transitive
  or perhaps a continuum?

- This analysis is based on the idea that derivational and morphological complexity is sensitive to the lexical semantic structure of verbs.

- **internally caused** - verbs like *bloom*, *deteriorate*, and *rust* are internally caused because the means of bringing about the change of state event is conceptualized as an inherent property of the entity undergoing the change (flowers bloom and pipes rust because of something internal to them)
- **Maltese:** *kkalma* (to calm down), *żviluppa* (to develop), *slowja* (to slow down)

- **externally caused** - verbs such as *break*, *crumble*, and *explode*, are conceptualized as coming about due to a force external to the entity undergoing the change of state
- **Maltese:** *ċċarġja* (to charge), *llixxa* (to smoothen), *ippurifika* (to purify)

- We argue that there is **not one** direction of derivation (causativization or anticausativization)

- The direction of derivation is rather sensitive to the **kind of event** named by the verbs in question (whether internally or externally caused)

- Directionality is possibly determined by the **frequency** of occurrence of verbs in transitive or intransitive clausal patterns

- It seems the **internal-external causation dichotomy** has correlated frequency effects, with internally caused verbs occurring more frequently in intransitive patterns, and externally caused verbs more frequently in transitive patterns

- We plan to test our explanation in a reading-time experiment, looking at processing factors.

- If biases are explained by internal/external causation, we expect to find:
  - Slower reading times with internal causation verbs in a transitive/causative frame
  - Slower reading times with external causation verbs in an intransitive frame