Variable "mood selection" with communication verbs in Greek: *Bi-eventive modal anchoring*

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So far: ADVISE-Predicates → **Subjunctive mood**

- Predicates communicating *advice*, *obligation*, *request*, *permission* a.o. (e.g. in Giannakidou 2015: *simvulevo* 'advise', *ipohreono* 'require', *zitao* 'request', *diatazo* 'order', hence **ADVISE-Ps**) typically combine with **subjunctive**:

(1) Kapji simvulepsan ton Brad Pitt **na** min taksidepsi sti hora mas

Some.PL advised.3PL the Brad Pitt **SUBJ** not travel.3SG to-the country our

'Some (people) advised Brad Pitt that he should not travel to our country…

…because it's dangerous.'

Novel observation: ADVISE-Ps + IND + mod_{PRT}

- ADVISE-predicates can also combine with indicative as long as it embeds a modal operator with ***prioritizing flavor*** (i.e. *bouletic*, *deontic*, *teleo*):

(2) Kapji **simvulepsan** ton Brad Pitt **oti** {ine **kalitera**} / {tha prepe}
Some.PL advised.3PL the Brad Pitt that$_{IND}$ is better / should
na min taksidepsi sti hora mas…
SUBJ not travel.3SG to-the country our
'Some (people) advised Brad Pitt that it's better to not travel to our country…'

…because it's dangerous.

Novel observation: ADVISE-Ps + IND + mod$_{PRT}$

- Notice that when there is an embedded modal operator with ***prioritizing flavor advice cannot combine with subjunctive***:

(3) *Kapji **simvulepsan** ton Brad Pitt **na** {ine **kalitera**} / {tha prepe}
Some.PL advised.3PL the Brad Pitt SUBJ is better / should
na min taksidepsi sti hora mas…
SUBJ not travel.3SG to-the country our
'Some (people) advised Brad Pitt that it's better to not travel to our country…'

…because it's dangerous.

Updated picture

See Sentence Evaluation Task in Appendix#3

ADVISE-Ps	**translation**				
• *simvulevo*	advise	SUBJ	/	IND+mod_{PRT}	*IND
• *protino*	recommend/suggest	SUBJ	/	IND+mod_{PRT}	*IND
• *parotrino*	urge	SUBJ	/	IND+mod_{PRT}	*IND
• *protrepo*	urge, exhort	SUBJ	/	IND+mod_{PRT}	*IND
• *diatazo*	command	SUBJ	/	IND+mod_{PRT}	*IND
• *ipohreono*	oblige	SUBJ	/	IND+mod_{PRT}	*IND
• *epitrepo*	allow	SUBJ	/	?? IND+mod_{PRT}	*IND

PUZZLE: Variable mood selection

All approaches predict **ADVISE-Ps + SUBJ:**

Giorgi & Pianesi (1997)

Villalta (2008)

Portner & Rubnistein (2020)

Ordering semantics (i.e. prioritizing ordering source/ alternatives)

Farkas (1992, 2003), Quer (2001)

Giannakidou (2015), Schlenker (2005)

Portner & Rubinstein (2012)

world-anchoring, intensional, non-veridical, commitment

PUZZLE: *ADVISE-Ps* + *IND* + mod_{PRT}

- ~~Hypothesis I~~: ADVISE-Ps are ambiguous, depending on their interpretation they license either subjunctive or indicative

➢ No meaning difference: ADVISE + SUBJ ≈ ADVISE + IND+mod_{PRT}

➢ The fact that a *prioritizing modal operator* is required below IND suggests that the verbs impose the same restrictions

Analysis: ADVISE-Ps + IND + mod_{PRT}

Hypothesis II: ADVISE-Ps have a uniform interpretation involving a *cause-event* and a *prioritizing state:*

ADVISE-Ps: *cause*$_{<CG_{RP}>}$ *to be in an attitude state*$_{<PRT>}$

(Martin & Schäfer 2012, 2015, Grano 2018)

The prioritizing flavor is expressed either by SUBJ-mood or by a PRT-modal.

Ingredients of the analysis

Ingredient#1: Decompositional analysis of attitude verbs

- Quantificational force is located in the embedded proposition (Kratzer 2006, 2013, Moulton 2009, Elliot 2017, Grano 2018, Portner & Rubinstein 2020).

- Attitude verbs denote predicates of situations and the embedded CPs are not necessarily thematically related with the predicate (Moulton 2009).

Ingredient#2: Mood is a modal operator

Portner & Rubinstein (2020)

- Subjunctive is a modal operator which requires a dual background (i.e. a modal base and an ordering source) whose content is provided by the matrix predicate (e.g. *want*, *advise*, *order*)

- Indicative is a modal operator requiring a single background (*epistemic*, *doxastic or reported common ground*) provided by predicates like *know*, *believe*, *claim*.

[Cross-linguistic variation: Mood merges in C-domain (Dobrovie –Sorin 2001, Roussou 2010)]

Ingredient#3: Modal event anchoring

<u>Hacquard (2006, 2010)</u>

- Modal operators are relativized to *events*.

(4) a. $[\![SUBJ]\!] = \lambda f_{<\varepsilon,stt>}.\lambda g_{<\varepsilon,stt>}.\lambda e.\lambda q_{<st>}.\forall w' \in max_{g(e)}\big(\cap f(e)\big):\ q(w')$

b. $[\![IND]\!] = \lambda f_{<\varepsilon,stt>}.\lambda e.\lambda q_{<st>}.\forall w' \in \cap f(e):\ q(w')$

- The modal background is provided by the *matrix event* by binding the event variable of the modal base and the ordering source (*event relativity*, Hacquard 2006, 2010).

(5) a. *know, believe, think* → *epistemic/doxastic content* → $f_{epist/dox}$

b. *want, plan, intend* → *prioritizing content* → f_{dox} / g_{prt}

Ingredient#4: *ADVISE-Ps are bi-eventive*

- *ADVISE*-Ps are communication verbs which have been argued independently to be *bi-eventive* (Martin & Schäfer 2012, 2015, Grano 2018)

- They decompose into:

i. a *report event (providing* a *reported common ground) that (in all worlds in which its goal is achieved)* <u>*causes*</u>

ii. a *prioritizing attitude state*

(see *defeasible causatives*, *e.g. encourage*, in Martin & Schäfer 2012, 2015)

(6) *ADVISE*-Ps: *cause*$_{<CG_{RP}>}$ *to be in an attitude state*$_{<PRT>}$

Analysis: ADVISE + *IND* + mod_{PRT}

Kapji **simvulepsan** ton Brad Pitt **oti** {ine **kalitera**} / {tha prepe}

Some.PL advised.3PL the Brad Pitt that$_{IND}$ is better / should

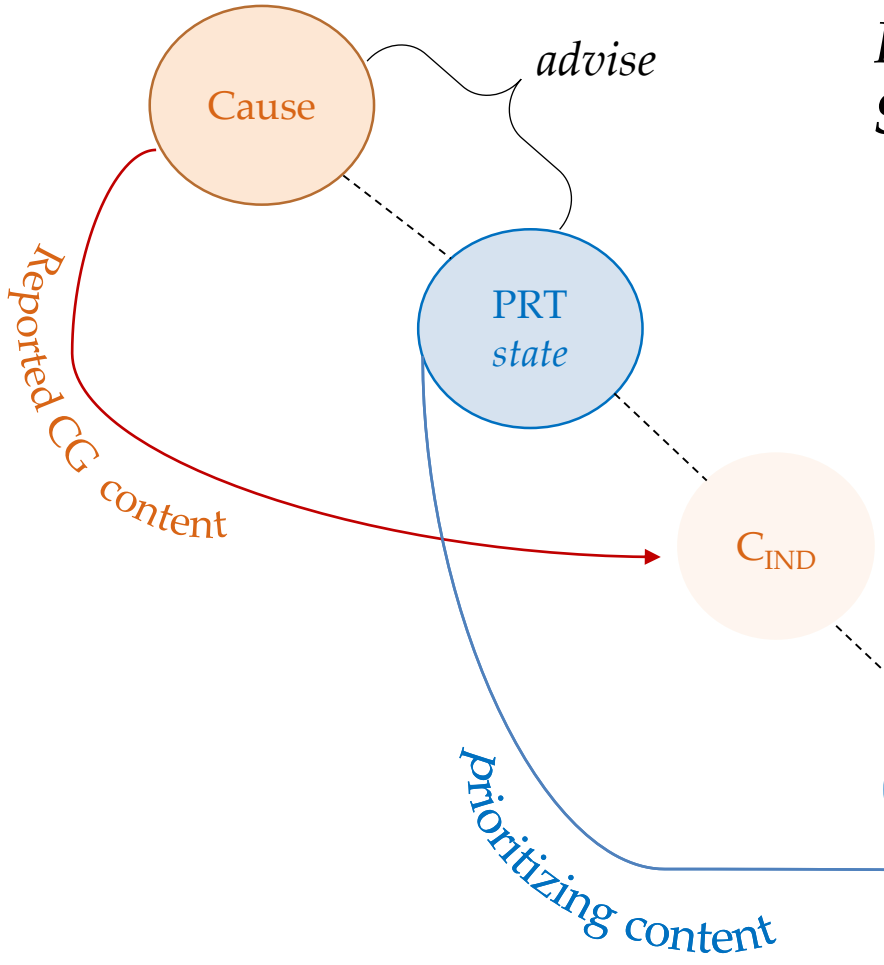
na min taksidepsi sti hora mas…

SUBJ not travel.3SG to-the country our

‘Some (people) advised Brad Pitt that it’s better to not travel to our country…’

…because it’s dangerous.

ADVISE + *IND* + mod_{PRT}: Local bi-eventive anchoring



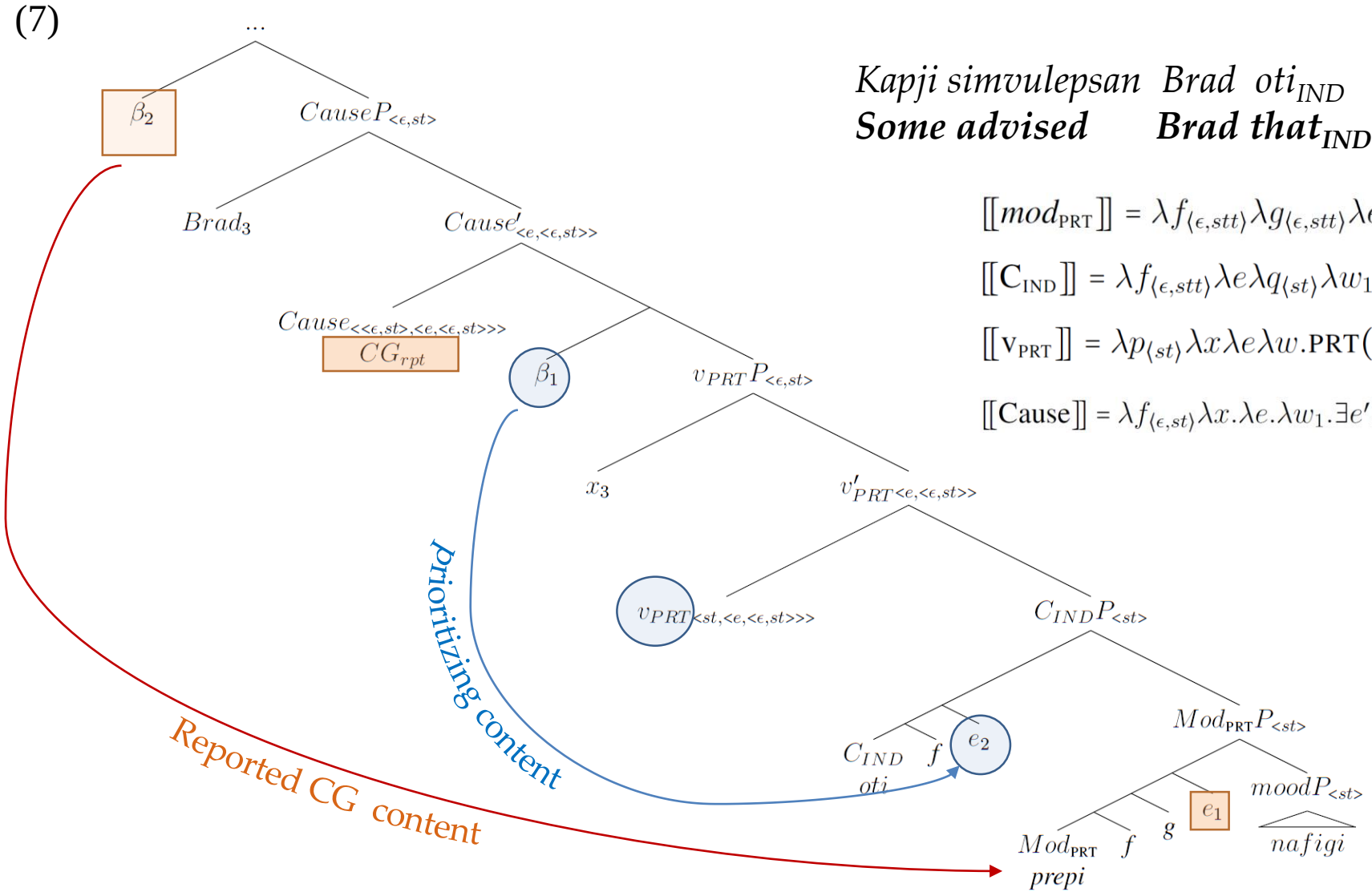
Kapji simvulepsan Brad oti$_{IND}$ *prepi na figi*
Some advised Brad that$_{IND}$ ***he should leave.***

$$[\![\mathrm{C_{IND}}]\!] = \lambda f_{\langle \epsilon, stt \rangle} \lambda e \lambda q_{\langle st \rangle} \lambda w_1 . \forall w'' \in \cap f(e, w_1) : q(w'')$$

$$[\![mod_{\mathrm{PRT}}]\!] = \lambda f_{\langle \epsilon, stt \rangle} \lambda g_{\langle \epsilon, stt \rangle} \lambda e \lambda q_{\langle st \rangle} \lambda w . \forall w' \in max_{g(e,w)}(\cap f(e, w)) : q(w')$$

ADVISE + *IND* + mod_{PRT}: Local bi-eventive anchoring

(7)



Kapji simvulepsan Brad oti$_{IND}$ *prepi na figi*
Some advised Brad that*$_{IND}$ *he should leave.

$$[\![mod_{\text{PRT}}]\!] = \lambda f_{\langle\epsilon,stt\rangle}\lambda g_{\langle\epsilon,stt\rangle}\lambda e\lambda q_{\langle st\rangle}\lambda w.\forall w' \in max_{g(e,w)}(\cap f(e,w)) : q(w')$$

$$[\![\text{C}_{\text{IND}}]\!] = \lambda f_{\langle\epsilon,stt\rangle}\lambda e\lambda q_{\langle st\rangle}\lambda w_1.\forall w'' \in \cap f(e,w_1) : q(w'')$$

$$[\![\text{v}_{\text{PRT}}]\!] = \lambda p_{\langle st\rangle}\lambda x\lambda e\lambda w.\text{PRT}(e,w) \wedge \text{EXP}(e,w) = x \wedge p(w)$$

$$[\![\text{Cause}]\!] = \lambda f_{\langle\epsilon,st\rangle}\lambda x.\lambda e.\lambda w_1.\exists e'.Cause(e',w_1) = e \wedge Causee(e,w_1) = x \wedge f(e',w_1)$$

IMPLICATIONS

- This type of variability (*SUBJ / IND* + *PRT*) under the current hypothesis is predicted to occur **only with bi-eventive predicates and not with predicates like *want, intend, plan*** (see Appendix#1).

- **Mood-selection is not always "selection"**. Rather it is binding and when there are two local binders they can bind two operators.

- We expect similar variability in languages in which mood can be analysed as a modal operator.

Thank you!!!

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Appendices

1. Appendix#1: why not *want*/*plan* + *IND* + mod_{PRT}

2. Appendix#2: ADVISE + *IND* + mod_{PRT} (*derivation*)

3. Appendix#3: Sentence Evaluation Task

APPENDIX#1: why not *want/plan* + *IND* + mod_{PRT}

(8) *Kapji **shediazun** **oti** {ine **kalitera**} / {tha prepe} na figun

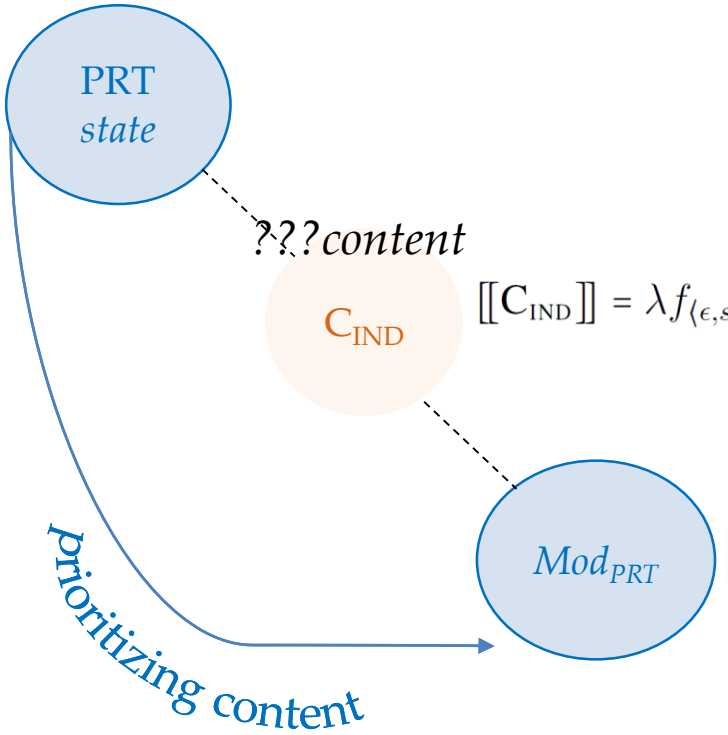
Some.PL plan.3PL $that_{IND}$ is better / should SUBJ leave.3PL

'Some (people) plan/want to leave…'

- These verbs are mono-eventive introducing a *prioritizing state*.
- There is no causing event to provide a *reported cg* to license the indicative.

APPENDIX#1: why not *want/plan* + IND + mod_{PRT}

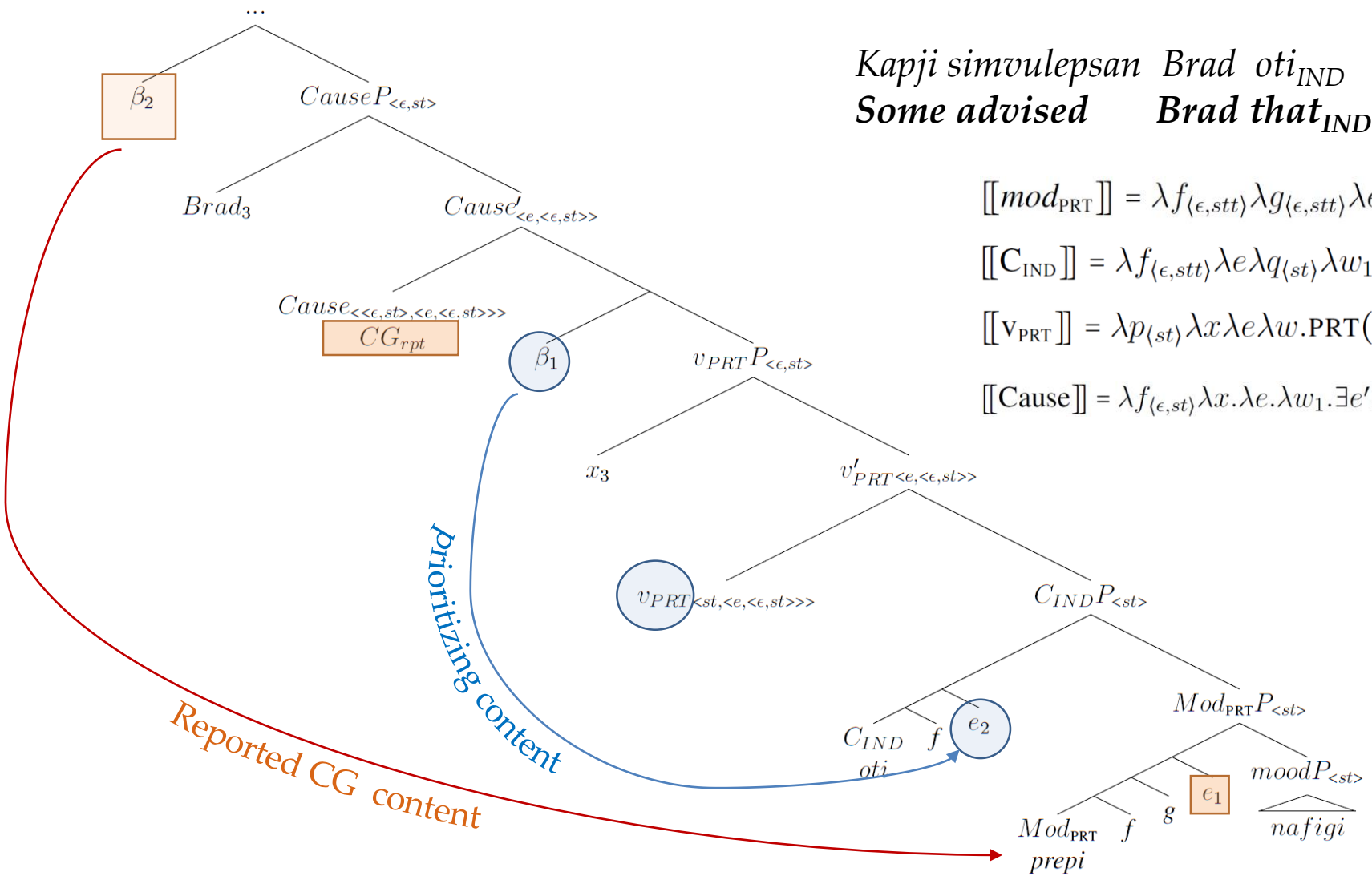
**Kapji skopevun*	*oti*$_{IND}$	*prepi*	*na figun*
****Some plan***	***that***$_{IND}$	***should***	***leave.***



$$[\![\mathrm{C_{IND}}]\!] = \lambda f_{\langle \epsilon, stt \rangle} \lambda e \lambda q_{\langle st \rangle} \lambda w_1 . \forall w'' \in \cap f(e, w_1) : q(w'')$$

$$[\![mod_{\mathrm{PRT}}]\!] = \lambda f_{\langle \epsilon, stt \rangle} \lambda g_{\langle \epsilon, stt \rangle} \lambda e \lambda q_{\langle st \rangle} \lambda w . \forall w' \in max_{g(e,w)}(\cap f(e, w)) : q(w')$$

Appendix#2: ADVISE + *IND* + mod_{PRT} (derivation)



Kapji simvulepsan Brad oti$_{IND}$ prepi na figi
Some advised Brad that$_{IND}$ he should leave.

$$[\![mod_{\text{PRT}}]\!] = \lambda f_{\langle\epsilon,stt\rangle}\lambda g_{\langle\epsilon,stt\rangle}\lambda e\lambda q_{\langle st\rangle}\lambda w.\forall w' \in max_{g(e,w)}(\cap f(e,w)) : q(w')$$

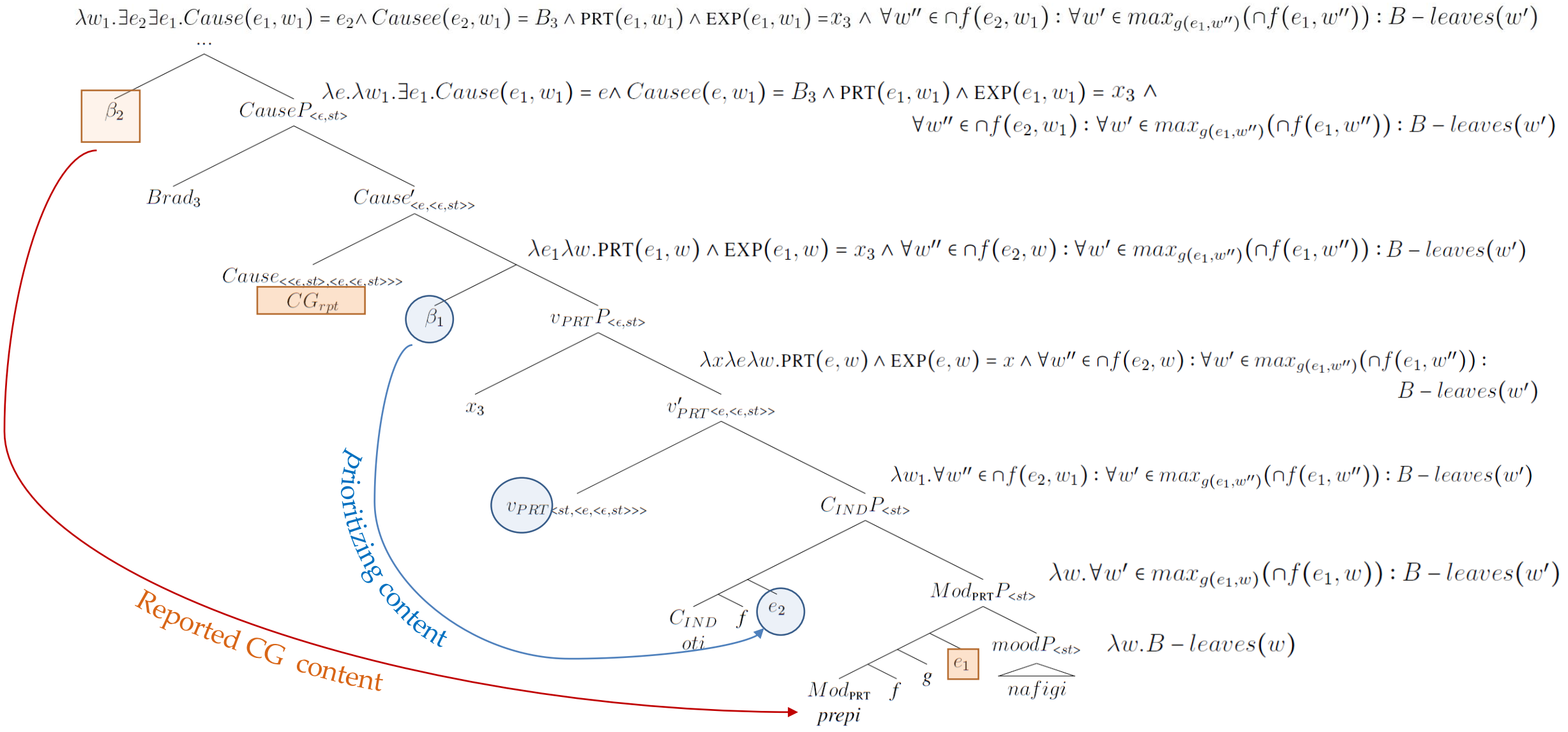
$$[\![\text{C}_{\text{IND}}]\!] = \lambda f_{\langle\epsilon,stt\rangle}\lambda e\lambda q_{\langle st\rangle}\lambda w_1.\forall w'' \in \cap f(e,w_1) : q(w'')$$

$$[\![\text{v}_{\text{PRT}}]\!] = \lambda p_{\langle st\rangle}\lambda x\lambda e\lambda w.\text{PRT}(e,w) \wedge \text{EXP}(e,w) = x \wedge p(w)$$

$$[\![\text{Cause}]\!] = \lambda f_{\langle\epsilon,st\rangle}\lambda x.\lambda e.\lambda w_1.\exists e'.Cause(e',w_1) = e \wedge Causee(e,w_1) = x \wedge f(e',w_1)$$

Appendix#2:

Kapji simvulepsan Brad oti$_{IND}$ prepi na figi
Some advised Brad that$_{IND}$ he should leave.



Appendix#2: ADVISE + *IND* + mod_{PRT} (derivation)

(9) $\lambda w_1.\exists e_2 \exists e_1.Cause(e_1, w_1) = e_2 \wedge Causee(e_2, w_1) = B_3 \wedge \mathrm{PRT}(e_1, w_1) \wedge \mathrm{EXP}(e_1, w_1) = x_3 \wedge$
$\forall w'' \in \cap f(e_2, w_1) : \forall w' \in max_{g(e_1, w'')}(\cap f(e_1, w'')) : B - leaves(w')$

b. $PRT(e\ ) \rightarrow g_{prioritizing}$

c. $Cause_{CGrpt}(e\ ) \rightarrow f_{reported\ CG}$

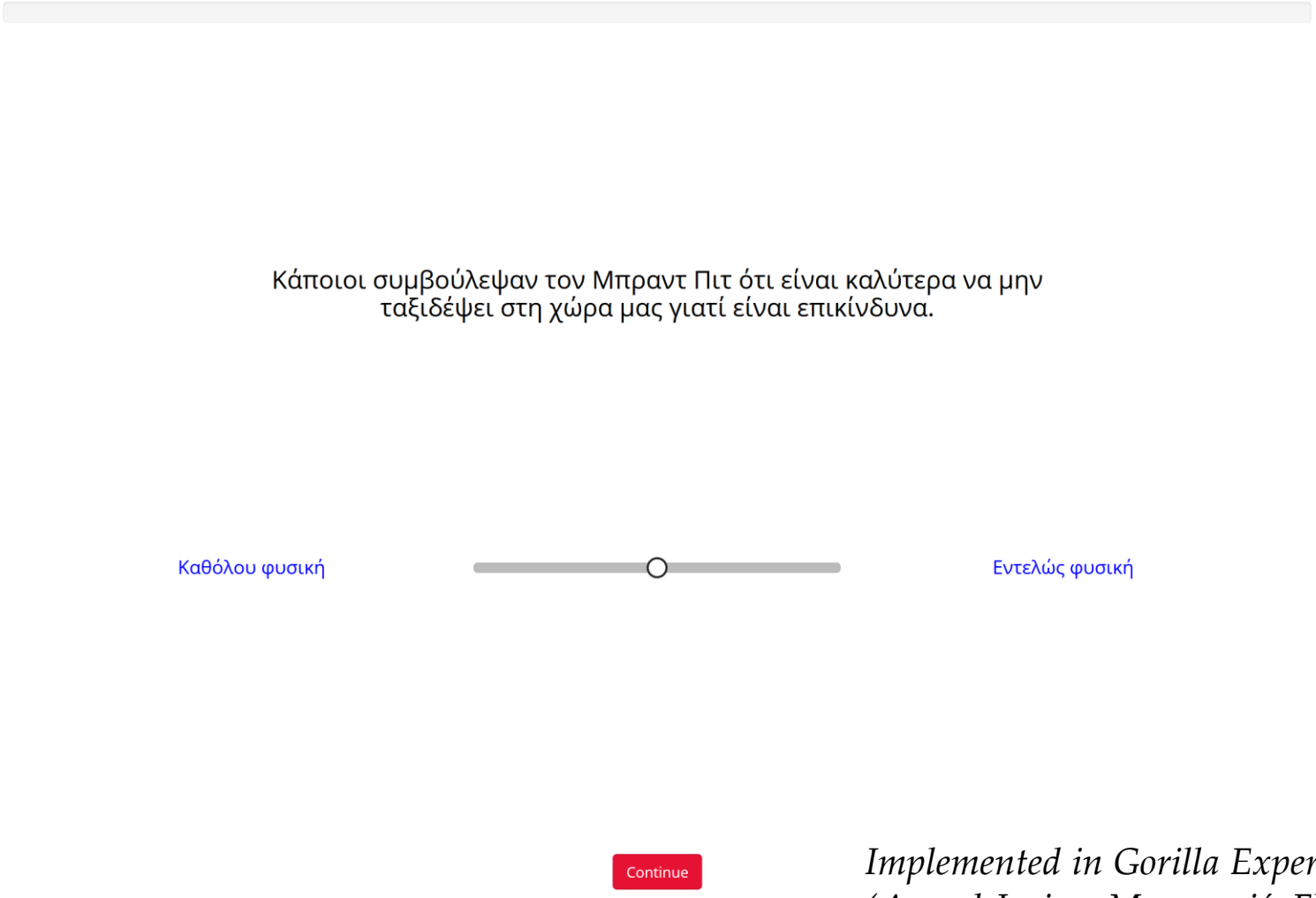
In w_1, there is a *cause event* e_2 that causes (when its goal is achieved) a *PRT-state* e_1 and the *CAUSEE* of e_2 is Brad and the *EXP* in e_1 is Brad and in all worlds consistent with the *reported cg* in e_2, all maximally preferred worlds in e_1 are worlds in which Brad travels.

APPENDIX#3: Sentence Evaluation Task

- Sentence Evaluation Task with a continuous slider [scale: 0 – 100, *entirely unnatural* ↔ *entirely natural*]
- 18 participants
- 15 items / 10 fillers
- 3 conditions
    - *a.* *ADVISEP + SUBJ*
    - *b.* *ADVISEP + IND + mod_{PRT}*
    - *c.* *ADVISEP + IND (without mod_{PRT})*
- <u>5 items/condition</u>

i.	*simvulevo*	advise
ii.	*parotrino*	urge
iii.	*protrepo*	urge, exhort
iv.	*diatazo*	command
v.	*ipohreono*	*oblige*

APPENDIX#3: Sentence Evaluation Task



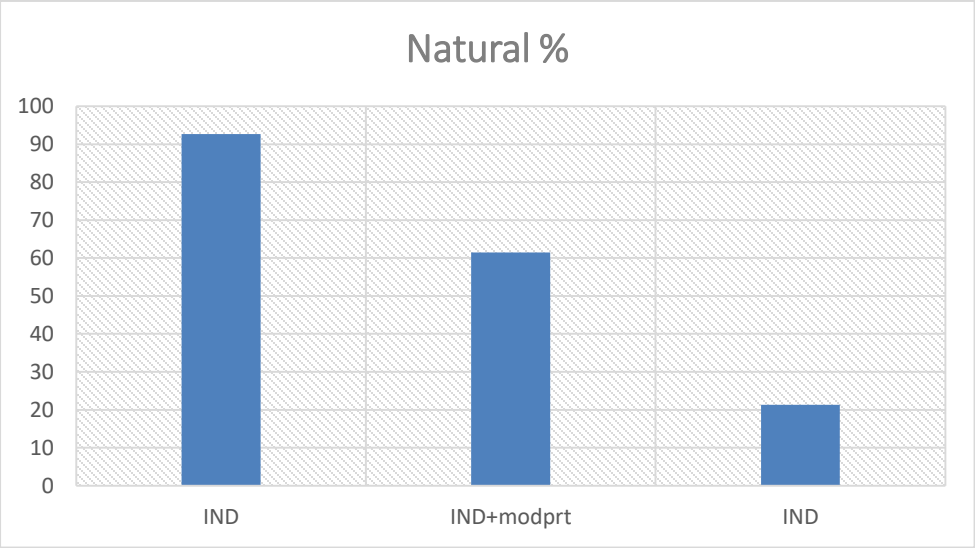
Implemented in Gorilla Experiment Builder (www.gorilla.sc)
(Anwyl-Irvine, Massonnié, Flitton, Kirkham & Evershed, 2018)

APPENDIX#3: Sentence Evaluation Task

- Sentence Evaluation Task with a continuous slider [scale: 0 – 100, *entirely unnatural* ↔ *entirely natural*)

Average response (%natural) per condition:

a. *ADVISEP + SUBJ = 92.7%*
b. *ADVISEP + IND + mod_{PRT} = 61.5%*
c. *ADVISEP + IND (without mod_{PRT}) = 21.3%*

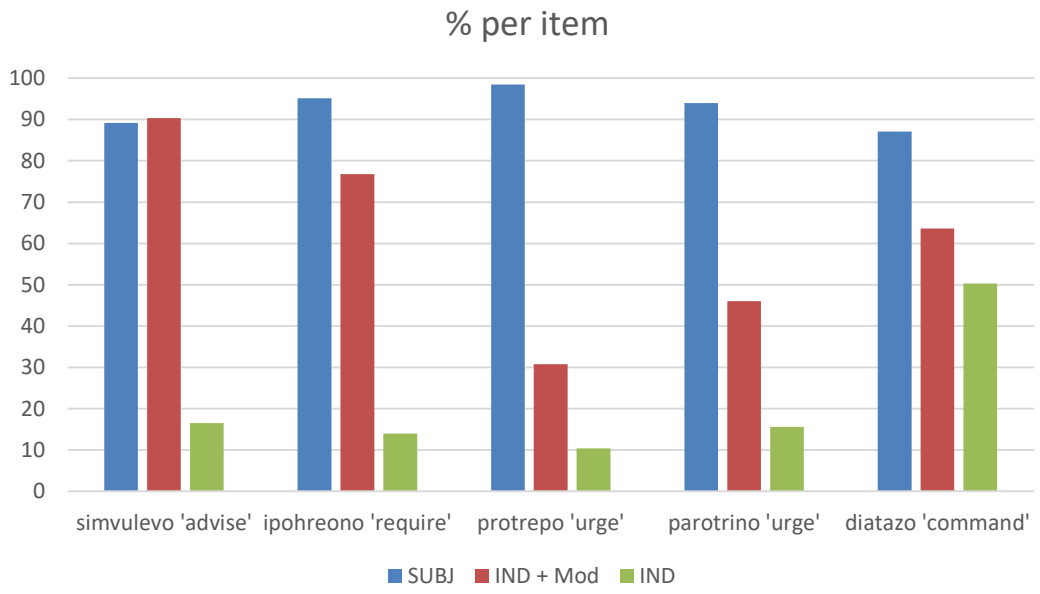


APPENDIX#3: Sentence Evaluation Task

- Sentence Evaluation Task with a continuous slider [scale: 0 – 100, *entirely unnatural* ⟷ *entirely natural*)

Average response (%natural) per item:

	SUBJ	*IND + Mod*	*IND*
simvulevo 'advise'	*89.2*	*90.3*	*16.5*
ipohreono 'require'	*95.1*	*76.8*	*14*
protrepo 'urge'	*98.5*	*30.8*	*10.4*
parotrino 'urge'	*94*	*46*	*15.6*
diatazo 'command'	*87.1*	*63.6*	*50.3*



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