Structural Size at the Syntax/Semantics Interface in the Non-Finite Domain of Italian

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1 Introduction

Crosslinguistically, it has been observed that certain clause embedding verbs exhibit a belief/intention semantic alternation wrt their complement clause (Grano 2018, 2024, Giannakidou & Mari 2021). Such alternation correlates with specific morpho-syntactic features of the complement clause, for example finiteness for English *persuade* (Grano 2019, 2024) and Russian *dumat* (Kasenov 2023), indicative vs. subjunctive mood for Greek *pitho* 'persuade' (Giannakidou & Mari 2021). Interestingly, Italian *convincere* 'convince' (alongside other verbs, like *pensare* 'think', and *avere paure* 'fear'), shows the same alternation within the non-finite domain. The verb can select two infinitival prepositional complementizers:

(1) *Marco ha convinto Gianni* ***di*** *avere un figlio.*
Marco$_1$ has convinced Gianni$_2$ *di* PRO$_{1/2}$ have.INF a child.
'Marco has convinced Gianni that he has a child.'

(2) *Marco ha convinto Gianni* ***ad*** *avere un figlio.*
Marco$_1$ has convinced Gianni$_2$ *a* PRO$_{*1/2}$ have.INF a child.
'Marco has convinced Gianni to have a child.'

In (1), Mario causes Gianni to have a belief about some state of affairs *s*, whereas in (2) the result is that Gianni has an intention to bring *s* about. In this paper, we look into the syntactic differences between these two infinitival structures, providing an account for their respective semantics.

2 Previous accounts on the belief/intention alternation

For Greek, Giannakidou & Mari (2021) argue that indicative selection presupposes subjective veridicality, meaning that the embedded clause is evaluated as true relative to the modal background introduced by the embedding verb. According to Grano (2024), what distinguishes intention readings from belief ones is that the complement has an abstracted eventuality argument: this distinction shows up in Romance languages as indicative vs. subjunctive mood, whereas in English it is conveyed structurally through finite versus non-finite complements. A key aspect of this account is **causal self-referentiality**, which refers to the idea that, for intention readings, the state introduced by the attitude predicate must causally contribute to the realization of the intended event described by the complement clause. Grano (2024) encodes this dependency in the semantics of *intend* (see (3), adapted), where the CAUSE* relation explicitly connects the subject's mental state with the intended event, formally requiring the complement to provide an abstracted eventuality argument for binding.

(3) $[\![\text{ intend }]\!]^w = \lambda P_{\langle e,\langle s,vt\rangle\rangle}.\lambda x_e.\lambda s_v.\exists s.Intention(s,w) \wedge Experiencer(s,x,w) \wedge \forall\langle w',y\rangle \in \text{CONTENT}(s) : \exists e.\text{CAUSE}^*(s,e,w') \wedge P(y)(w')(e)$

On the other hand, Indicative mood would provide existential closure of the eventuality argument, making the complement clause suitable for belief readings. However, this account does not straightforwardly extend to Italian, where the belief/intention alternation is mapped onto two types of infinitival complements rather than a finite/non-finite contrast: specifically, di-infinitives are mapped to belief readings, even if they don't compose with Indicative mood.

Here, we build on an alternative solution, briefly mentioned by Grano (2024) based on a suggestion by Menéndez-Benito. This proposal posits that the closure of the eventuality argument is effected by a dedicated head situated structurally above the Subjunctive but below the Indicative. If independent evidence demonstrates that *di*-infinitives and *a*-infinitives also differ in structural size, this explanation could naturally extend to account for the semantic alternation observed in the non-finite domain as well.

3 Evidence on structural size

In fact, the two infinitivals seem to exhibit crucial structural differences. To begin with, only *di*-infinitives can exhibit both subject and object control, whereas *a*-infinitive only allows object control (cf. (1)/(2)). Moreover, *di*-infinitives allow modal auxiliaries such as *potere* ('can') and *dovere* ('must') intervening between *di* and the infinitive, contrary to *a*-infinitives:

(4) *Marco ha convinto Gianni* ***di****/****a*** *voler/poter/saper/dover studiare.*
Marco has convinced Gianni *di/*a* want/can/being-able/have-to study.INF

Since modal auxiliaries merge above the verbal domain (Cinque 2006, Grano 2015), their presence in *di*-infinitives but not in *a*-infinitives suggests that *di*-infinitives project a larger structure. This aligns with theoretical accounts linking structural size to propositionality (Lohninger & Wurmbrand 2020).

3.1 Zooming-in on *a*-infinitives

Leaving aside *di*-infinitives for the moment, assuming they represent a standard case of control infinitives, projecting up to FinP and equipped with their logophoric center (Rizzi 1997, Bianchi et al. 2003, Landau 2025, a.o.), we will now focus on the syntactic and semantic properties of *a*-infinitives. We begin by noticing that passive is available (5), as well as low aspectual restructuring verbs, as seen in (6) (these verbs are merged at the edge of the vP domain, Cinque 2006, Grano 2015, Wurmbrand 2001, Cardinaletti & Shlonsky 2004).

(5) *Marco ha convinto Gianni a essere intervistato.*
Marco has convinced Gianni *a* be.INF interviewed.PST.PRT.M
'Marco has convinced Gianni to be interviewed.'

(6) *Marco ha convinto Gianni a cominciare a/continuare a/finire*
Marco has convinced Gianni *a* begin.INF to/continue.INFto/finish.INF to
di lavorare.
work.INF
'Marco has convinced Gianni to start/continue/finish working.'

Interestingly, the infinitive in (5) necessarily implies an active (consenting) role in the interviewing event: Gianni does not passively enable it but rather allows it (it can be paraphrased as *Marco has convinced Gianni to let* (someone) *interview him*). This is consistent with the idea that, with *a*-infinitives, the attitude holder (Gianni in (5)) has an intention of bringing about the event described in the complement clause.

The reduced structure of these infinitives raises the question of how a future interpretation is licensed. In fact, root modality, which is located in the lower portion of the T layer, is associated with future orientation (Hacquard 2006). However, as we have seen, this position is not available in a-infinitives. By contrast, aspectual operators are typically merged even lower than root modals and may therefore remain accessible in these reduced structures. Interestingly, some aspectual operators have been argued to involve modal displacement: for instance, it has been proposed that the English progressive introduces 'inertia worlds' (Dowty 1979, Portner 1998, Copley 2014). A natural solution, then, is to posit the presence of an underlying future-oriented modal operator, similar to WOLL (Abusch 2004, Wurmbrand 2014). This operator would function as a factual modal (see Kratzer 2013), with a circumstantial modal base consisting of possibilities that share the relevant facts with the actual situation. This feature, incidentally, would also correctly predict that *convincere-a* reports would not be sensitive to *de dicto/de re* ambiguitities. Consider the following context: *Marco has told Gianni that Luca is the new boss, and that he should talk with him. Gianni believes Marco, and he goes to talk to him. However, Luca is not the new boss, and Marco told him a lie.*

(7) *Marco ha convinto Gianni *a/di parlare con il nuovo capo.*
Marco has convinced Gianni **a/di* speak.INF with the new boss
'Marco has convinced Gianni to speak with the new boss.'

In (7), when *a* is present, the definite description *the new boss* refers to the entity in accordance with the speaker's circumstantial knowledge, despite Gianni's mistaken beliefs about who the new boss is. Note that *di-infinitive*, meaning *Marco has convinced Gianni that he is talking with the new boss* is perfectly fine with a *de dicto* reading of the definite description (arising from Gianni's beliefs), consistent with its assumed propositional nature. Another indirect argument in favor of a low, circumstantial modal akin to WOLL resides in the lack of restructuring effects, despite the reduced nature of these complements. According to Cinque (2004, 2006), Wurmbrand (2001), and Wurmbrand & Lohninger (2019), transparency effects such as clitic climbing are evidence for the lack of a complete functional structure above the infinitival verb. Consider (8):

(8) *L'operaio lo_1 prova a costruire t_1*
The-worker it_1 tries to build t_1
'The worker tries to build it.'

The object clitic *lo* is able to climb over the matrix verb due to the fact that both the restructuring verb *tries* and the lexical verb *build* are in the same domain, and the infinitive is not higher than a vP. The case of *a*-infinitives embedded under the attitude verbs addressed in this paper, however, is different in that it does not allow clitic climbing.

(9) **Gianni lo_1 pensa a costruire t_1 domani*
Gianni it thinks *a* build.INF t_1 tomorrow
Gianni thinks about building it tomorrow

We can account for this restriction if (9) involves an underlying modal element that provides the future orientation of the complement clause, essentially constituting two different (temporal) domains. This also explains why it is possible to have two distinct temporal adverbials in the matrix and complement clauses (10) — a pattern not found in standard restructuring configurations, where the infinitival complement lacks independent temporal specification and is fully dependent on the temporal properties of the restructuring verb (11). This hypothesis is further supported by the fact that these *a*-infinitives can host negation (12), indicating that they must project a (reduced) TP. This makes them comparable to the *situation* complements

described Wurmbrand & Lohninger (2019) and Lohninger & Wurmbrand (2020), separating them from restructuring infinitives which would be in fact *event* complements.

(10) *Ieri Gianni mi ha convinto a comprare una macchina nuova il mese prossimo.*
Yesterday Gianni me.CL has convinced to buy.INF a new car the next month.
'Yesterday Gianni convinced me to buy a new car next month.'

(11) *Ieri Gianni ha provato a riparare la macchina il mese prossimo.
'Yesterday Gianni has tried to repair the new car the next month'

(12) *Gianni mi ha convinto a non salutare più il capo.*
Gianni me.CL has convinced to not say-hi.INF anymore to-the boss.
'Gianni has convinced me not to say hello to the new boss anymore.

4 Semantic analysis

The difference in size between the two infinitival structures has important semantic consequences (Lohninger & Wurmbrand 2020). We propose that *a* selects an event-denoting infinitive whose eventuality argument remains unsaturated (Grano 2024), while *di* selects a larger, propositional structure in which the eventuality argument is saturated via a CLOSURE operator. This distinction is reflected in the denotations in (13a) and (13b).

(13) a. $[[[_{\text{TP}}\text{PRO vincere}]]] = \lambda x.\lambda w.\lambda e.\textsc{win}(e, w)$ & $\textsc{agent}(x, e, w)$
b. $[[[_{\text{FinP}}\textsc{closure}\ \textsc{pro}\ \text{vincere}]]] = \lambda x.\lambda w.\exists e'.\textsc{win}(e', w)$ & $\textsc{agent}(x, e', w)$

Following Grano (2024), intention encoding requires eventuality abstraction so that the embedded event is causally linked to the matrix attitude. In the Italian non-finite domain, we argue that this causal link is introduced by *a*, yielding a 'cause-to-intend' reading, while *di* selects a proposition with an abstracted individual argument. Assuming, with Kratzer (2006) and Moulton (2009), that modal quantification arises inside the embedded clause, we posit a single meaning for *convincere* as 'cause to have a rational attitude', with finer meaning differences stemming from the type of complement (to be slightly revised in §5).

Specifically, *a* selects a minimal TP complement denoting a proposition abstracting over eventuality, individual, and world arguments (Pearson 2013, Chierchia 1989), to which it adds a future-oriented, modalized causal relation, along the lines of (Grano 2024). By contrast, *di* selects a larger structure consisting of a CLOSURE operator binding the event argument. Consequently, *a* and *di* yield different types properties of states, both compatible with a single lexical entry for *convincere* adapted from Grano (2019)'s denotation for English *persuade*.

5 On the selectional restrictions of the matrix verb

The difference in meaning between the two complements may also reflect an effect of the matrix verb, in line with a rich body of work (Lohninger & Wurmbrand 2020, Moulton 2009, Kratzer 2006) proposing that the interpretation of a matrix-complement configuration is distributed across both components, rather than being solely determined by either the matrix verb or the embedded clause. One possible way to capture this cross-clausal interaction is to adopt a clausal architecture based on the decomposition of the VP into its core subevental components (Ramchand 2008, 2018): InitP introduces the external argument and the causation event; ProcP

expresses the nature of the process and introduces the undergoer; and ResP gives the result state of the event, licensing the resultee. Within this framework, it becomes possible to diagnose the internal structure of lexical items by applying tests targeting each of these components. In this light, a verb like *pensare* ('think') appears to exhibit two distinct subevental structures depending on the type of infinitival complement it selects. When selecting a *di*-infinitive, *pensare* seems to behave as a stative mental predicate, projecting only InitP, with no associated process or result component (in line with Ramchand 2008:106 analysis of mental states). By contrast, when selecting an *a*-infinitive, *pensare* appears to introduce a dynamic, deliberative cognitive event, consistent with the presence of a ProcP in addition to InitP. Various diagnostics seem to support this differentiation, such as the availability of imperative force only when *a*-infinitives are selected.

(14) *Pensa* **di/a passare* *l'esame!*
Think.2ND-SING **di/a* pass.INF the-exam!
'Think *[that you will pass the exam]/[about passing the exam]!'

If this line of reasoning is on the right track, complement selection (*di* vs. *a*) could reflect a deeper sensitivity to the matrix verb's event composition, and the structures below illustrate a possible representation of the two configurations ((20-21) embed the complements of (19)).

(15) [$_{\text{InitP}}$ Gianni [$_{\text{Init'}}$ pensare [$_{\text{CP}}$ *di passare l'esame*]]]

(16) [$_{\text{InitP}}$ Gianni [$_{\text{Init'}}$ pensare [$_{\text{ProcP}}$ ~~Gianni~~ [$_{\text{Proc'}}$ ~~pensare~~ [$_{\text{PP}}$ *a passare l'esame*]]]]]

6 Conclusions

This paper has examined the belief/intention alternation in Italian embedded infinitives, focusing on the syntactic and semantic distinctions between the two types of infinitival complements selected by verbs like *convincere* ('convince'). We have shown that the alternation, which is commonly attributed to finiteness and mood distinctions in other languages, is instead mapped onto the structural size of the complement. The analysis presented here suggests that *di*-infinitives are associated with larger structures, enabling the embedded clause to host additional functional projections that allow for propositional interpretation and eventuality closure. In contrast, *a*-infinitives are structurally smaller, linking more directly to the causal intention of the matrix verb and implicating a more minimalistic event structure. These differences align with the belief versus intention readings observed in the two constructions, where *di*-infinitives convey a belief-like interpretation, while *a*-infinitives give rise to an intention interpretation that involves causal self-referentiality. Finally, the investigation into the selectional restrictions of the matrix verb has highlighted how the syntactic and semantic properties of the infinitival complement may interact with the event structure of the matrix verb. This cross-clausal interaction not only explains the belief/intention alternation but also provides insight into the broader role of complement selection in determining the interpretation of attitude predicates. More specifically, the analysis in (15–16), together with the proposal regarding the different sizes of the infinitival complements, suggests a reformulation of the intention/belief alternation along the lines of a two-variable matrix (COMPLEMENT SIZE and MATRIX VERB'S INTERNAL STRUCTURE) having each two levels: REDUCED *vs.* EXTENDED; and INITP *vs.* INITP + PROCP, respectively. This aspect is to be developed in more details throughout the presentation, integrating the empirical landscape with other infinitive embedding verbs selecting these two types of infinitives and displaying the same intention/belief alternation (e.g., *permettersi di/a*, 'having the courage to').

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