

Belief, intention and eventuality abstraction in the non-finite domain¹

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Abstract. Crosslinguistically, some attitude predicates alternate between belief and intention readings depending on the morphosyntactic form of their complements. Building on Grano's (2019, 2024) analysis of persuasion predicates, this paper examines a revealing case from Italian, where the verb *convincere* ('convince') displays a belief–intention alternation within the non-finite domain. The two readings correlate with distinct infinitival complements introduced by the prepositional complementizers *di* and *a*. We argue that the semantic contrast reflects a difference in the structural size of the embedded clause. Adopting Grano's proposal that intention reports involve eventuality abstraction and causal self-referentiality, and assuming that modal quantification is introduced in the complement clause (Kratzer, 2006; Moulton, 2009; Bogal-Allbritten, 2016), we show that *di*-infinitives yield propositional complements via late eventuality closure, while structurally reduced *a*-infinitives introduce future-oriented modal quantification over inertia worlds, giving rise to intention readings.

Keywords: attitudes, semantic alternation, belief, intention, complement clauses, infinitives, Italian.

1. Introduction

Attitude verbs are typically understood as relations between individuals and propositions, where the nature of the relation is determined by the verb itself (Hintikka, 1962, 1969; Nelson, 2024; Hacquard and Lidz, 2019; Grano, 2021). For instance, *believe* relates a subject to a proposition compatible with her beliefs, *know* to one compatible with her knowledge, and *want* to one compatible with her desires. This view is illustrated by the contrasts in (1), where the same pair of subject (*Mary*) and proposition (*Mary is smart*) is placed in different attitudinal relations, yielding distinct entailment patterns.

- (1) a. Mary believes that she is smart.
 b. Mary knows that she is smart.
 c. Mary wants to be smart.

On this standard view, the proposition expressed by the complement clause is assumed to remain constant across different morpho-syntactic realizations, as in (1c), with the attitude verb doing all the semantic work. This picture, however, has been challenged by a growing body of literature (Kratzer 2006; Moulton 2009; Bogal-Allbritten 2016 a.m.o.). One line of criticism shows that the form of the complement clause itself contributes to interpretation in non-trivial ways (see, e.g., Moulton 2009 on the complementation patterns of perception verbs). A related concern is

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that attitude verbs are sometimes underspecified with respect to the kind of attitude they express, such that the attitudinal interpretation emerges from the interaction between the matrix predicate and the type of complement it selects.

This interaction is particularly clear in cases of *semantic alternation*, where a single verb gives rise to different attitudinal readings depending on the morpho-syntactic properties of its complement. A well-known example is provided by English *persuade* (Grano, 2018, 2024):

- (2) a. Mary persuaded John that he has a baby.
b. Mary persuaded John to have a baby.

Although both sentences describe a persuasion event involving Mary, John, and the proposition that John has a baby, they differ in the attitude John ends up holding as a result of the persuasion. In (2a), John comes to hold a belief about the truth of the embedded proposition. In (2b), by contrast, he comes to form an intention to act so as to bring about that proposition. Notably, these readings correlate with the syntactic form of the complement: the cause-to-believe reading is associated with a finite clause, while the cause-to-intend reading arises with a non-finite infinitival complement.

This paper is concerned with a closely related alternation in Italian, already described in Fusco and Sgrizzi (2026), which is particularly revealing from a theoretical perspective. Like English, Italian displays a belief–intention contrast with persuasion verbs. Unlike English, however, both readings appear with infinitival complements. The contrast is instead marked by the choice of prepositional complementizer, specifically *di* versus *a*, as shown in (28). This pattern raises a number of questions about the role of clausal size, complementizers, and modal interpretation, which form the core focus of the present study.

- (3) a. Marco ha convinto Gianni **di** avere un figlio.
Marco have-PRS.3SG convince-PST.PTCP Gianni DI have-INF a child
'Marco has convinced Gianni that he has a child'
b. Marco ha convinto Gianni **a** avere un figlio.
Marco have-PRS.3SG convince-PST.PTCP Gianni A have-INF a child
'Marco has convinced Gianni to have a child'

The remainder of this paper is organized as follows. Section 2 reviews the cross-linguistic landscape of belief–intention alternations, focusing on English, Russian, Greek, and Italian. Section 3 presents the previous accounts on semantic alternation. Section 4 introduces the Italian data in detail and presents a set of syntactic diagnostics supporting a structural asymmetry between *di*- and *a*-infinitives. Section 5 develops a formal semantic analysis of the alternation, also discussing the role of complementizers and the modality involved. Finally, Section 6 concludes.

2. Belief–intention alternations across languages

The correlation between syntactic form and attitudinal interpretation observed in English is not unique. Cross-linguistic evidence shows that many languages distinguish belief and intention readings with the same attitude predicate, although the morpho-syntactic locus of the distinction varies. In Russian, the verb *dumat'* ('think') displays an alternation parallel to English. When

the complement is a bare infinitive, the sentence receives an intention reading, as in (4a). When the verb selects a finite complement introduced by the complementizer *čto* ('that'), the sentence expresses a belief about a future event (Kasenov, 2023), as in (4b). As in English, the alternation tracks the finite versus non-finite contrast.

- (4) a. Vasja *dumaet* *vypit'* *piva*.
 Vasja think-PRS.3SG drink-INF beer.GEN
 'Vasja intends to drink beer.'
- b. Vasja *dumaet* *čto* *my idem* *pit'* *pivo*.
 Vasja think-PRS.3SG that we go-PRS.1PL drink-INF beer.ACC
 'Vasja thinks that we are going to drink beer.'

Modern Greek illustrates a different strategy. Here, the verb *pítho* ('persuade/convince') alternates between a cause-to-intend and a cause-to-believe reading depending on the mood of its finite complement (Giannakidou and Mari, 2021). With a subjunctive complement introduced by *na*, the sentence receives an intention reading; with an indicative complement introduced by *óti*, it yields a belief reading. Crucially, unlike English and Russian, both complements are finite, and the alternation is encoded in mood rather than finiteness.

- (5) a. I Ariadne *epise* *ton Nikolas na* *fiji* *noris*.
 the Ariadne persuade-PST.3SG the Nikolas SBJV leave-PRS.3SG early
 'Ariadne persuaded/convincing Nikolas to leave early.'
- b. I Ariadne *epise* *ton Nikolas oti* *i* *idea tou ine* *kali*.
 the Ariadne persuade-PST.3SG the Nikolas that.IND the idea his be.PRS.3SG good
 'Ariadne persuaded/convincing Nikolas that his idea is good.'

Italian presents a particularly instructive case. As shown in (6), the verb *convincere* ('convince') exhibits the same belief–intention alternation, but both readings appear with infinitival complements. As already anticipated above, the contrast is instead marked by the choice of prepositional complementizer: *di* gives rise to a belief reading, while *a* yields an intention reading.

- (6) a. Marco *ha* *convinto* *Gianni di* *avere* *un figlio*.
 Marco₁ have-PRS.3SG convince-PST.PTCP Gianni₂ DI PRO_{1/2} have-INF a child
 'Marco has convinced Gianni that he has a child'
- b. Marco *ha* *convinto* *Gianni a* *avere* *un figlio*.
 Marco₁ have-PRS.3SG convince-PST.PTCP Gianni₂ A PRO₁ have-INF a child
 'Marco has convinced Gianni to have a child'

Beyond the interpretive contrast, a first asymmetry we note is in their control properties: with *di*, the null subject may be controlled by either the matrix subject or object, while with *a* only object control is available. As we will see, this difference suggests a deeper structural asymmetry between the two types of infinitival complements.

Our crosslinguistic observations are summarized in Table (6). Taken together, these patterns show that while languages consistently distinguish belief from intention readings, they do so by exploiting different morpho-syntactic resources: finiteness in English and Russian, mood in Greek, and prepositional complementizers in Italian. Building on the hypotheses advanced

by Grano (2018, 2024), according to which intention readings arise in structurally reduced environments, this paper argues that Italian provides a crucial testing ground for evaluating how such reduction is encoded and how it interacts with attitude interpretation.

Table 1: Summary of preliminary cross-linguistic contrasts

	Belief	Intention
<i>persuade</i> (English), <i>dumat</i> (Russian)	finite	non-finite
<i>pitho</i> (Greek)	indicative	subjunctive
<i>convincere</i> (Italian)	<i>di</i> + inf	<i>a</i> + inf

3. Previous analyses

The belief–intention contrast has recently been analyzed as part of a more general interaction between attitude predicates and mood. Evidence from Greek makes this connection particularly transparent. As illustrated in (5), the two interpretations of the verb *pitho* systematically covary with the mood of the embedded clause: belief readings arise with Indicative complements introduced by *oti*, while intention readings arise with Subjunctive complements introduced by *na*. In the theory developed by Giannakidou and Mari, this contrast reflects a difference in the epistemic status of the embedded proposition. Indicative mood presupposes subjective veridicality, in that the proposition is taken to hold relative to the modal background associated with the embedding predicate, whereas Subjunctive mood marks the complement as hypothetical and epistemically unsettled.

Shifting to English *persuade*, Grano (2018) adopts the view that attitude verbs do not themselves introduce modal quantification; instead, modality, i.e., quantification over possible worlds, is contributed by the embedded clause (Kratzer, 2006, 2013; Moulton, 2009; Bogal-Allbritten, 2016; Oikonomou, 2021). In addition, infinitival clauses are taken to encode modal structure independently (Bhatt, 2008; Grano, 2016). Under this approach, the belief–intention alternation associated with *persuade* is traced back to the semantic contribution of the complement. Finite clauses introduce a modality grounded in informational states, resulting in a cause-to-believe interpretation, while non-finite *for/to*-clauses introduce a preference-based modality, giving rise to a cause-to-intend interpretation.

- (7) a. $\llbracket \text{PRO to leave} \rrbracket = \lambda e. \forall w' \in \text{PREF}(e) : \exists e', [\text{Leave}(e') \text{ Agent}(e, \text{PRO}) \text{ in } w']$
 b. $\llbracket \text{that it was raining} \rrbracket = \lambda e. \forall w' \in \text{INFO}(e) : \exists e', [\text{Rain}(e') \text{ in } w']$

Crucially, both types of complements are treated as properties of eventualities. This shared type makes it possible to maintain a uniform lexical entry for *persuade*, shown in (8), which is sensitive to a general class of rational attitudes encompassing belief and intention, but excluding desire (Grano, 2012, 2018).

- (8) $\llbracket \text{persuade} \rrbracket^w = \lambda P_{vt}. \lambda x. \lambda y. \lambda e. \exists e'. \text{Persuade}(e) \wedge \text{Agent}(e, y, w) \wedge \text{Patient}(e, x, w) \wedge \text{CAUSE}(e, e') \wedge \text{RATIONAL-ATTITUDE}(e') \wedge \text{Experiencer}(x, e') \wedge P(e')$

According to this entry, *persuade* denotes a relation between an eventuality description and two individuals, yielding a persuasion event whose agent is *y* and whose patient is *x*. This event

brings about an attitudinal state e' experienced by x and characterized by the property P (the content). Importantly, the attitudinal state provides the eventuality parameter that anchors the modal quantification contributed by the complement, in line with event-based approaches to attitude semantics (Hacquard, 2010; Alonso-Ovalle et al., 2024).

In later work, Grano (2024) pointed out that intention requires an additional ingredient for its correct representation. According to Searle (1983), beliefs are satisfied by the truth of their propositional content, whereas intentions require that the intended action be brought about in virtue of the intention itself. To capture this difference, Grano (2024) proposes that intentions must be causally self-referential, i.e., their attitudinal state must play a causal role in the realization of the embedded event. This requirement is implemented in the semantics of *intend*, given in (9), where a distinctive causal relation CAUSE^* links the attitude state to the event variable provided by the complement.

$$(9) \quad \llbracket \text{intend} \rrbracket^w = \lambda P_{\langle e, \langle s, vt \rangle \rangle}. \lambda x_e. \lambda s_v. \exists s. \text{Intention}(s, w) \wedge \text{Experiencer}(s, x, w) \wedge \forall \langle w', y \rangle \in \text{CONTENT}(s) : \exists e'. \text{CAUSE}^*(s, e, w') \wedge P(y)(w')(e)$$

The denotation in (9) takes as input a proposition with abstracted individual, world, and eventuality arguments, corresponding to English infinitival (control) complements. Grano further suggests that Subjunctive mood may leave the eventuality argument open, thereby allowing composition with intention-related predicates in Greek and Romance. Indicative mood, by contrast, closes the eventuality argument, yielding a clause that is incompatible with a denotation such as (9). In discussing predicates that exhibit belief–intention semantic alternation, such as *persuade* and some of its cross-linguistic counterparts, Grano (2024) correctly notes that this account makes the right predictions: whenever intention is involved—and thus causal self-referentiality—Indicative mood is excluded, while Subjunctive or non-finite complements are licensed instead.

However, this account does not straightforwardly extend to Italian, where the belief–intention contrast arises between two types of infinitival complements rather than between finite and non-finite clauses. In particular, *di*-infinitives systematically give rise to belief readings despite the absence of Indicative morphology. Moreover, even if one were to assume that infinitives may compositionally combine with a Mood head, there is no overt morphological evidence that *di*-infinitives combine with an Indicative operator while *a*-infinitives combine with a Subjunctive one, which would yield the correct predictions. Such an assumption would therefore lack independent motivation and amount to an *ad hoc* stipulation.

In seeking to extend this analysis to the Italian data, we explore a different direction. Grano (2024) himself, following a suggestion by Menéndez-Benito, briefly notes that existential closure of the eventuality variable might be introduced not by Mood itself, but by a dedicated functional head that is structurally higher than Subjunctive but lower than Indicative. On this view, the semantic alternation can be attributed to a difference in structural size. In what follows, we aim to assess whether such an explanation could account for the Italian contrast, namely whether *di*- and *a*-infinitives differ in their structural size. If so, this proposal could be straightforwardly adapted to the non-finite domain, modulo some appropriate revisions of the formal apparatus. Our discussion will therefore focus primarily on the contrast within the non-finite domain, returning to finite clauses in Section 5.3.

4. Evidence from structural size

A growing body of work in the cartographic tradition has established that the amount of functional structure projected by a complement clause correlates systematically with its semantic type (Wurmbrand, 2014; Wurmbrand and Lohninger, 2023; Lohninger and Wurmbrand, 2020). On this view, complements vary along a scale of structural complexity: at one extreme, fully propositional CPs host the complete array of inflectional projections (Rizzi, 1997); at the other, radically truncated structures consisting of little more than a vP yield event-denoting expressions that remain temporally and modally dependent on the matrix predicate (Wurmbrand, 2001). The Italian infinitival system provides a particularly clear window into this correlation, as the two prepositional complementizers *di* and *a* give rise to complements that diverge sharply in both their syntactic behaviour and their interpretive properties.

4.1. The distribution of modal auxiliaries

A first diagnostic for clausal size concerns the availability of modal auxiliaries. In the framework developed by Cinque (1999, 2006), modals occupy dedicated functional heads arrayed hierarchically above the vP shell: epistemic modals sit highest (in the TP domain), root modals expressing ability, permission, and obligation are located lower, and the lexical verb occupies the bottom of the structure. If a given infinitival complement lacks the projections that host these auxiliaries, we expect modals to be systematically excluded. This prediction is borne out. Infinitives introduced by *di* readily accommodate the full range of Italian modal auxiliaries—*volere* ‘want’, *potere* ‘can’, *dovere* ‘must’, and *sapere* ‘know how to’—intervening between the complementizer and the lexical verb:

- (10) Marco ha convinto Gianni **di** voler / poter / saper
 Marco have-PRS.3SG convince-PST.PTCP Gianni DI want-INF / can-INF / know.how-INF
 / dover studiare.
 / must-INF study-INF
 ‘Marco has convinced Gianni that he wants to / can / knows how to / has to study.’

With *a*, by contrast, insertion of any modal auxiliary results in sharp ungrammaticality:

- (11) *Marco ha convinto Gianni **a** voler / poter / saper /
 Marco have-PRS.3SG convince-PST.PTCP Gianni A want-INF / can-INF / know.how-INF /
 dover studiare.
 must-INF study-INF
 ‘Marco has convinced Gianni to want / be able / know how / have to study.’

Since modal auxiliaries merge above the verbal domain (Cinque, 2006; Grano, 2012), their presence in *di*-infinitives but not in *a*-infinitives suggests that *di*-infinitives project a larger structure. Notice that this restriction cannot be reduced to semantic incompatibility. For comparison, it is well known that epistemic modals are generally infelicitous under purely preferential attitudes such as *want* (Anand and Hacquard, 2013; Crnic and Trinh, 2020; Ippolito, 2018), as illustrated in the Italian example in (12a), adapted from Anand and Hacquard (2013). Crucially, however, this restriction has been shown to be defeasible: epistemic modals become acceptable when they are anchored to an individual distinct from the attitude holder, as in (12b) (Anand and Hac-

quard, 2013; Crnic and Trinh, 2020). This indicates that the syntactic position hosting epistemic modality is in fact available in the (finite) complement of *want*, and that the deviance in (12a) is semantic rather than structural. By contrast, root modals are uniformly licensed under *want* (both with finite (13a) and non-finite complements (13b)), yet remain systematically excluded from *a*-infinitives.

- (12) a. #Maria vuole che Gianni possa essere l' assassino.
 Maria want-PRS.3SG that Gianni might be-INF the murderer
 'Maria wants that Gianni might be the murderer.'
- b. Maria vuole che Gianni possa essere l' assassino (secondo il
 Maria want-PRS.3SG that Gianni might be-INF the murderer according-to the
 rapporto della polizia).
 report of-the police
 'Maria wants that Gianni might be the murderer, according to the police report.'
- (13) a. Maria vuole che Gianni possa fare colazione.
 Maria want-PRS.3SG that Gianni be-able-to do-INF breakfast
 'Maria wants that Gianni is able to have breakfast.'
- b. Maria vuole poter fare colazione.
 Maria want-PRS.3SG that Gianni be-able-to do-INF breakfast
 'Maria wants to be able to have breakfast.'

This contrast supports the conclusion that the restriction observed with *a*-infinitives is genuinely structural, reflecting the absence of the functional projections required to host modal auxiliaries. So, from a syntactic perspective, the data indicate that *di*-complements project structure extending at least into the modal layer of the TP domain, whereas *a*-complements are truncated below it. This structural difference has immediate semantic consequences: if modality is encoded configurationally in dedicated functional projections (Hacquard, 2006, 2010), the absence of these projections in *a*-infinitives predicts that any modal semantics they display must arise from a different source—a point to which we return below.

4.2. Control possibilities and the role of the left periphery

A second domain of variation involves the control properties of the two infinitival types (see ft. 2). Since Landau (2001), it has been recognized that the syntactic locus mediating control relations may vary across complement types. In particular, the availability of long-distance or 'non-obligatory' control has been tied to the presence of a fully articulated left periphery, specifically the Fin(iteness) head that Rizzi (1997) posits as the locus of finiteness features and that subsequent work has associated with logophoric anchoring (Bianchi, 2003; Landau, 2025). The Italian data align with these expectations. With *di*, the embedded PRO may take either the matrix subject or the matrix object as its antecedent.

- (14) Marco_i ha convinto Gianni_j di PRO_{i/j} essere stato
 Marco have-PRS.3SG convince-PST.PTCP Gianni DI PRO be-INF be-PST.PTCP
 ingiusto.
 unfair
 'Marco_i convinced Gianni_j that he_{i/j} had been unfair.'

The availability of subject control is crucial, as it is a property standardly analyzed as involving a logophoric or perspectival mechanism mediated by functional structure in the C-domain (Bianchi, 2003). The restriction to object control follows if *a*-infinitives lack the FinP projection (or equivalent) that would license a logophoric licensing of PRO. In the absence of such structure, PRO is obligatorily controlled by the closest c-commanding DP (here, the matrix object). The control facts thus provide converging evidence that *di* selects a complement extending into the left periphery, while *a* selects a structurally reduced clause that does not reach this domain.

4.3. Temporal orientation

A further asymmetry concerns temporal interpretation. As extensively discussed by Wurmbrand (2014), control infinitives vary in their temporal properties: some permit free temporal orientation relative to the matrix event, while others are obligatorily future-oriented. This variation has been linked to the presence or absence of an independent temporal layer in the infinitival clause. In Italian, *di*-infinitives display temporal flexibility. The embedded eventuality may precede the matrix event:

- (15) Marco ha convinto Gianni *di* aver fatto un errore
 Marco have-PRS.3SG convince-PST.PTCP Gianni DI have-INF make-PST.PTCP a mistake
 dieci anni fa.
 ten years ago
 ‘Marco convinced Gianni that he made a mistake ten years ago.’

With *a*, past temporal reference is impossible.

- (16) *Marco ha convinto Gianni *a* aver fatto un errore
 Marco have-PRS.3SG convince-PST.PTCP Gianni A have-INF make-PST.PTCP a mistake
 dieci anni fa.
 ten years ago
 ‘Marco convinced Gianni to have made a mistake ten years ago.’

The contrast then is further evidence for the impoverished structure of *a*-infinitives. A natural question, however, would be how the future interpretation is licensed if the temporal layer is defective. We will return to this question in Section 5.1.

4.4. Delimiting the size of *a*-infinitives

If *a*-complements are smaller than their *di*-counterparts, how much structure do they actually contain? Several diagnostics indicate that they are not bare vPs but include limited functional material above the lexical layer. First, passivization is available, indicating that the structure extends at least to VoiceP (Cinque, 1999):

- (17) La conduttrice ha convinto l’ospite *a* essere
 the conductor have-PRS.3SG convince-PST.PTCP the-guest A be-INF
 intervistato.
 interview-PST.PTCP.M

‘The conductor has convinced the guest to be interviewed.’

Second, low aspectual predicates such as *cominciare* ‘begin’, *continuare* ‘continue’, and *finire* ‘finish’ may appear. Following Cinque (2006) and Wurmbrand (2001), these aspectual verbs are merged at the edge of the vP domain, hence their availability confirms the presence of this layer.

- (18) Marco ha convinto Gianni *a cominciare a / continuare a / finire di lavorare.*
 Marco have-PRS.3SG convince-PST.PTCP Gianni A begin-INF A / continue-INF A / finish-INF DI work-INF
 ‘Marco has convinced Gianni to start / continue / finish working.’

With *a*, by contrast, only object control is possible.

- (19) Marco_i ha convinto Gianni_j *a* PRO_{*i/j} *partire immediatamente.*
 Marco have-PRS.3SG convince-PST.PTCP Gianni A PRO leave-INF immediately
 ‘Marco convinced Gianni to leave immediately.’

Third, the matrix clause and the infinitival complement may host independent temporal adverbials, indicating that they constitute distinct temporal domains (in both *a*- and *di*-infinitives).

- (20) Gianni convince Mario *a costruirlo domani.*
 Gianni convince-PRS.3SG Mario A build-INF tomorrow.
 ‘Gianni convinces Mario about building it tomorrow.’

This pattern contrasts with canonical restructuring configurations, where the infinitival complement is fully dependent on the temporal specification of the matrix verb and independent temporal modification is excluded (Grano, 2012; Cinque, 2006). Crucially, however, *a*-infinitives do not exhibit the transparency effects characteristic of true restructuring. Clitic climbing, a hallmark of mono-clausal configurations (Cardinaletti and Shlonsky, 2004), is unavailable:

- (21) *Gianni lo₁ convince Mario *a costruire t₁.*
 Gianni it₁ convince-PRS.3SG Mario A build-INF t₁
 intended: ‘Gianni convinces Mario to build it.’

The absence of clitic climbing in *a*-infinitives selected by attitude verbs suggests the presence of a clausal-like boundary that blocks extraction. In the typology of Wurmbrand and Lohninger (2023); Lohninger and Wurmbrand (2020), this places *a*-infinitives in the intermediate category of ‘situation’ complements: larger than bare events (which exhibit full transparency) but smaller than propositions (which host the complete functional hierarchy).

4.5. Summary: Two infinitival sizes

The converging evidence reviewed in this section supports a bipartite analysis of Italian infinitival complements. *Di*-infinitives project a full clausal structure extending into the left periphery

(FinP/CP). This extended architecture hosts modal auxiliaries, licenses both subject and object control via logophoric mechanisms, yields propositional denotations susceptible to truth-value assessment, and permits flexible temporal orientation. *A*-infinitives, to the contrary, instantiate a reduced structure whose edge falls below the modal and left-peripheral layers. This truncation excludes modal auxiliaries, restricts control to the locally *c*-commanding object, yields non-propositional (event-abstracting) denotations, and forces obligatory future orientation via a covert circumstantial modal. A summary of the distributional contrasts is given in Table 4.5.

Table 2: Summary of distributional contrasts.

Diagnostic	<i>di</i> -infinitives	<i>a</i> -infinitives
Modal auxiliaries	✓	*
Subject control	✓	*
Object control	✓	✓
Past temporal reference	✓	*
Passive	✓	✓
Aspectual restructuring verbs	✓	✓
Clitic climbing	*	*

These structural asymmetries provide the syntactic foundation for the semantic analysis developed in the following sections. If the belief/intention alternation reduces to a difference in whether the complement’s eventuality argument is existentially closed (belief) or remains open for matrix binding (intention), and if this difference is encoded configurationally in the presence vs. absence of a CLOSURE-hosting projection, then the distinct sizes of *di*- and *a*-infinitives directly derive the observed interpretive contrast.

5. Accounting for the semantic alternation

Having established that *di*- and *a*-infinitives differ in structural size, we are now in a position to sketch a formal analysis that adapts Grano’s (2024) proposal to the Italian contrasts.²

First, we assume, following much recent work (Kratzer 2006; Moulton 2009; Bogal-Allbritten 2016; Grano 2018 a.m.o.), that modal quantification is contributed by the complement clause, more specifically by the prepositional complementizer. Second, we posit that bare vP infinitives contain an abstracted eventuality argument. Third, we assume that *a* directly selects a vP (and the necessary structure right above it, if needed, as Voice and other restructuring verbs, see §4.4), saturating the eventuality argument and causally relating it to the attitude state via the CAUSE* relation (Grano, 2024). Fourth, we assume that *di* selects a larger structure in which an intervening operator closes the eventuality argument.

For the purposes of the present analysis, the precise identity of the head responsible for existential closure is not crucial, provided that it is structurally higher than *a*. It could, for instance, correspond to the Aspect head, an option that has been widely adopted in the literature (Kratzer, 1998; Hacquard, 2006, 2010). We return to this issue below; for our basic analysis, we will simply employ a CLOSURE operator as an underspecified placeholder, setting aside other possible

²The present analysis expands the implementation laid out in Fusco and Sgrizzi (2026).

semantic contributions. Before turning to the formal implementation, however, we first address one final preliminary issue, namely the modality involved in *a*-infinitives.

5.1. On the nature of modality in *a*-infinitives

The severely reduced structure of *a*-infinitives raises a fundamental question for the analysis sketched above. If these complements lack independent tense structure, how is their obligatory future-oriented interpretation licensed? And how does this interact with the supposed modal quantification contributed by *a*?

A natural starting point is the observation that future orientation need not be encoded by tense alone. A substantial body of work has argued that certain future-oriented interpretations are related additionally or exclusively to modal operators rather than to temporal operators alone (Dowty, 1979; Portner, 1998; Copley, 2009). In particular, root modality, typically located in the lower portion of the T domain (presumably below Aspect, see Hacquard 2006, 2010), is inherently future-oriented (Kratzer, 2013). This modal component is commonly analyzed in terms of a circumstantial modal base, consisting of worlds that are compatible with the relevant facts of the actual world, together with an ordering source that ranks these worlds according to how well they conform to a given standard. Depending on the nature of the standard, the ordering source may be deontic, bouletic, or inertial, thereby favoring worlds that develop in accordance with norms, desires, or the normal course of events, respectively.

Importantly, future-oriented modality of this kind is not restricted to overt modal auxiliaries. The English progressive has been argued to introduce inertia worlds (Dowty, 1979; Portner, 1998), and Copley (2009) shows that both the progressive and the future share a modal core. Along similar lines, Abusch (2004) and Wurmbrand (2014) argue that future-oriented control structures involve a covert modal operator (often notated as *WOLL*) situated above *vP*. These proposals establish that prospectivity can be licensed in structurally reduced environments via modal quantification, independently of tense.

We propose that the obligatory future orientation of *a*-infinitives in Italian is derived in precisely this way. Concretely, we analyze *a* as introducing a future-oriented modal operator that quantifies over inertia worlds. This operator takes the eventuality description denoted by the embedded *vP* and relates it to a set of possible continuations of the attitude state or evaluation state introduced by the matrix predicate. On this view, *a* itself is the locus of modal quantification, supplying both prospectivity and, in intention reports, the causal self-referential relation encoded by *CAUSE**.

This analysis receives apparent support from a range of Italian constructions involving *a*-infinitives, all of which display structural reduction and systematic future orientation. In (22) we present two such constructions: a progressive construction available in Central and Southern regional varieties of colloquial Italian (Manzini and Lorusso, 2022) (22a), and *a*-imperatives (Rossi, forthcoming) (22b).

- (22) a. Gianni sta a mangiare.
 Gianni stay-PRS.3SG a eat-INF
 ‘Gianni is eating.’

- b. A mangiare!
 a eat-INF
 ‘Eat! / Let’s eat!’

The examples in (23) show their incompatibility with modals, showing their reduced structure and paralleling the observations in (11).

- (23) a. *Gianni sta a voler / poter / saper / dover mangiare.
 Gianni stay-PRS.3SG a want-INF / can-INF / know.how-INF / must-INF eat-INF
 ‘Gianni is eating.’
 b. *A voler / poter / saper / dover mangiare!
 a want-INF / can-INF / know.how-INF / must-INF eat-INF
 ‘Eat! / Let’s eat!’

Crucially, both constructions exhibit future orientation: the progressive is infelicitous with past temporal reference, whereas the *a*-imperative is intrinsically future-oriented given its directive force.

- (24) *Gianni sta a mangiare ieri.
 Gianni stay-PRS.3SG a eat-INF yesterday
 ‘Gianni is eating yesterday.’

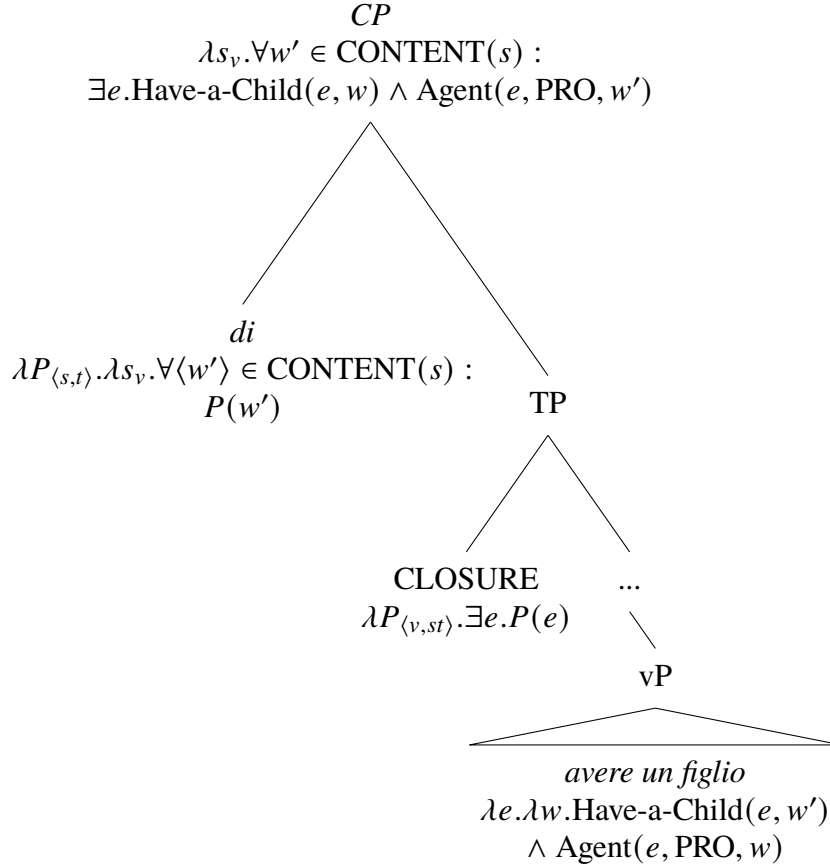
Taken together, these patterns suggest that *a*-infinitives might uniformly encode future orientation via modal quantification over inertia worlds.

5.2. Basic formal analysis

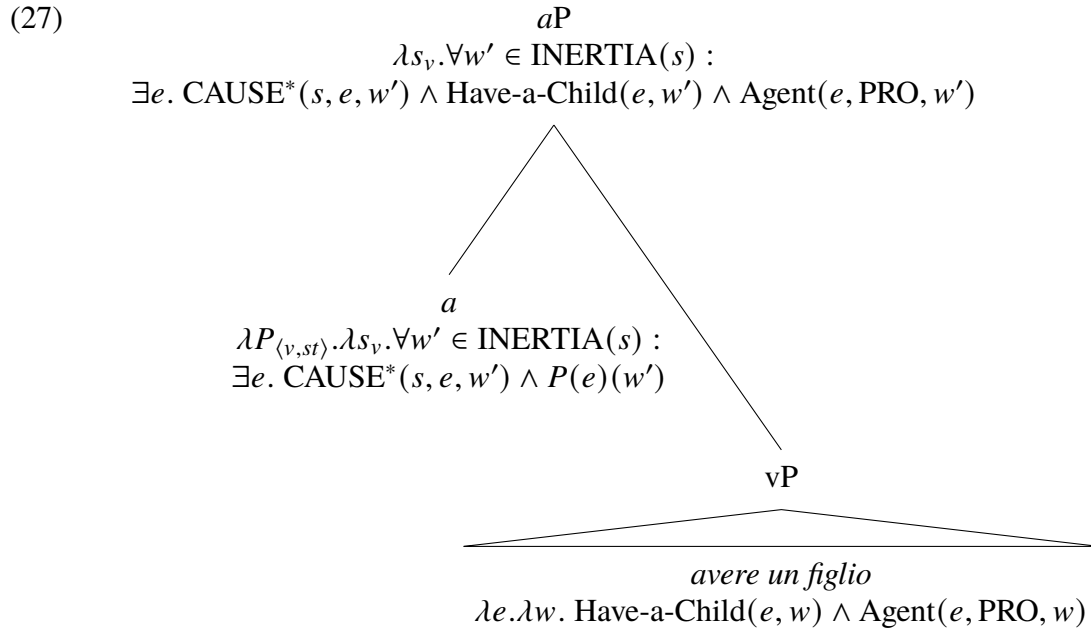
We can now sketch a formal implementation of the proposal outlined above. We begin with a bare infinitive, minimally a vP, which denotes a function from eventualities to propositions, as in (25a). At this stage, the eventuality argument remains unsaturated. From this point, two distinct compositional paths are available. The first option is for composition to proceed until some operator within the inflectional region existentially binds the eventuality argument. For now, we will use the label CLOSURE for such an operator, postponing a more in-depth discussion of its precise nature and location to Section 5.3. Once closure has applied, further structure can be built until the complementizer *di*, located in a higher position in the clausal spine, selects a propositional constituent, plausibly a full TP, as in (25b). The result is a property of states suitable for combination with attitude predicates. The full composition for this configuration is illustrated in (26).

- (25) a. $\llbracket [_{VP} PRO \text{ avere un figlio}] \rrbracket = \lambda e. \lambda w. \text{HAVE-A-CHILD}(e, w) \ \& \ \text{AGENT}(PRO, e, w)$
 b. $\llbracket [_{TP} \text{ CLOSURE } PRO \text{ avere un figlio}] \rrbracket = \lambda w. \exists e'. \text{HAVE-A-CHILD}(e', w) \ \& \ \text{AGENT}(PRO, e', w)$

(26)



The second option is for the bare vP to be selected directly by *a*. On the basis of the structural diagnostics discussed above, we assume that *a* is located in the lower portion of the T domain. When *a* selects a vP, the resulting structure receives additional functional material that introduces a future-oriented causal relation. More specifically, *a* introduces a CAUSE* relation (Grano, 2024) that binds the eventuality argument and causally links the embedded event to the attitude state introduced by the matrix predicate. As argued above, this configuration captures the causal self-referentiality characteristic of intention reports, namely the requirement that the attitudinal state itself causally contribute to the realization of the intended event. In addition, *a* introduces quantification over possible worlds, following the insight, due to Kratzer (2006) and Moulton (2009), that modal quantification in attitude reports is contributed by the embedded clause rather than by the attitude verb. The resulting structure again denotes a property of states. The composition for an *a*-infinitive is illustrated in (27).



We adopt a single lexical entry for *convincere*, building on Grano’s (2019) proposal for English *persuade*. On this view, *convincere* introduces a causal relation between an event of convincing and a resulting mental state classified as a rational attitude. Rational attitudes in this sense include beliefs and intentions, but crucially exclude desires, which lack the kind of rational evaluability required by the argumentative structure associated with *convincere*. The denotation we assume is given in (28).

$$(28) \quad \llbracket \text{convincere} \rrbracket^w = \lambda P_{vt}. \lambda x. \lambda y. \lambda e. \exists e'. \text{Convince}(e) \wedge \text{Agent}(e, y, w) \wedge \text{Patient}(e, x, w) \wedge \text{CAUSE}(e, e') \wedge \text{RATIONAL-ATTITUDE}(e') \wedge \text{Experiencer}(x, e') \wedge P(e')$$

This lexical entry provides the core meaning of *convincere* independently of the type of infinitival complement it selects. The observed contrast between *a*- and *di*-infinitives follows from differences in the structural size of the complement and in the way the eventuality argument is treated.

In sum, although both *a*- and *di*-infinitives ultimately yield properties of states and are therefore compatible with the denotation of *convincere*, they differ in whether the eventuality argument is left open and causally linked via *a*, or instead internally bound by a CLOSURE operator under *di*. This compositional distinction accounts for the fact that a single lexical entry for *convincere* gives rise to systematically different interpretations in the Italian infinitival domain.

5.3. On the position of the existential closure

In the formal account developed above, we have assumed that a crucial difference between the two structures concerns the locus of existential closure. More specifically, in *a*-infinitives it is the complementizer itself that effects closure, whereas infinitives selected by *di* contain another operator that binds off the eventuality argument. In this section, we expand on this assumption by considering where the closure operation may plausibly take place in complements supporting the doxastic meaning and, more broadly, in finite unembedded sentences. To this regard, several

options have been proposed in the literature, including the verb itself (Champollion, 2015), Aspect (Hacquard, 2006; Kratzer, 1998), and Mood (Grano, 2024).

If we restrict our attention to the Italian data, an immediate candidate is Aspect. Aspect has been independently argued to behave as a quantifier over events, relating the event time to the evaluation time (Hacquard 2006; Kratzer 1998; cf. also Klein 1994). Crucially, Aspect is located in the inflectional region above vP and root modals. On the basis of the evidence discussed in Section 4, this places it above the attachment site of *a*, but below *di*, in line with our analysis.

The cross-linguistic picture is less straightforward. Consider first languages such as English and Russian, where the belief-intention alternation aligns with the finiteness distinction. Under standard assumptions, non-finite clauses are structurally reduced relative to finite ones. Still, it is not obvious that the relevant non-finite clauses lack Aspect specifically, and hence that Aspect can serve as the relevant locus of existential closure in finite clauses. In fact, Wurmbrand (2014) argues that some English infinitives, in particular those with an irrealis future interpretation, involve *to* merging directly with WollP, a projection immediately above vP. If this is correct, then Aspect might still be considered a viable position for eventuality closure.

The Greek system requires a more careful assessment. As we saw in Section 2, the belief-intention contrast in Greek is not aligned with the finiteness distinction, but is instead encoded within the mood system. If the relevant contrast is to be derived from differences in structural size, the central question becomes which portions of the clausal spine distinguish Indicative and Subjunctive clauses. Importantly, Greek Subjunctive clauses display richer verbal morphology than non-finite clauses in languages such as English. As a result, the alternation cannot be straightforwardly reduced to the presence or absence of a head such as Aspect, which is morphologically visible in both moods.

At the same time, there is independent evidence that Subjunctive clauses are syntactically reduced relative to Indicative clauses in a way that parallels non-finite clauses, although the relevant truncation affects a higher portion of the clausal spine (Giorgi, 2009). More specifically, the reduction appears to target the region between the high T domain and the C domain. In Greek, the Indicative-Subjunctive distinction is not morphologically encoded on the verb, but is determined by the selecting complementizer or particle (Giannakidou, 2009; Roussou, 2001). This makes it natural to locate the semantic contrast in the contribution of the element introducing the embedded clause.

This conclusion is also consistent with syntactic analyses of Greek *na*. In particular, *na* has been argued to merge in a Mood/Modal position, at the edge between the C and T domains (Roussou, 2001; Giannakidou, 2009; Roussou and Tsangalidis, 2010). This makes Greek directly relevant to proposals that locate quantificational force in Mood (Grano, 2024). On this view, the Subjunctive marker *na*, commonly assumed to occupy a lower position than Indicative *oti*, would be responsible for modal quantification, eventuality binding, and the introduction of the CAUSE* relation. It thus parallels Italian *a*, as in (29).

$$(29) \quad \llbracket na \rrbracket = \lambda P_{\langle v, \langle e, st \rangle \rangle} . \lambda s_v . \forall w' \in \text{INERTIA}(s) : \exists e . \text{CAUSE}^*(s, e, w') \wedge P(e)(w')$$

What, then, about Indicative *oti*? There are at least two possible analyses. On the first, composition initially encounters a null Indicative morpheme, located in the mood domain, which

introduces existential closure of the eventuality argument. The result then combines with *oti*, which contributes modal quantification over the CONTENT worlds of the attitude state. This option is compatible with Grano’s proposal that Mood is the locus of quantificational force (Grano, 2024), since both *na* and the null Indicative morpheme would occupy the relevant mood-related layer. A schematic denotation for the null Indicative morpheme is given in (30).

$$(30) \quad \llbracket \text{IND} \rrbracket = \lambda P_{\langle v, \langle e, st \rangle \rangle} . \lambda w_s . \exists e . P(e)(w)$$

The denotation of *oti* would then be restricted to modal quantification over the CONTENT worlds, as in (31).

$$(31) \quad \llbracket \text{oti} \rrbracket = \lambda p_{\langle s, t \rangle} . \lambda s_v . \forall w' \in \text{CONTENT}(s) : p(w')$$

On a second possibility, *oti* itself provides both existential closure of the eventuality argument and modal quantification over the CONTENT worlds. Under this second analysis, *oti* receives the denotation in (32).

$$(32) \quad \llbracket \text{oti} \rrbracket = \lambda P_{\langle v, \langle e, st \rangle \rangle} . \lambda s_v . \forall w' \in \text{CONTENT}(s) : \exists e . P(e)(w')$$

The choice between these two analyses is not merely notational. If existential closure is introduced by a null Indicative morpheme, then Greek would provide direct support for locating both modal quantification and event closure in the mood system, in line with Grano (2024). If, instead, *oti* itself introduces both operations, then Greek would instantiate a system in which a complementizer simultaneously closes the eventuality argument and quantifies over attitude worlds.

This proposal remains tentative and requires further investigation. The previous discussion highlights that the locus of existential closure may itself be subject to cross-linguistic variation: it may be introduced by the verbal root, by Aspect, by Mood, or by the complementizer, depending on the grammar of the language and the structural size of the embedded clause.

6. Conclusion

Semantic alternation poses a serious challenge to the compositionality of attitude reports. At the same time, it forces us to identify the core meaning of certain lexical items, such as attitude verbs, and to reassess the role of syntax in shaping attitudinal interpretation. By examining the Italian cases of *convincere*, we have shown that the belief–intention alternation cannot be reduced to a single morphosyntactic parameter such as mood or finiteness. Rather, it emerges from the interaction between the selecting attitude predicate, the complementizer, and the structural size of the embedded clause.

Our analysis contributes to a growing body of work that de-emphasizes the semantic burden of the attitude verb itself, locating modal quantification (the hallmark of attitude ascriptions) within the complement clause (Kratzer, 2006; Moulton, 2009; Bogal-Allbritten, 2016; Oikonomou, 2021). In Italian, this shift is made visible by the contrast between *di*- and *a*-infinitives, which differ both in structural size and in the way the eventuality argument is handled. While *di*-infinitives yield propositional complements via (late) eventuality closure, *a*-infinitives remain

structurally reduced and introduce future-oriented modal quantification, yielding intention-like interpretations through causal self-reference.

At the same time, several questions remain open and call for further investigation. One concerns the precise structural locus of eventuality closure and its cross-linguistic variability, particularly in systems where mood rather than finiteness encodes the relevant contrast. Another open issue is the internal typology of *a*-infinitives: while they uniformly display future orientation, not all instances encode intention in the strict sense, suggesting that the modal component introduced by *a* may admit different semantic instantiations. Finally, a broader comparative perspective is needed to determine how complementizers across languages divide the labor between modal quantification, temporal anchoring, and attitude interpretation.

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