

## Belief, Intention, and the Grammar of Persuasion

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**Introduction:** The verb *persuade* accepts both NONFINITE complements that instantiate object-control structures, giving rise to INTENTION-based meanings (1), as well as FINITE complements giving rise to BELIEF-based meanings (2) (see e.g. Dowty 1985; Jackendoff 1985).

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|--|-------------------|
| (1) Mary <b>persuaded</b> John <sub>1</sub> [PRO <sub>1</sub> to leave]. | NONFINITE         |
| ≈ Mary caused John to form the <b>intention</b> : “I will leave.”        | INTENTION-FORMING |
| (2) Mary <b>persuaded</b> John [that it was raining].                    | FINITE            |
| ≈ Mary caused John to form the <b>belief</b> : “It is raining.”          | BELIEF-FORMING    |

(Analogous facts hold for *advise*, *convince*, and *tell*; as well as for subject-control verbs *agree*, *decide*, *promise*, *propose*, and *swear*. Here, for reasons of space, I focus on *persuade* only.)

These facts raise at least the following questions:

- Is there just one verb *persuade* or are there two (i.e., is it underspecified or polysemous)?
- Why does the belief/intention meaning difference correlate with finiteness/nonfiniteness?
- Why does *persuade* target only belief and intention to the exclusion of (e.g.) desire?

In what follows, I propose that (a) there is just one verb *persuade* (meaning roughly ‘cause to have an attitude’); (b) finiteness contributes epistemic modality whereas nonfiniteness contributes priority modality; and (c) *persuade* targets RATIONAL attitudes only, defined as attitudes that are closed under conjunction and entailment, which include belief and intention but not desire. Taken together, these proposals support the decompositional approach to attitude semantics (Kratzer 2006; Moulton 2009; Bogal-Allbritten 2016), and they contribute to a more fine-grained typology of attitude types, beyond the confines of belief and desire that typically dominate in the formal semantics literature.

**(a) Against polysemy:** A standard test for distinguishing underspecification from polysemy or ambiguity is to use the item in a way that forces both of the relevant meanings (see e.g. Zwicky & Sadock 1975); if the result is felicitous, this argues for underspecification, whereas if the result is zeugmatic, this argues for polysemy or ambiguity. For the case at hand, this can be achieved by embedding under *persuade* a coordination of a finite clause and a nonfinite clause, as in (3) or (4).

(3) I persuaded John [that the city is in danger] and [to evacuate immediately].

(4) I persuaded John [to evacuate immediately] and [that the safest place to be is by the sea].

Both (3) and (4) are felicitous and do not sound playful or zeugmatic, which suggests that *persuade* is underspecified rather than polysemous or ambiguous along the senses ‘cause to form an intention’ and ‘cause to form a belief’; cf. e.g. (5) which suggests that *run* is polysemous or ambiguous rather than underspecified along the senses ‘race’ and ‘conduct’.

(5) #Yesterday John ran five miles and a phonology experiment.

**(b) The semantics of (non)finiteness:** Kratzer (2006) proposes that this modality in an attitude report is contributed not by the attitude verb itself but rather by a functional head in the left periphery of the complement clause. Building on this as well as Bresnan’s (1972); Portner’s (1997) and Grano’s (2016) work on the semantics of infinitives, I propose that *for-to* clauses (which include all infinitives introduced by overt *for* and most control infinitives) encode priority modality, as in (6) (where PRIORITY contributes a circumstantial modal base and a priority [=bouletic/teleological/deontic] ordering source [Portner 2007, 2009]), whereas finite clauses encode epistemic modality, as in (7). (Following Hacquard 2010, these denotations incorporate the proposal that modal accessibility functions are keyed to eventualities rather than to worlds.)

(6) [[PRO to leave]] =  $\lambda e. \forall w' \in \mathbf{PRIORITY}(e): \exists e' [leave(e') \wedge Ag(e', PRO) \text{ in } w']$

(7) [[it is raining]] =  $\lambda e. \forall w' \in \mathbf{EPISTEMIC}(e): \exists e' [rain(e') \text{ in } w']$

Evidence for associating finiteness with epistemic modality (or more generally, modals that quantify over information states in the sense of Anand and Hacquard 2013) and *for-to* infinitives with priority modality comes from the observation that representational attitudes tend to co-occur with the former (8) and non-representational or priority-related attitudes with the latter (9). (I gloss over many nuances here; see Hacquard 2014; Grano 2016 for more discussion. Note that *believe* can combine with ECM infinitives, consistent with Moulton’s 2009 proposal that ECM infinitives encode epistemic modality; and *claim* can combine with control infinitives, showing that not all control infinitives have priority semantics.)

- (8) a. John **believes** {that it is raining / \*for it to rain}.  
 b. John **claims** {that it is raining / \*for it to rain}.  
 (9) a. John **wants** {\*that it is raining / for it to rain}.  
 b. John **intends** {\*that Bill leaves / for Bill to leave}.

(6)-(7) work in concert with the proposed denotation for *persuade* in (10) to yield the truth conditions in (11)-(12) for (1)-(2) respectively.

- (10) [[*persuade*]] =  $\lambda P \langle et \rangle \lambda x \lambda y \lambda e. \exists e' [ \text{persuade}(e) \wedge \text{Ag}(e,y) \wedge \text{Pt}(e,x) \wedge \text{CAUSE}(e,e') \wedge \text{attitude}(e') \wedge \text{Exp}(e',x) \wedge P(e') ]$   
 (11) [[(1)]] =  $\exists e \exists e' [ \text{persuade}(e) \wedge \text{Ag}(e,m) \wedge \text{Pt}(e,j) \wedge \text{CAUSE}(e,e') \wedge \text{ATT}(e') \wedge \text{Exp}(e',j) \wedge \forall w' \in \text{PRIORITY}(e'): \exists e'' [ \text{leave}(e'') \wedge \text{Ag}(e'',j) \text{ in } w' ] ]$   
 (12) [[(2)]] =  $\exists e \exists e' [ \text{persuade}(e) \wedge \text{Ag}(e,m) \wedge \text{Pt}(e,j) \wedge \text{CAUSE}(e,e') \wedge \text{ATT}(e') \wedge \text{Exp}(e',j) \wedge \forall w' \in \text{EPISTEMIC}(e'): \exists e'' [ \text{rain}(e'') \text{ in } w' ] ]$

(c) **Persuasion and rational attitudes.** A shortcoming of (11) is that priority modality is a more general semantic category than intention; and yet *persuade* in combination with an infinitive can only mean ‘cause to form an intention’ and not (say) ‘cause to form a desire’, as brought out by (13)-(14).

- (13) CONTEXT: I'm at a party with John. I'm trying to get him to leave by pointing out all the advantages of doing so. Finally he says, “These are all good points. You've really made me *want* to leave. But I'm sorry, I have no *intention* of doing so.”  
 SENTENCE: I persuaded John to leave. JUDGMENT: *false*  
 (14) CONTEXT: I'm at a party with John. I'm trying to get him to leave by pointing out all the advantages of doing so. Finally he says, “These are all good points. I still don't *want* to leave. But I will. I fully *intend* to leave after I finish this drink.”  
 SENTENCE: I persuaded John to leave. JUDGMENT: *true*

To rein in the semantics accordingly, I propose that *persuade* contributes a presupposition that the caused attitude is a *rational* one, where rational attitudes are defined as attitudes that are closed under conjunction and entailment. As seen in (15)-(16), *believe* and *intend* both name rational attitudes whereas *want* does not. (Data taken from Grano 2017, building on Heim 1992; Levinson 2003; Condoravdi & Lauer 2016, and others.)

- (15) CLOSURE UNDER CONJUNCTION  
 a. John **wants** to go to Paris this summer, and he **wants** to go to Rome this summer, but he doesn't **want** to go to both Paris and Rome this summer.  
 b.#John **believes** he'll go to Paris this summer, and he **believes** he'll go to Rome this summer, but he doesn't **believe** he'll go to both Paris and Rome this summer.  
 c.#John **intends** to go to Paris this summer, and he **intends** to go to Rome this summer, but he doesn't **intend** to go to both Paris and Rome this summer.  
 (16) CLOSURE UNDER ENTAILMENT  
 a. John doesn't **want** to teach next semester, but given that he has to, he **wants** to teach Tuesdays and Thursdays.  
 b.#John doesn't **believe** he'll teach next semester, but given that he has to, he **believes** he'll teach Tuesdays and Thursdays.  
 c.#John doesn't **intend** to teach next semester, but given that he has to, he **intends** to teach Tuesdays and Thursdays.

The end result is that a logically natural class of attitudes that include belief and intention but not desire turns out also to be a grammatically natural class, lexically encoded on verbs like *persuade*.

**References:** Anand & Hacquard 2013: *S&P* 6:1–59. Bogal-Allbritten 2016: PhD diss., UMass Amherst. Bresnan 1972: PhD diss., MIT. Condoravdi & Lauer 2016: *S&P* 9:1–61. Dowty 1985: *L&P* 8:291–331. Grano 2016: *SuB* 20:306–322. Grano 2017: *JoS* 34:587–632. Hacquard 2010: *NALS* 18:79–114. Hacquard 2014: *SALT* 24:330–352. Heim 1992: *JoS* 9:183–221. Jackendoff 1985: *LI* 16:445–460. Krater 2006: Decomposing attitude verbs. Talk given in honor of Anita Mittwoch, Hebrew University Jerusalem. Levinson 2003: *SALT* 13:222–239. Moulton 2009: PhD diss., UMass Amherst. Portner 1997: *NALS* 5:167–212. Portner 2007: *NALS* 15:351–383. Portner 2009: *Modality*. OUP. Zwicky & Sadock 1975: *Syntax and Semantics* 4:1–36.