Introduction. The subclass of factive predicates in (1) and (2) shows puzzling behavior when taking a nonfinite complement. In (1), the presupposition that John took out the trash is triggered; but in (2), John’s (not) taking out the trash is entailed. That is, these verbs appear to be factive when they take a finite clause but implicative when they take a nonfinite clause.

(1) John did (not) {remember/forget/know/understand} that he took the trash out.  
   presupposes: John took the trash out.

(2) a. John did {remember/know/understand/not forget} to take the trash out.  
   entails: John took the trash out.  
   b. John did {not remember/not know/not understand/forget} to take the trash out.  
   entails: John didn’t take the trash out.

I argue from presupposition projection facts that these verbs select a (covert) Kratzerian root (nonepistemic) modal in (2). This dovetails with (i) Bhatt (1999) argument for covert root modality in some nonfinite relative clauses as well as (ii) Wurmbrand’s (to appear) proposal that other nonfinite selecting verbs—such as hope and want—select a future modal. I show that this assumption can naturally explain the implicativity that these verbs show in (2) but not (1) as well as the presuppositional behavior seen in both.

Data. Though implicatives entail their complement, they generally also presuppose some modalized version of it. Karttunen (1971) noticed that manage presupposes that “whatever is meant by the complement sentence is in some way difficult for the subject” and that remember “presupposes that the subject was obligated to carry out the act described in the complement.” Interestingly, this latter presupposition is general to the sentences in (2). Essentially, (2) has the same projection properties as (3).

(3) John did (not) {remember/forget/know/understand} that he should take the trash out.  
   presupposes: John should take the trash out.

The lack of modality in (1)—along with its presence only with an overt modal—suggests that, wherever the modality is coming from, it is not part of the denotation of the verb. Further, this modalization doesn’t seem to have to do with operations specific to control. First, when either remember or forget take a gerund complement, the modality is absent from the presupposition.

(4) John did (not) remember/forget taking the trash out.  
   presupposes: John took the trash out.

Second, the presence of modality does not seem to be due to factivity generally: one can remember their obligation to take out the trash but not remember the taking out, as in (5); but the fact that (6b) is infelicitous shows that (6a) does not similarly involve love of an obligation. Rather, (6a) contradicts (6b) because the love in (6a) is also of the taking out.

(5) a. John remembered to take the trash out...  
   b. but he forgot/didn’t remember doing it.

(6) a. John loved to take the trash out...  
   b. #but he hated/didn’t love doing it.

Such a lack of modality in some to-infinitives was documented by Bhatt. Here, we see that while some nonfinite selecting verbs are selecting modal heads, others are not. This is corroborated by Wurmbrand in her discussion of verbs like claim, which she argued selects a T head, and try, which she argued selects an Asp head.

Analysis. This set of facts can be explained if our factives select a root modal. The sentences in (2) would then be the spell-out of the tree fragment in (7). A similar account has been proposed by Wurmbrand to explain certain facts about future-oriented predicates like hope and want.
I give a standard semantics for root modals, but I follow Hacquard (2010) in assuming that modals are event-relative. In this system, conversational backgrounds map from events to the circumstances of that event.

\[ \text{Mod}^f.g.w = \lambda f_{s(e)} \cdot \lambda e. \forall w' \in \text{Best}_{g(e)}(f(e)) : f_{s(e)}(w')(e) \text{ in } w \]

I give a standard Hintikkan denotation to the attitude verb. Here, I follow Stephenson (2010a, 2010b) in providing a unified treatment of finite and nonfinite clauses by allowing an attitude verb to pass an event to its complement. Stephenson shows that this can naturally handle the semantics of both gerundive and finite complements.

\[ \text{remember}^w = \lambda f_{s(e)} \cdot \lambda e. \text{memory}(e) \& \forall w' \in \text{Content}(e) : f_{s(e)}(w')(e) \text{ in } w \]

This unification of denotation across complement type is welcome since it helps explain why the verb is factive independently of those types. We need just say that the complement of the verb is presupposed. This, of course, still leaves room to specify in exactly what way the verb is presuppositional and various options are compatible with the current approach.

With a sketch of the presupposition account in hand, I turn to deriving the implicativity of the nonfinite cases. The essential idea is a hybrid of Hacquard’s (2008, 2009) semantic treatment of implicativity. The attitude verb passes the matrix event directly to the embedded modal, resulting in the modal being relativized to that event. Since this event is in the real world—absent a modal/attitude above the event quantification—we end up with worlds compatible with the circumstances of an event in the world of evaluation. This, along with Hacquard’s assumption that events have a constant description across worlds, results in implicativity. Hacquard’s assumption might be extended to explain why (11) results in the negative implications in (2b): events that do not satisfy a description across all worlds do not satisfy that description in the real world. (This is obviously a variant of the law of excluded middle.)

\[ \exists e ... \forall w' \in \text{Content}(e) : [\forall w'' \in \text{Best}_{g(e)}(f(e)) : \text{[vP]}^{w''(e)} \text{ in } w'] \text{ in } w \]

Blocking implicativity in the finite case requires positing at least one event binder in the embedded clause—a reasonable assumption, since we assume that an aspect node binding the VP event exists in most finite clauses. This low event binding forces the relevant circumstances to only exist in the experiencer’s attitude-compatible worlds, resulting in no implicativity.

\[ \exists e ... \forall w' \in \text{Content}(e) : [\exists w'' \in \text{Best}_{g(e)}(f(e)) : \neg [\text{vP}]^{w''(e')} \text{ in } w'] \text{ in } w \]

**Discussion.** Above, I argued that a subclass of factive predicates select root modal complements. I then showed that positing this selection allows us to derive implicativity in the nonfinite case but not in the finite case.