

# Psych verbs in English and Mandarin

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**Abstract** Psych verb constructions show peculiar properties. They appear to project the same  $\theta$ -relations into inverse configurations (*John fears sharks/Sharks frighten John*). Furthermore, Experiencer Object psych verb constructions admit backward binding in apparent violation of familiar c-command conditions (*Pictures of himself anger John*). We offer a solution to both puzzles drawing crucially on data from English and Mandarin. We argue that apparent  $\theta$ -role inversion is an illusion, and that Experiencer Subject psych verb constructions like *John fears sharks* are not in fact simple transitive constructions but instead involve a concealed clause with a silent predicate (*John fears* [CP *sharks PRED*]). Regarding backward binding, we argue for an updated version of Belletti and Rizzi's (1988) analysis of Experiencer Object psych verbs in which the putative Theme is a Source that is underlyingly c-commanded by the Experiencer.

**Keywords** Psych verbs · Intensionality · Concealed complement clauses · Applicatives · English · Mandarin

## 1 Introduction: the problem of psych constructions

Psych constructions pose a number of challenges to syntactic theory. As shown in (1)–(2), Experiencer Subject (ES) and Experiencer Object (EO) psych verbs in English

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permit backward binding (cf. 5a–c) in apparent violation of the c-command constraint (see Belletti and Rizzi 1988; Pesetsky 1987, 1995; Grimshaw 1990, among others).<sup>4</sup>

- (3) a. \*Stories about **himself<sub>i</sub>** described **John<sub>i</sub>** accurately. (TV)  
 b. \***Each other<sub>i</sub>**'s advisors invited **the students<sub>i</sub>**.
- (4) a. \*Friends of **himself<sub>i</sub>** fear **John<sub>i</sub>**. (ES)  
 b. \***Each other<sub>i+j</sub>**'s friends like **John<sub>i</sub> and Peter<sub>j</sub>**.
- (5) a. Rumors about **himself<sub>i</sub>** enraged **John<sub>i</sub>**. (EO)  
 b. Pictures of **each other<sub>i</sub>** annoyed **the students<sub>i</sub>**.  
 c. **Each other<sub>i+j</sub>**'s supporters worried **Freud<sub>i</sub> and Jung<sub>j</sub>**.  
 (Pesetsky 1995:43)

The properties of psych verbs noted above are found cross-linguistically, for example, in Italian, as discussed in a well-known paper by Belletti and Rizzi (1988). They are also found in Mandarin. Lai (2004) identifies *pa* 'fear', *danxin* 'be worried' and *xihuan* 'like' as ES psych verbs, and *gandong* 'touch', *jiniu* 'infuriate', and *wuru* 'insult' as EO psych verbs (see Lai 2004 for the full list of ES and EO psych verbs in Mandarin; see also Yang 2009). As (6)–(7) show, ES and EO psych verbs in Mandarin exhibit apparent "θ-role inversion" with equivalent θ-roles assigned in "flipped" structural positions.

<sup>4</sup>It is well-known that the backward binding property of EO psych verbs is shared by counterpart causatives involving *make* + a psych adjective since Pesetsky's (1995) work, as illustrated by (ia–c).

- (i) a. Rumors about **himself<sub>i</sub>** made **John<sub>i</sub>** angry.  
 b. Pictures of **each other<sub>i</sub>** made **the students<sub>i</sub>** annoyed.  
 c. **Each other<sub>i+j</sub>**'s supporters made **Freud<sub>i</sub> and Jung<sub>j</sub>** worried.

This fact seems to support the "decompositional intuition" that EO psych verbs are comprised of a causative element plus an adjectival element. On this view, one expects that only psychological 'make'-causatives allow backward binding cross-linguistically. While this expectation is borne out in English (cf. (i)–(ii)), it isn't in Mandarin, as *shi* 'make'-causatives always allow backward binding whether they take psych (iii) or non-psych adjectives (iv).

- (ii) a. \*[That **she<sub>i</sub>** was driving] made **no girl<sub>i</sub>** responsible/culpable.  
 b. \*[That **her<sub>i</sub>** patient canceled] made **no doctor<sub>i</sub>** available/free/accessible.  
 c. \*[That **its<sub>i</sub>** edge was dull] made **no tool<sub>i</sub>** useful/useless/useable.
- (iii) **Ziji<sub>i</sub>** de pengyou de guanhuai shi **Lisi<sub>i</sub>** shifen gandong.  
 self DE friend DE solicitude make Lisi very touched  
 'The solicitude of self<sub>i</sub>'s friends made Lisi<sub>i</sub> very touched.'
- (iv) **Ziji<sub>i</sub>** de gongzuo-liang turan da zeng shi **Lisi<sub>i</sub>** shifen manglu.  
 self DE work-load suddenly big increase make Lisi very busy  
 'That self<sub>i</sub>'s workload suddenly increased made Lisi<sub>i</sub> very busy.'

In view of the different behaviors between *make*-causatives and *shi*-causatives with respect to backward binding, we leave open the question as to whether EO psych verbs are derivationally related to psychological 'make'-causatives for future study.

- (6) EXPERIENCER THEME (ES)  
 Zhangsan pa/danxin/xihuan Mali.  
 Zhangsan fear/be.worried/like Mary  
 ‘Zhangsan fears/is worried about/likes Mary.’
- (7) THEME EXPERIENCER (EO)  
 Zhangsan gandong-le/jinu-le/wuru-le Mali.  
 Zhangsan touch-Perf/infuriate-Perf/insult-Perf Mary  
 ‘Zhangsan touched/infuriated/insulted Lisi.’

Mandarin psych verbs also exhibit parallel binding anomalies (Chen 1995). As in English, Mandarin simple transitives and ES psych verbs resist backward binding, as seen in (8)–(9) and (10a, b), respectively.

- (8) a. \***Ziji<sub>i</sub>** de pengyou da-le **Lisi<sub>i</sub>**. (Simple TV)  
 self DE friend hit-Perf Lisi  
 b. \***Ziji<sub>i</sub>** de pengyou da-le **meigeren<sub>i</sub>**.  
 self DE friend hit-Perf everyone
- (9) a. \***Ziji<sub>i</sub>** de pengyou piping-le **Lisi<sub>i</sub>**. (Simple TV)  
 self DE friend criticize-Perf Lisi  
 b. \***Ziji<sub>i</sub>** de laoshi piping-le **meige xuesheng<sub>i</sub>**.  
 self DE teacher criticize-Perf every student
- (10) a. \***Ziji<sub>i</sub>** de pengyou pa/danxin/xihuan **Lisi<sub>i</sub>**. (ES)  
 self DE friend fear/be.worried/like Lisi  
 b. \***Ziji<sub>i</sub>** de pengyou pa/danxin/xihuan **meigeren<sub>i</sub>**.  
 self DE friend fear/be.worried/like everyone

By contrast, EO psych verb examples like (11)–(13) appear to allow backward binding of the bare reflexive *ziji* ‘self’ bound by a non-c-commanding proper name (11a)–(13a) or universal quantifier (11b)–(13b).

- (11) a. **Ziji<sub>i</sub>** de pengyou de guanhuai gandong-le **Lisi<sub>i</sub>**. (EO)  
 self DE friend DE solicitude touch-Perf Lisi  
 ‘The solicitude of self<sub>i</sub>’s friends touched Lisi<sub>i</sub>.’  
 b. **Ziji<sub>i</sub>** de fumu de zhichi gandong-le **meige cansaizhe<sub>i</sub>**.  
 self DE parents DE support touch-Perf every contestant  
 ‘The support of self<sub>i</sub>’s parents touched every contestant<sub>i</sub>.’
- (12) a. **Ziji<sub>i</sub>** de zhichizhe de beipan jinu-le **Lisi<sub>i</sub>**. (EO)  
 self DE supporter DE betrayal infuriate-Perf Lisi  
 ‘Self<sub>i</sub>’s supporters’ betrayal infuriated Lisi<sub>i</sub>.’  
 b. **Ziji<sub>i</sub>** de zhichizhe de beipan jinu-le **meige houxuanren<sub>i</sub>**.  
 self DE supporter DE betrayal infuriate-Perf every candidate  
 ‘Self<sub>i</sub>’s supporters’ betrayal infuriated every candidate<sub>i</sub>.’
- (13) a. **Ziji<sub>i</sub>** de pengyou weixie de hua wuru-le **Mali<sub>i</sub>**. (EO)  
 self DE friend obscene DE word insult-Perf Mary  
 ‘The ribaldry of self<sub>i</sub>’s friends insulted Mary<sub>i</sub>.’

- b. **Ziji<sub>i</sub>** de diren weixie de hua wuru-le **meige nübing<sub>i</sub>**.  
 self DE enemy obscene DE word insult-Perf every female.soldier  
 ‘The ribaldry of self<sub>i</sub>’s enemies infuriated every female soldier<sub>i</sub>.’

### 1.1 Further syntactic differences between ES and EO psych verbs in Mandarin

The two classes of psych verbs in Mandarin exhibit further syntactic differences beyond backward binding. For instance, ES psych verbs typically select a clausal complement (14)–(15), and in some cases require one (16).<sup>5</sup>

- (14) a. Zhangsan pa/danxin [Lisi hui da ta]. (ES)  
 Zhangsan fear/be.worried Lisi will hit him  
 ‘Zhangsan fears/is worried that Lisi will hit him.’  
 b. Zhangsan pa/danxin Lisi.  
 Zhangsan fear/be.worried Lisi  
 ‘Zhangsan fears/is worried about Lisi.’
- (15) a. Mali xihuan [Lisi qu zhao ta].  
 Mary like Lisi go find her  
 ‘Mary likes having Lisi come visit her.’  
 b. Mali xihuan Lisi.  
 Mary like Lisi  
 ‘Mary likes Lisi.’
- (16) a. Wo kongpa [ta bu hui lai].  
 I fear/afraid he not will come  
 ‘I fear/am afraid he will not come.’  
 b. \*Wo kongpa ta.  
 I fear/afraid him  
 Intended: ‘I fear him/I’m afraid of him.’

By contrast EO psych verbs never select a clausal complement (17):

- (17) a. \*Zhangsan gandong/jinu/wuru [Lisi hui ku]. (EO)  
 Zhangsan touch/infuriate/insult Lisi will cry  
 b. Zhangsan gandong-le/jinu-le/wuru-le Lisi.  
 Zhangsan touch-Perf/infuriate-Perf/insult-Perf Lisi  
 ‘Zhangsan touched/infuriated/insulted Lisi.’

The two verb classes also differ in their potential for occurring in the Mandarin “*ba*-construction” (Wang 1947; Chao 1968; Hashimoto 1971; Li 1974; Teng 1975; Li and Thompson 1981; Huang 1982; Wang 1987; Tiee 1990; Sybesma 1992, 1999; Liu 1997; Li 2006; Huang et al. 2009, inter alia). Put broadly, whereas EO psych

<sup>5</sup>We are grateful to Jim Huang (p.c.) for pointing out (16a, b) to us.

verbs are permitted in the *ba*-construction, ES psych verbs are not. Compare (18) and (19a, b).<sup>6</sup>

- (18) \*Zhangsan ba Mali pa/danxin/xihuan. (ES)  
Zhangsan BA Mary fear/be.worried/like
- (19) a. Zhangsan de hua ba Mali gandong-le/jinu-le. (EO)  
Zhangsan DE word BA Mary touch-Perf/infuriate-Perf  
'What Zhangsan said touched/infuriated Mary.'
- b. Zhangsan ba Mali wuru-le.  
Zhangsan BA Mary insult-Perf  
'Zhangsan insulted Mary.'

Finally, the two classes of psych verbs also diverge in terms of passivization. Mandarin exhibits so-called "long passives" and "short passives," the difference between them lying in the realization of the demoted Agent.<sup>7</sup> The Agent is realized in long passives (20a), but is absent in short passives (20b) (see Feng 1995; Cheng et al. 1993, 1999; Ting 1995, 1996, 1998; Huang 1999, 2013; Huang et al. 2009, inter alia).

- (20) a. Zhangsan bei Lisi da-le. (Long passive)  
Zhangsan BEI Lisi hit-Perf  
'Zhangsan was beaten up by Lisi.'

<sup>6</sup>Li and Thompson (1981) observe that verbs of emotion such as *ai* 'love', *xiang* 'miss', *hen* 'hate', etc. which are typically disallowed in the *ba*-construction, become acceptable when it forms part of a resultative compound (i) or when followed by a resultative complement (ii).

- (i) Lisi tuntuntutu de yangzi ba Linyi ji-si-le.  
Lisi hesitant DE manner BA Linyi anxious-die-LE  
'Lisi's hesitant way of talking made Linyi anxious to death.' (Huang et al. 2009:168 [ex. 35d])
- (ii) Ta ba xiao mao ai de yao si.  
he BA small cat love DE want die  
'He loves the kitten so much that he wants to die.' (Li and Thompson 1981:469 [ex. 27])

This observation does not appear to us to threaten the generalization in the text that ES psych verbs are not compatible with the *ba*-construction. ES psych verbs are overwhelmingly stative, non-telic predicates in which the object is unaffected. As we discuss below, the *ba*-construction appears to require the post-*ba* NP be understood as "affected" (Wang 1987; Li 2006; Huang et al. 2009) and/or that the VP be understood as bounded in the sense of Liu (1997). Interestingly, addition of a resultative element is well-known to alter the aspectual character of the predicates it combines with, so that a non-bounded predicate with a non-affected object is reconstrued as a bounded predicate with an affected one; cf. (iii, a, b).

- (iii) a. John hammered the metal (for an hour/\*in an hour).  
b. John hammered the metal flat (?\*for an hour/in an hour).

Furthermore, under many analyses of resultatives, the resultative element and the verb form a complex predicate (Huang 1988, 1992; Li 1990, 1995, 1997, 1999, 2005). We suggest this as the reason for the otherwise unexpected behavior of *ji* 'anxious', *ai* 'love', etc. in (i) and (ii). Specifically, we suggest that what is licensed in the *ba*-construction in (i) and (ii) is *not* the verbs *ji* and *ai* simpliciter, but rather the complex predicates *ji-si-le* 'anxious to death' and *ai de yao si* 'love to death'. The latter are licensed because they (unlike their bare verb counterparts) have the necessary affectedness/aspectual properties. The generalization in the text therefore remains intact.

<sup>7</sup>We review the syntactic analyses of long and short passives in Sect. 2.3.2.

- b. Zhangsan bei da-le. (Short passive)  
 Zhangsan BEI hit-Perf  
 ‘Zhangsan was beaten up.’

Interestingly, whereas ES psych verbs are excluded in both long and short passives (21a, b), EO psych verbs accept either form (22a, b).

- (21) a. \*Mali bei Zhangsan pa/danxin/xihuan. (ES)  
 Mary BEI Zhangsan fear/be.worried/like  
 Intended: ‘Mary is feared/worried/liked by Zhangsan.’  
 b. \*Mali bei pa/danxin/xihuan.  
 Mary BEI fear/be.worried/like  
 Intended: ‘Mary is feared/worried/liked.’
- (22) a. Mali bei Zhangsan gandong-le/jinu-le/wuru-le. (EO)  
 Mary BEI Zhangsan touch-Perf/infuriate-Perf/insult-Perf  
 ‘Mary was touched/infuriated/insulted by Zhangsan.’  
 b. Mali bei gandong-le/jinu-le/wuru-le.  
 Mary BEI touch-Perf/infuriate-Perf/insult-Perf  
 ‘Mary was touched/infuriated/insulted.’

## 1.2 A semantic difference: intensionality

Beyond their syntactic differences, ES and EO psych verbs also exhibit a striking semantic difference: ES verbs are *intensional* in complement position, whereas EO psych verbs are *extensional*.<sup>8</sup> Three familiar diagnostics for intensionality vs. extensionality demonstrate the point.

Expressions like *vampire* and *levitator*, although meaningful, do not denote any real objects. There are, in reality, neither vampires nor individuals who can levitate. This entails that when such expressions are used in the object position of a normal, extensional predicate like *see* or *run into with x’s car*, the result is always a false sentence. Since there are no *vampires* and *levitators*, (23a, b), for example, must be false.

- (23) a. John saw **vampires**.  
 b. Mary ran into **a levitator** with her car.

English EO psych verbs resemble simple transitives in this respect: they always yield falsity with non-denoting expressions in object position, as shown in (24) and (25). For (24a) and (24b) to be true, a vampire or a levitator must show interest in or concern with John’s opinions, which is impossible. Similarly, for (25a) and (25b) to be true, a vampire or a levitator would have to have felt scared or shocked by the explosion, which is impossible.<sup>9</sup>

<sup>8</sup>The observation that ES psych verbs are intensional goes back to at least Bennett (1974). For more recent discussion, see Nissenbaum (1985) and Forbes (2006, 2013).

<sup>9</sup>Landau (2010) notes that some English EO psych verbs like *interest* and *concern* are stative, whereas others like *scare*, *shock*, *surprise*, etc. are ambiguous between a stative reading and an eventive reading.

- (24) a. John's opinions interest **a vampire**.  
 b. John's opinions concern **a levitator**.
- (25) a. The explosion scared **a vampire**.  
 b. The explosion shocked **a levitator**.

With English ES psych verbs like *love* and *fear*, however, the situation is quite different. In the latter case, it does seem that (26a, b) could be true even without there being such things as *vampires* and *levitators*.

- (26) a. John loves **vampires**.  
 b. Mary fears **all levitators**.

Therefore one diagnostic of intensional predicates (like *love* or *fear*) is that co-occurrence with a non-denoting object expression need not induce falsity. In contrast, extensional predicates (i.e., simple transitives and EO psych verbs) co-occurring with a non-denoting object expression always induce falsity.

A second diagnostic for intensionality concerns pairs like *Stefani Joanne Angelina Germanotta/Lady Gaga*, which refer to the same person.<sup>10</sup> Substitution of identically referring terms in the object position of a normal, transitive verb does not affect truth or falsity. Thus if (27a) is true, (27b) must be true as well; John ran into the person he did, however that person happens to be named. This behavior characterizes all extensional predicates.

- (27) a. John ran into **Stefani Joanne Angelina Germanotta** with his car.  
 b. John ran into **Lady Gaga** with his car.

Again, English EO psych verbs resemble simple transitives in this respect: substitution of identically referring terms in object position does not affect truth value. If (28a) is true, (28b) must be true as well; John's opinions interest or concern the same person, however that person happens to be named. Similarly for (29a) and (29b).

- (28) a. John's opinions interest/concern **Stefani Joanne Angelina Germanotta**.  
 b. John's opinions interest/concern **Lady Gaga**.
- (29) a. The explosion scared/shocked **Stefani Joanne Angelina Germanotta**.  
 b. The explosion scared/shocked **Lady Gaga**.

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We include both types here and below to show that this aspectual class distinction, although interesting in its own right, appears to be irrelevant to the question of intensionality. We may also note that unlike the case in English, Mandarin EO psych verbs are unambiguously eventive. This is evidenced by their incompatibility with the intensifier *hen* (i), which stative verbs typically permit (Huang et al. 2009).

- (i) \*Zhangsan hen gandong/jinu/wuru Mali.  
 Zhangsan very touch/infuriate/insult Mary  
 Intended: 'Zhangsan touches/infuriates/insults Lisi.'

As in English, aspectual class seems orthogonal to questions of intensionality with Mandarin psych verbs.

<sup>10</sup>*Lady Gaga* is the stage-name of Ms. Germanotta.



The same is *not* true of ES psych predicates like *love*, however. Intuitively, (30b) might be true without (30a) being true as a consequence. For example, John himself might admit to the second but deny the first, protesting that he does not know Stefani Joanne Angelina Germanotta, whoever she is.

- (30) a. John loves **Stefani Joanne Angelina Germanotta**.  
b. John loves **Lady Gaga**.

The second diagnostic of intensional predicates (like *love* or *fear*) is thus that substitution of identically referring terms needn't preserve truth-value.<sup>11</sup> By contrast, substitution of identically referring terms with extensional predicates (i.e., simple transitives and EO psych verbs) always does.<sup>12</sup>

A final diagnostic for intensional predicates concerns the possibility of non-specific readings with indefinites. Consider (31a, b):

- (31) a. John got a good result (on his entrance exams).  
b. John needed a good result (on his entrance exams).

If John got a good result on his entrance exams, then it follows that there is some (specific) good result that John got—e.g., 96 %. This understanding is also possible with (31b); it could be true that John needed a good result on his entrance exams in virtue of needing some (specific) good score. However, John could also have needed a good result on his entrance exams, even if there were no specific good result he had to obtain. It was simply required to be strong, according to some reasonable standard (95 %, 96 %, 97 %, etc.). This “unspecific” reading of indefinites is available with intensional predicates, but not with extensional ones.

<sup>11</sup>For helpful further discussion of these tests, see standard texts such as Dowty et al. (1981).

<sup>12</sup>An anonymous reviewer asks about the potential intensionality of EO psych verb subjects in view of examples like (i), which, according to his/her judgments, seem to allow for truth despite the non-existence of vampires:

- (i) [Vampires] frighten/worry John.

To evaluate this case we consider the three primary diagnostics for intensionality (drawn from Dowty et al. 1981): (a) potential for truth with non-denoting nominals, (b) preservation of truth-value by substitution of co-referring terms, and (c) possibility of “non-specific” readings with indefinites. (a) is tested by (i). (b) and (c) are tested by (ii) and (iii), respectively:

- (ii) Jackie Chan/Cheng Long frightens John.

- (iii) An intruder frightens John.

Regarding (ii), we judge that truth-value is preserved by substitution of Jackie Chan and Cheng Long. If this is correct, then subject position is *not* intensional by this diagnostic. Regarding (iii), it seems to us that to the extent that this sentence is acceptable, it cannot convey the thought that John is frightened at the thought of an (unspecified) intruder; it requires a specific intruder as the cause of John's fright. If correct, this judgment again points toward extensionality in the subject position. This leaves only (i) as evidence for intensionality. Bennett (1974) and Dowty (1979) argue against acceptance of truth with non-referring terms as a decisive test for intensionality in relation to the verb *worship*, and take possibility of “non-specific” readings with indefinites as the key test. By this criterion EO psych verb subjects would seem to be non-intensional, although this conclusion must be regarded as tentative.

Compare now (32a, b). It seems clear that the English ES psych verb *fear* patterns like intensional *need*. John could have feared a poor result on his exams without there having been a specific bad result that he feared receiving (e.g., a 59 %). By contrast the English EO psych verb *frighten* appears to pattern like extensional *get*. If John's health frightened a friend of his, then there must have been some specific friend of John that was frightened.<sup>13</sup>

- (32) a. John feared a poor result (on his entrance exams).  
b. John's health frightened a friend of his.

Thus ES *fear* and EO *frighten* pattern as intensional and extensional predicates, respectively, in regard to the indefiniteness test.

Mandarin simple transitives such as *yujian* 'meet' pattern like their English counterparts in being extensional. A non-denoting object always yields falsity with *yujian* (33a); likewise, substitution of identically referring terms always preserves truth-value (33b). If Lisi has met Jackie Chan, Lisi has met Cheng Long whether he is aware of the fact or not. Finally, indefinite NPs in object position always receive a specific interpretation. If Lisi met a teacher then there is a teacher that he met (33c).

- (33) a. Lisi yujian-le **xixuegui**. (Simple TV)  
Lisi meet-Perf vampire  
'Lisi met the vampire.'  
b. Lisi yujian-le **Jackie Chan/Cheng Long**.  
Lisi meet-Perf Jackie Chan/Cheng Long  
'Lisi met Jackie Chan/Cheng Long.'  
c. Lisi yujian-le **yi-ge laoshi**.  
Lisi meet-Perf one-Cl teacher.  
'Lisi met a teacher.'

Likewise Mandarin EO psych verbs such as *gandong* 'touch' pattern like their English EO psych verb counterparts. *Gandong* 'touch' is always false with a non-denoting object such as *xixuegui* 'vampire'. For (34) to be true, a vampire would have to have felt touched by Lisi, which is impossible. Correlatively, substitution of identically referring terms preserves truth with *gandong*, as seen in (35). Suppose Lisi is a brilliant singer, well-known for love songs that move his audiences. Suppose further that Jackie Chan attends one of Lisi's concerts and feels himself moved by Lisi's performance. Under this scenario, one can utter either of (35a) and (35b) truthfully even though Lisi himself might have no idea that *Jackie Chan* and *Cheng*

<sup>13</sup>Note that EO psych verbs are also extensional in subject position; compare (32a) in the text with (i):

- (i) A poor result (on his entrance exams) frightened John.

If a poor result frightened John, there must have been a poor result that John achieved and that frightened him. In order to get something approximating (32a) with *frighten*, it is necessary to switch to an example like (ii) where we now appeal to (specific) thoughts.

- (ii) The thought of a poor result (on his entrance exams) frightened John.

*Long* refer to the same person. Finally, once again, if Lisi touched a teacher then there is a teacher that he touched (36). No non-specific reading of the indefinite is available:

- (34) Lisi gandong-le **xixuegui**. (EO)  
 Lisi touch-Perf vampire  
 ‘Lisi touched the vampire.’
- (35) a. Lisi gandong-le **Jackie Chan**. (EO)  
 Lisi touch-Perf Jackie Chan  
 ‘Lisi touched Jackie Chan.’  
 b. Lisi gandong-le **Cheng Long**.  
 Lisi touch-Perf Cheng Long  
 ‘Lisi touched Cheng Long.’
- (36) Lisi gandong-le **yi-ge laoshi**. (EO)  
 Lisi touch-Perf one-Cl teacher  
 ‘Lisi touched a teacher.’

By contrast, and again as in English, Mandarin ES psych verbs, such as *pa* ‘fear,’ exhibit all the diagnostics of intensionality noted above. Thus the presence of a non-denoting term like *xixuegui* ‘vampire’ in complement position need not induce falsity; (37) may be true despite there being no vampires.

- (37) Lisi pa **xixuegui**. (ES)  
 Lisi fear vampire  
 ‘Lisi fears vampires.’

Furthermore, substitution of identically referring terms need not preserve truth with ES psych verbs like *pa* ‘fear’. Suppose Lisi knows Jackie Chan as the famous kungfu movie star and fears Jackie Chan because of his formidable martial arts skills. Suppose further that Lisi does not know *Cheng Long* is the Chinese stage-name of Jackie Chan. Under this scenario (38a) will be true, however (38b), with the substitution, certainly needn’t be true as well.

- (38) a. Lisi pa **Jackie Chan**. (ES)  
 Lisi fear Jackie Chan  
 ‘Lisi fears Jackie Chan.’  
 b. Lisi pa **Cheng Long**.  
 Lisi fear Cheng Long  
 ‘Lisi fears Cheng Long.’

Finally, Mandarin ES psych verbs allow non-specific readings of indefinites in complement position, as illustrated by the triple in (39). Example (39a), with extensional *tuirfan* ‘overthrow,’ allows only a specific reading of *yi-ge baoniue de zhengfu* ‘an oppressive government’. If (39a) is true, there must have been such a government that was overthrown. By contrast (39b), with uncontroversially intensional *xuyao* ‘need’, permits (and even favors) a non-specific reading of *yi-ge lianjie de zhengfu* ‘an uncorrupted government’. Example (39b) can be true even without there being a spe-

cific uncorrupted government—a specific constellation of parties and politicians—that the Chinese need. Compare now (39c), with the ES psych verb *pa* ‘fear’. Example (39c) clearly patterns with (39b). Example (39c) permits (and even favors) a non-specific reading of *yi-ge baoniè de zhengfu* ‘an oppressive government,’ just like (39b).<sup>14</sup>

- (39) a. Zhu zai Eluosi de ren tuifan-le **yi-ge baoniè de zhengfu.**  
live at Russia DE person overthrow-Perf one-Cl oppressive DE government  
‘The people who lived in Russia overthrew an oppressive government.’
- b. Zhu zai Zhongguo de ren xuyao **yi-ge lianjie de zhengfu.**  
live at China DE person need one-Cl uncorrupted DE government  
‘The people who live in China need an uncorrupted government.’
- c. Zhu zai Zhongguo de ren pa **yi-ge baoniè de zhengfu.**  
live at China DE person fear one-Cl oppressive DE government  
‘The people who live in China fear an oppressive government.’

Thus the Mandarin ES psych verb *pa* ‘fear’ is intensional, and the same results obtain for other Mandarin ES psych verbs.

The table in (40) summarizes the different properties of ES and EO psych verbs examined so far. As we see, the two classes of psych verbs have opposite syntactic properties, and also contrast semantically with respect to intensionality/extensionality.

(40) **Properties of Mandarin ES and EO psych verbs**

	ES	EO
<b>Backward binding</b>	No	Yes
<b>Clausal complement</b>	Yes	No
<b>Ba-construction</b>	No	Yes
<b>Long &amp; short passives</b>	No	Yes
<b>Intensional</b>	Yes	No

We believe that contrasting properties of ES and EO psych verbs derive from a very different underlying syntax for each. In the next sections, we offer our analysis of the two classes.

<sup>14</sup>As in the English case, Mandarin EO psych verbs are extensional in subject position. Consider (i):

- (i) **Yi-ge baoniè de zhengfu** jinu-le zhu zai Zhongguo de ren.  
one-Cl oppressive DE government infuriate-Perf live at China DE person  
‘An oppressive government infuriated the people who live in China.’

This sentence requires a specific reading of the subject indefinite. That is, there must have been an oppressive government that infuriated the people who live in China.

## 2 The structure of ES psych verb constructions

### 2.1 Intensionality and clausal complementation

Our approach to ES psych verbs hinges crucially on the observation that these constructions are intensional, together with a hypothesis about the relation of intensionality to syntax. Specifically, following a long tradition (including Quine 1960; McCawley 1974; Karttunen 1976; Ross 1976; Larson et al. 1997; Larson 2002; Marušič and Žaucer 2006) we adopt the view of *sententialism*, which holds that if a syntactic position is intensional, it must be contained within a clausal complement selected by a predicate of propositional attitude. Sententialism expresses the semantics-syntax correlation in (41).<sup>15</sup>

(41) Intensionality → Clausal Complementation

To illustrate the force of (41), consider (42a) and note that the surface object position of *need* is intensional. Example (42a) can be true even without the existence of vampires; John can need something even if the thing he needs does not exist. Sententialism requires that *a vampire* be located within a clausal complement. Interestingly, McCawley (1974), Karttunen (1976) and Ross (1976) have proposed that (42a) in fact has the structure in (42b), where the surface object of *need* is in fact the object of a silent predicate *HAVE*:

- (42) a. John needs a vampire.  
 b. John needs [PRO TO HAVE a vampire].

Independent support for this analysis in English is provided by the parallelism in (43) and (44) (observed by Kajita 1967). Example (43a) is well-formed and coherent despite the presence of conflicting temporal adverbs (*yesterday*, *tomorrow*). The usual structural explanation for this fact is that the adverbs are situated in distinct clausal domains; *yesterday* is in the main clause and *tomorrow* is in the embedded clause (43b). Interestingly, (44a) is also well-formed and coherent in precisely the same way as (43a). As McCawley (1974), Karttunen (1976) and Ross (1976) point out,

<sup>15</sup>An anonymous reviewer notes much discussed cases of invalid reasoning like (i) as a potential challenge for the claim that intensionality always has a sentential source. Montague (1974) introduced such paradigms as evidence for “individual concepts” (type <s,e>)—the intensional counterparts of individuals. Crucially, intensionality of this kind does not involve propositionality, or relations to propositions.

- (i) The temperature is 90 degrees.  
 The temperature is rising.  
 ∴ 90 degrees are rising.

We note that Montague’s intensional analysis of invalid inferences like that in (i) is not universally accepted and alternatives have been proposed (see, for example, Jackendoff 1979). Furthermore, even if Montague’s solution is correct, it appears to apply strictly to what Löbner (1981, 2012) terms “functional nouns” like *name*, *size*, *shape*, *color*, *meaning*, *head*, *bottom*, *root*, *mother*, or *cholesterol level* (see Löbner 2012). In other words, this form of intensionality—if this is indeed even the correct label for the phenomenon in question—appears quite distinct from, and irrelevant to, cases of the sort cited in the text, involving nouns like *vampire*, *levitator* or *werewolf*, which are plainly not functional in Löbner’s terms.

this fact can be explained if we posit a structure parallel to (43b), viz., (44b) with a covert clausal complement.

- (43) a. Yesterday John needed to have a bicycle tomorrow.  
 b. Yesterday John needed [to have a bicycle tomorrow].
- (44) a. Yesterday John needed a bicycle tomorrow.  
 b. [Yesterday John needed [PRO TO HAVE a bicycle tomorrow]].

This line of reasoning can be extended to counterpart nominal constructions like (45a) and to (largely archaic) adjectival constructions like (46a), which occur with a preposition (*of*).<sup>16</sup> A natural idea is that the latter also involve a concealed clause-like complement, here a gerundive (45b)/(46b).

- (45) a. Yesterday John was in need of a bicycle tomorrow.  
 b. [Yesterday John was in need of [PRO HAVING a bicycle tomorrow]].  
 (cf. *Yesterday John was in need of having a bicycle tomorrow.*)
- (46) a. Yesterday John was desirous of a bicycle tomorrow.  
 b. [Yesterday John was desirous of [PRO HAVING a bicycle tomorrow]].  
 (cf. *Yesterday John was desirous of having a bicycle tomorrow.*)

These cases show that the notion “clausal” in (41) is not to be identified simply with CP or TP but rather is to be understood in the sense of complements expressing propositions. “Clausal complementation” thus potentially includes not only CP/TP, but also small clauses, propositional gerunds, and even vPs, as in (47a). In the latter, vP is the complement of the adverb *allegedly*, derived from the propositional attitude verb *allege*, as in (47c). More precisely, the notion that the vP is a complement to *allegedly* derives from the relation between (47a) and (47c).

- (47) a. A vampire allegedly bit John.  
 b. A vampire [<sub>αP</sub> allegedly [<sub>vP</sub> a vampire bit John]]  
 c. It’s alleged [that a vampire bit John]

In Larson (2002), (47a) is analyzed as in (47b), where (following standard views) the subject (*a vampire*) has been raised out of vP subject position but can continue to be interpreted there.

The relativization of “clausal complement” to the full range of proposition-expressing XPs allows for various differences among intensional transitives. For example, (48a) shows an intensional postverbal NP (*a vampire*) and has been analyzed along the lines of (48b), involving a concealed complement with *FIND*. Nonetheless, as observed by Partee (1974), constructions like (48a) do not permit a temporal ad-

<sup>16</sup>The *American Heritage Dictionary of the English Language* lists adjectival constructions like (46) with *desirous* as still in current usage, giving (i) as an example.

(i) Both sides were desirous of finding a quick solution to the problem.

For most people, however, including the second author, such examples sound quite dated or formal.

verb conflicting with the main clause tense (48c), in contrast to constructions like (44a):

- (48) a. John was seeking a vampire.  
 b. John was seeking [PRO TO FIND a vampire].  
 (cf. *John was trying/seeking to find a vampire.*)  
 c. ?\*John was seeking a vampire next week.

Larson (2002) proposes tying this fact to the observation by Wurmbrand (1997) that restructuring *try*-infinitives in German lack an independent tense specification in their complements, a point she illustrates with pairs like (49a, b), contrasting German *versuchen* ‘try’ and *beschließen* ‘decide’:

- (49) a. #Hans **versuchte** Maria in zwei Monaten in Wien zu besuchen.  
 Hans tried Maria in two months in Vienna to visit  
 ‘Hans tried to visit Maria in Vienna in two months.’  
 b. Hans **beschloss** Maria in zwei Monaten in Wien zu besuchen.  
 Hans decided Maria in two months in Vienna to visit  
 ‘Hans decided to visit Maria in Vienna in two months.’

The idea is that *seek* in (48a), like *versuchen* in (49a), involves a complement without an independent tense, and hence is unable to support independent tense reference by an adverb.<sup>17</sup> Thus hidden clausal complementation can show a variety of behaviors depending on the independent properties of the constructions.

<sup>17</sup>More fully, intensional transitives are analyzed by Larson (2002) as restructuring verbs, where the latter are accounted for along the lines of Burzio (1986) and Baker (1988), in which the embedded VP undergoes raising and the hidden verb HAVE undergoes further incorporation to the matrix verb, forming a complex predicate (ia–c) (see also Larson et al. 1997):

- (i) a. John needs [CP [PRO [VP HAVE a vampire]]]  
 b. John needs [CP [VP HAVE a vampire] [PRO t ]]  
 c. John needs-HAVE [CP [VP t a vampire] [PRO t ]]

The impossibility of (48c) vs. (49a) above can then be accommodated by saying, following Wurmbrand (1997), that restructuring *try/versuchen*, unlike restructuring *need*, is tense defective. This proposal will also accommodate the observation by Partee (1974) that overt constructions with *seek* in English *do* allow a temporal adverb that disagrees with the main clause tense (ii).

- (ii) John was seeking to find a vampire next week.

We can say that overt infinitival complements with *seek* are like overt infinitival complements with *need* and support an independent tense. By contrast covert infinitival complements with *seek* are like overt infinitival complements with *versuchen* and do not support an independent tense. Hence the impossibility of (48c).

On this account restructuring is also what permits passivization of the complement clause object (iiia). Larson (2002) argues that this derivation is parallel to that of passive impersonal constructions with the counterpart verbs in Italian (iiib) (cf. (iiia)–(iiic)).

- (iii) a. A vampire is needed-HAVE [CP [VP t a vampire] [PRO t ]]  
 b. Questi libri si volevano leggere.  
 these books SI wanted to read  
 ‘We wanted to read these books’.  
 c. Questi libri si volevano-leggere [CP [VP leggere questi libri] [PRO t]].

Mandarin also provides empirical support for the sententialist view. Like the intensional verb *need* in English, the surface object position of the verb *xuyao* ‘need’ in Mandarin is intensional. Like (42a), (50a) can be true even without the existence of vampires; Zhangsan can need something even if the thing he needs does not exist. Sententialism requires that *xixuegui* ‘vampires’ be located within a clausal complement. This requirement is met, as *xuyao* can take an overt clausal complement with *xixuegui* serving as the subject, as in (50b). It follows that *xixuegui* in (50a) must not be the true object of *xuyao*. Rather, it must be an argument within the concealed complement clause whose predicate is covert. We represent this schematically as in (50c), where PRED is some covert predicate. On this view, to need *xixuegui* amounts to the need for *xixuegui* to do or undergo PRED.

- (50) a. Zhangsan xuyao xixuegui.  
 Zhangsan need vampire  
 ‘Zhangsan needs vampires.’  
 b. Zhangsan xuyao [xixuegui yao ta].  
 Zhangsan need vampire bite him  
 ‘Zhangsan needs vampires to bite him.’  
 c. Zhangsan xuyao [xixuegui PRED]

Independent support for the analysis of *xuyao* as involving a complement clause comes from (51a). Despite the presence of conflicting temporal adverbs (*zuotian* ‘yesterday’, *jintian* ‘today’), (51a) is well-formed. The well-formedness of (51a) follows from the usual structural explanation that the adverbs are situated in distinct clausal domains; *zuotian* ‘yesterday’ is in the main clause and *jintian* ‘today’ is in the embedded clause (51b).<sup>18</sup>

<sup>18</sup>Although we have shown that intensional verbs such as *xuyao* ‘need’ support the sententialist hypothesis, we note that Mandarin, unlike English, disallows temporal adverbs to modify silent predicates. Consider Mandarin *xuyao*. Like English *need*, *xuyao* takes both an overt clausal complement and a “bare” object that is intensional (ia, b).

- (i) a. Zhangsan xuyao [you yi-liang zixingche].  
 Zhangsan need have one-Cl bicycle  
 ‘Zhangsan needed to have a bicycle.’  
 b. Zhangsan xuyao [yi-liang zixingche].  
 Zhangsan need one-Cl bicycle  
 ‘Zhangsan needed a bicycle.’

Furthermore, like English, an overt complement clause permits a temporal adverb referring to a time distinct from that of the main clause in Mandarin (iia). However, unlike English, Mandarin does *not* permit a “bare” object and a temporal adverb that would refer to the time of an understood clause (iib, c):

- (ii) a. Zhangsan xuyao [mingtian you yi-liang zixingche].  
 Zhangsan need tomorrow have one-Cl bicycle  
 ‘Zhangsan needed to have a bicycle tomorrow.’  
 b. \*Zhangsan xuyao [mingtian yi-liang zixingche].  
 Zhangsan need tomorrow one-Cl bicycle  
 ‘Zhangsan needed a bicycle tomorrow.’  
 c. \*Zhangsan xuyao [mingtian YOU yi-liang zixingche].  
 Zhangsan need tomorrow have one-Cl bicycle  
 ‘Zhangsan needed to have a bicycle tomorrow.’



- (51) a. Zhangsan zuotian xuyao Lisi jintian dao ta jia.  
Zhangsan yesterday need Lisi today go he home  
'Yesterday, Zhangsan needed Lisi to go to his home today.'  
b. Zhangsan zuotian xuyao [Lisi jintian dao ta jia].

We will not try to motivate or defend the sententialist hypothesis further here since such an effort would carry us well beyond the scope of this paper. Rather in what follows we will simply assume the sententialist hypothesis and explore some interesting consequences deriving from it.

## 2.2 Projecting ES psych verb constructions

The sententialist hypothesis has direct and immediate implications for the analysis of ES psych verbs. Specifically, the fact that the surface objects of these verbs are intensional implies that they cannot be true objects. For example, *Lisi* cannot be the true object of the psych verb *pa* 'fear' in (52a). Rather *Lisi* must be an argument within a concealed complement clause. We will represent this schematically as in (52b), where PRED is some covert predicate. On this view, to fear *Lisi* is to fear that *Lisi* will do, or undergo PRED. By contrast we assume that the post-verbal nominal in an EO psych verb construction such as (53a) is a bare DP, as shown in (53b).

- (52) a. Zhangsan pa Lisi. (ES)  
Zhangsan fear Lisi  
'Zhangsan fears Lisi.'  
b. Zhangsan pa [Lisi PRED]

That Mandarin, unlike English, disallows temporal adverbs to modify silent predicates can be seen in the Mandarin counterparts of other English verbs allowing temporal reference to hidden predicates (see Dowty 1979). For instance, (iii, b) show that English allows both silent and overt predicates to be modified by a temporal adverb. By contrast, while Mandarin allow both silent and overt predicates (iva, b), a temporal adverb must be anchored to an overt predicate (v).

- (iii) a. John promised [TO GIVE Mary \$1000 by Friday].  
b. John promised [to give Mary \$1000 by Friday].
- (iv) a. Zhangsan daying-le [GEI Mali yi-qian kuai qian].  
Zhangsan promise-Perf give Mary one-thousand CI money  
'Zhangsan promised Mary a thousand dollars.'  
b. Zhangsan daying-le [gei Mali yi-qian kuai qian].  
Zhangsan promise-Perf give Mary one-thousand CI money  
'Zhangsan promised to give Mary a thousand dollars.'
- (v) Zhangsan daying-le [zai xingqiwu yiqian \*(gei) Mali yi-qian kuai qian].  
Zhangsan promise-Perf at Friday before give Mary one-thousand CI money  
'Zhangsan promised to give Mary a thousand dollars by Friday.'

We frankly do not know why Mandarin differs from English in disallowing temporal adverbs to modify silent predicates. Possibly it is due to independent differences in the tense systems in the two languages. Lin (2003, 2006) argues that whereas English temporal adverbs pick up their reference from a time established by V + tense, Mandarin lacks tense altogether so that temporal adverbs actually establish the main temporal reference of a sentence in combination with V. If so it's possible that V + adverb requires an overt verb in Mandarin, much like V + tense requires an overt verb in English.

- (53) a. Zhangsan gandong-le Lisi. (EO)  
 Zhangsan touch-Perf Lisi  
 ‘Zhangsan touched Lisi.’  
 b. Zhangsan gandong-le [DP Lisi]

This proposal is supported by the observation made earlier that ES psych verbs, unlike their EO counterparts, typically allow, and sometimes require, overt clausal complements; recall (14)–(17) (we repeat (14) and (17) below as (54) and (55)).

- (54) a. Zhangsan pa/danxin [Lisi hui da ta]. (ES)  
 Zhangsan fear/be.worried Lisi will hit him  
 ‘Zhangsan fears/is worried that Lisi will hit him.’  
 b. Zhangsan pa/danxin Lisi.  
 Zhangsan fear/be.worried Lisi  
 Zhangsan fears/is worried about Lisi.’
- (55) a. \*Zhangsan gandong/jinu/wuru [Lisi hui ku]. (EO)  
 Zhangsan touch/infuriate/insult Lisi will cry  
 b. Zhangsan gandong-le/jinu-le/wuru-le Lisi.  
 Zhangsan touch-Perf/infuriate-Perf/insult-Perf Lisi  
 ‘Zhangsan touched/infuriated/insulted Lisi.’

What we are proposing, in essence, is that complement selection by ES psych verbs is *uniform*—that this class of predicates selects a clausal/propositional complement in *all* cases, even when surface syntax does not reveal this overtly.

Similar proposals are familiar from the literature. Chomsky (1981) appeals to hidden propositional complementation in dealing with (56a), analyzing it as in (56b) on analogy to (56c).<sup>19</sup> He argues that such an analysis allows us to maintain a uniform account of the selectional requirements of *seem*, as exhibited in the full finite complementation structure (56d):

- (56) a. John seems angry.  
 b. John seems [        angry].  
     ↑                  └──┬──┘  
 c. John seems [        to be angry].  
     ↑                  └──┬──┘  
 d. It seems [CP that John is angry]

<sup>19</sup>As originally observed in Stowell (1981) and Williams (1983), for sentences like (56a), the subject can be construed *de re* but not *de dicto* (ia). By contrast, for sentences like (56b), the subject has both *de re* and *de dicto* interpretations (ib) (see Johnson 2004 and Lechner 2007).

- (i) a. A linguist seems unhappy. (*de re*/\**de dicto*)  
 b. A linguist seems to be unhappy. (*de re/de dicto*) (Lechner 2007: ex. [27a, b])

The lack of *de dicto* interpretation in sentences like (ia) follows from Johnson’s (2004) proposal that reconstruction of the subject into the small clause is proscribed. By contrast, reconstruction of the subject into a clausal complement is permitted and hence both *de re* and *de dicto* interpretations can be obtained in sentences like (ib).

Chomsky offers a similar account of the perception verb *feel* in (57a), noting this example to be ambiguous between the readings expressed by the two unambiguous clausal complement constructions (57b) and (57c). Chomsky proposes to capture this ambiguity via a hidden propositional complementation account in which the first reading is analyzed as in (58a), parallel to (57b), and the second reading is analyzed as in (58b), in effect a raising version of (57c) (cf. (56b, d)). Once again these proposals imply uniform selection by *feel*.

- (57) a. John feels cold.  
 b. John feels [himself to be cold].  
 c. It feels [that John is cold]. (i.e., John feels cold to the touch.)
- (58) a. John feels [PRO cold].  
 b. John feels [        cold].  
 ↑                  ↓

Finally, consider the so-called “concealed questions” like (59a, b), first discussed by Grimshaw (1979). We follow Grimshaw (1979) and recent approaches inspired by Grimshaw (Harris 2007; Aloni 2008; Roelofsen and Aloni 2008; Percus 2009, 2010) that the surface appearance of such examples is deceptive, and that the apparent “objects” of *know* and *ask* are in fact contained within a hidden interrogative complement, roughly as in (60a, b) respectively. Following this view, *the answer* and *the time* in (59a, b) cannot be regarded as simple objects, given their associated interrogative interpretations, as shown in (60a, b).<sup>20</sup>

- (59) a. John knows the answer.  
 b. Mary asked the time.
- (60) a. John knows [what the answer is    ].  
 b. Mary asked [what the time was    ].

Thus in all these cases, facts of distribution and interpretation are addressed by postulating concealed propositional complementation parallel to what we are advocating for ES psych verbs.<sup>21</sup>

The precise properties of the concealed psych verb complement appear to us to both differ from and resemble those of other concealed clauses. On the one hand, unlike *need* and *seek*, ES psych verbs clearly do not involve a complement predicate with fixed content. Whereas *need* DP and *seek* DP appear uniformly construable as ‘need-to-**have** DP’ and ‘seek-to-**find** DP’ respectively, the content of *fear* DP is plainly more variable. Mary may fear spiders in virtue of fearing that they will crawl on her. Bill may fear spiders in virtue of fearing their biting him. And John may fear spiders in virtue of fearing that they will do something to him, he knows not what. PRED in a concealed psych verb complement thus seems to function either as a pro-predicate, with content fixed by context (the case of Mary and Bill) or as a predicate

<sup>20</sup>See Heim (1979), Romero (2005, 2007), Frana (2006, 2010), Nathan (2006) and Schwager (2008) for alternative analyses of concealed questions.

<sup>21</sup>Concealed complements have been proposed for other languages besides English and (here) Mandarin. See van Riemsdijk (2002) for interesting discussion of hidden *GO* complements in Dutch and Marušič and Žaucer (2006) for concealed complementation involving *FEEL-LIKE* in Slovenian.

variable existentially bound within the complement (the case of John).<sup>22</sup> On the other hand, concealed psych verb complements resemble those of *need* in allowing independent time reference in the concealed clause in at least some cases. Thus *?John*

<sup>22</sup>An anonymous reviewer makes the interesting observation that although ES psych verb pairs like *fear* and *like* both take overt clauses (ia, b), it seems much easier to reconstruct specific hidden predicative content (*PRED*) with the former than with the latter when the two appear with bare DPs (iia, b):

- (i) a. John fears [that Mary will betray him].  
b. John likes [that Mary is warm-hearted].

- (ii) a. John fears [Mary *PRED*]  
b. John likes [Mary *PRED*]

This question points to the broader issue of what principles guide *PRED* interpretation for individual psych verbs. Since a general answer lies well beyond the scope of this paper, we must content ourselves here with some general points. First, it is clear that *PRED* cannot be freely fixed from context. For example, although (iia) with *fear* can, in our judgment, be construed along the lines of (ia), it cannot be construed as in (iia-c), no matter what the context is:

- (iii) a. John fears [that Mary forgot her overcoat].  
b. John fears [that Mary will forget her overcoat].  
c. John fears [that Mary will stop loving him]

*Fear* (like *hope*, with which it is often paired) seems in its most basic sense to involve what Enç (1986) terms a “shift to the future”, hence non-future interpretations like (iia) are blocked. Furthermore, however, even with future shift, the interpretation must have some kind of “malefactive” implication for the subject, similar to what is invoked by adversative passives and certain ethical datives. Thus (iia), when understood along the lines of (ia), means something like ‘John fears Mary will commit an act of betrayal on him’, etc. This rules out interpretations counterpart to (iib) where, despite a future shift, no such malefactive implication for the subject is present. Finally, it seems that *fear* requires a stage-level/non-stative understanding of its predicate, so that even interpretations like (iic) are ruled out, despite future orientation and adversative content. Roughly speaking, Mary must be understood as “doing something in the future that negatively impacts the subject”.

One way of probing hidden content is to consider potential answers to *why* questions in paradigms like (iv). These appear to make the distinctions we observed above:

- (iv) A: John fears Mary.  
B: Really? Why?  
A: John fears [that Mary will betray him].  
\* [that Mary forgot her overcoat].  
\* [that Mary will forget her overcoat].

Using this probe we can begin to approach the content of *PRED* with *like* (v). First, it seems to us that *like* requires *PRED* to be understood in terms of i-level predicates true of Mary. That is, the starred answer in (v) would seem acceptable only in so far as it revealed some i-level property of her, e.g., that she is reliable:

- (v) A: John likes Mary.  
B: Really? Why?  
A: John likes [that Mary is warm-hearted], [that she is kind to others].  
\* [that she was in class yesterday].

Furthermore it seems to us that, unlike the case with *fear*, *like* requires the presence of a series of properties on Mary’s part; i.e., whereas it is possible to truly fear Mary on the basis of a single future action she might undertake, it is impossible (or at least odd) to speak of liking a person on the basis a single i-level property. Rather it seems that predication of *like* DP requires the like-relation to hold over a range of propositions

*fears sharks tomorrow* seems to us to have at least marginally a reading where John is currently in a state of fear that sharks will be present at the beach tomorrow—i.e., where *tomorrow* does not modify *fear*.<sup>23</sup> Correlatively, although *John feared sharks yesterday* has a clear reading where *yesterday* refers to the time of his fear state, it also seems to have a reading where, for example, at a point two weeks ago John was in a state of fear about sharks being present at the beach yesterday, but felt no fear yesterday when he arrived there and found none in the waters. Here again the hidden clause appears to support independent time reference.

Like English *fear* DP, Mandarin *danxin* DP clearly does not involve a complement predicate with fixed content. For instance, Zhangsan may be worried about Lisi in virtue of his recklessness. Wangwu may be worried about Lisi in virtue of his critical health condition. Mali may be worried about Lisi in virtue of worrying that he will do something harmful to himself or something will happen to him, she knows not what. PRED in the concealed complement of *danxin* thus seems to function either as a pro-predicate, with content fixed by context (the case of Zhangsan and Wangwu) or as a predicate variable existentially bound within the complement (the case of Mali).<sup>24</sup>

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of the form [DP PRED], where PRED is i-level, and PRED is evaluated positively by the subject. *Like* thus would seem to involve some form of implicit, possibly, generic quantification over properties. This might explain why it seems difficult to select a single content for PRED, as the reviewer observes. These remarks are necessarily programmatic. Nevertheless, we hope they are sufficient to show how the general question raised here regarding PRED content might be approached empirically in the framework we are assuming.

<sup>23</sup>An anonymous reviewer observes that sentences like *?John fears sharks tomorrow* improve with event nominals (ia, b):

- (i) a. John fears [the exams tomorrow].
- b. John fears [the wedding tomorrow].

This point touches the interesting question of the syntactic contexts in which hidden clauses and their contents can be reconstructed. Compare (iia–c):

- (ii) a. [The exams/wedding tomorrow] disrupted our plans.
- b. [An apple a day] keeps the doctor away.
- c. [Sharks tomorrow] will disrupt our plans.

Early transformational grammar would have analyzed the subject phrase in (iia) as derived by the so-called “WHIZ-deletion” from a relative clause source (iiaa); i.e., (iia) involves a non-clausal subject. It is the modifier that is clausal in this context. By contrast (iib) appears to involve a genuine subject clause with a missing agent (*PRO*), a missing verb (*HAVE*) and a missing ablative (*from one*) (iibb). For us, (iic) appears to be of the latter sort, where what is understood is something like (iicd), with the subject phrase a concealed clause and with *tomorrow* a modifier of the hidden predicate (*HAVE/BE*).

- (iii) a. [The exams/wedding **WHICH IS/ARE** tomorrow] disrupted our plans.
- b. [**PRO HAVING** an apple a day] keeps the doctor away (**from one**).
- c. [**PRO HAVING** sharks tomorrow] will disrupt our plans.
- d. [Sharks **BEING PRESENT** tomorrow] will disrupt our plans.

Hence it seems that hidden clauses of the sort postulated under sententialism are not only found in clausal complement environments. We must leave this much wider issue for discussion elsewhere.

<sup>24</sup>An anonymous reviewer asks whether ES psych verbs such as *danxin* ‘be worried’ can support independent time reference like English ES psych verbs such as *fear*. The answer is negative, as evidenced by the fact that (ia) only has the reading where *zuotian* ‘yesterday’ modifies *danxin*. Following our proposal that

We will not attempt to pursue the structure or content of the concealed psych verb complement further here.<sup>25</sup> Rather we will simply note that our proposal, if correct, addresses the key semantic fact about ES psych verbs noted above, viz., that they are intensional. It also immediately voids the more general threat to UTAH posed by psych verbs. Under our analysis, ES and EO psych verbs do *not* involve the same Experiencer and Theme theta-roles projected in “flipped” configurations. Indeed, according to (52b), the surface “objects” of ES psych verbs are not the Theme arguments of the verbs at all; rather they are arguments of a separate thematic domain within a concealed complement clause.

## 2.3 Explaining the *ba* and *bei* data

### 2.3.1 Ba-Construction

We observed earlier that ES psych verbs resist the *ba* construction; recall (18) (repeated below as (61)).

- (61) \*Zhangsan ba Mali pa/danxin/xihuan. (ES)  
Zhangsan BA Mary fear/be.worried/like

It is therefore incumbent on us to show that our concealed clausal complement analysis of ES psych verbs is consistent with this fact.

Evidently, demonstrating this will require an account of the *ba* construction itself. That is, we must show that the concealed clause analysis is compatible with at least *some* plausible analysis of *ba*. Liu (1997) observes that although the literature on *ba* is vast, analyses of the *ba* construction generally fall into three broad groups, corresponding to the three key elements of the construction itself (62). Thus there are analyses focusing on: (i) the nature of *ba*, (ii) the semantic role of the post-*ba* NP and (iii) the aspectual semantics of the main predicate XP:

- (62) ba NP XP  
(i) (ii) (iii)

As it turns out, to the extent that these accounts make exact predictions, it appears that *all* are compatible with the concealed clause analysis of ES psych verbs we are

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ES psych verbs take concealed complement clauses, (ia) will be schematically represented as (ib). This correctly captures the meaning of (ia); i.e., yesterday, Zhangsan was constantly in a state of worry that Lisi would do or undergo PRED.

- (i) a. Zhangsan zuotian yizhi danxin Lisi.  
Zhangsan yesterday constantly be.worried Lisi  
'Zhangsan was constantly worried about Lisi yesterday.'  
b. Zhangsan zuotian yizhi danxin [Lisi PRED]

We believe that the lack of independent time reference with ES psych verbs is due to the impossibility for temporal adverbs to modify silent predicates in Mandarin, unlike English (see footnote 18).

<sup>25</sup>As footnote 23 indicates, however, there is much more to be said.



- (65) a. Zhangsan pa [Lisi hui da ta].  
 Zhangsan fear Lisi will hit him  
 'Zhangsan feared that Lisi would hit him.'  
 b. Zhangsan pa [Lisi PRED]

Our analysis therefore appears to predict the ES psych verb facts correctly under the causative analysis of the *ba* construction offered by Sybesma (1992, 1999).

*NP as disposed/affected/transferred* Approach (62ii) is exemplified by the large family of analyses that attempt to predict the possibility of a *ba* construction form by the role played by the post-*ba* NP in the corresponding non-*ba* form. VPs are hypothesized to show a *ba* variant when the post-*ba* NP corresponds to an argument understood as “disposed” (Wang 1947; Chao 1968; Li and Thompson 1981; Tiee 1990, inter alia), “transferred” (Thompson 1973; Li 1974) or “affected” (Wang 1987; Li 2006; Huang et al. 2009) by the action or event depicted by the verb.

For instance, *hua* ‘flower’ in (66a) might be considered a disposed NP because the flower has been disposed of by being put in a vase. Likewise the flower might be viewed as affected by being put in the vase given that its position has changed. Under a theory of the sort just mentioned this leads us to expect a *ba*-construction variant, correctly as it turns out (66b):

- (66) a. Wo cha-le hua zai huaping-li.  
 I stick-Perf flower at vase-inside  
 ‘I stuck the flower inside the vase.’

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verbs, they cannot appear in the *ba* construction (iib).

- (ii) a. Zhangsan hen xiwang/xiangxin [Lisi hui chenggong].  
 Zhangsan very hope/believe Lisi will succeed  
 ‘Zhangsan hopes/believes that Lisi will succeed.’  
 b. \*Zhangsan ba Lisi hen xiwang/xiangxin [hui chenggong].  
 Zhangsan ba Lisi very hope/believe will succeed

These points are again consistent with our analysis of ES psych verbs as clause-taking, propositional attitude constructions. Note that English ES psych verbs like *fear* and uncontroversial propositional attitude verbs like *hope* and *believe* also accept intensifiers (iiia–c):

- (iii) a. John very much fears [that Mary has gotten lost].  
 b. John very much hopes [that she will be found].  
 c. John strongly believes [that freedom is essential].

Furthermore, these verbs pattern as statives by the usual tests for aspectual class. For example, Dowty (1979) notes that only non-statives can occur in English pseudo-clefts. Propositional attitude verbs and ES psych verbs are forbidden in this context (iva–c) (see also Landau 2010).

- (iv) a. \*What John did was fear [that Mary has gotten lost].  
 b. \*What John did was hope [that she will be found].  
 c. \*What John did was believe [that freedom is essential].

The Mandarin *ba* construction and the English pseudo-cleft seem to us to select for very much the same verb classes.



- b. DISPOSED  
 Wo ba **hua** cha zai huaping-li le.  
 I BA flower stick at vase-inside LE  
 'I stuck the flower into the vase.' (Sybesma 1999:132 [ex. 2a])

More subtly, consider (67a). This construction is ambiguous between the two readings in (67ai) and (67aii). Under reading (67ai) the object *ma* 'horse' is understood as affected by the verbal action. Under reading (67aii) it is the subject *Lisi* that is affected. Given that the *ba* construction requires an affected object, this leads us to expect that the *ba* variant (67b) will be unambiguous with only the reading in (67bi). This expectation is correct, as the reading in (67bii) is unavailable (indicated by "#").

- (67) a. Lisi qi-lei-le **ma**.  
 Lisi ride-tired-Perf horse  
 i. 'Lisi rode a horse and made it tired.'  
 ii. 'Lisi became tired from riding a horse.'
- b. AFFECTED  
 Lisi ba **ma** qi-lei-le.  
 Lisi BA horse ride-tired-LE  
 i. 'Lisi rode a horse and made it tired.'  
 ii. #'Lisi became tired from riding a horse.'

Finally, in (68a) *beizi* 'cup' is considered a transferred object because it changes possession from Lisi to Mary. Again we predict a corresponding *ba* construction with *beizi* as the post-*ba* NP (68b); we also predict the unavailability of (68c) if only transferred objects can serve as the object of *ba*.

- (68) a. Lisi na **beizi** gei Mali.  
 Lisi take cup to Mary  
 'Lisi take the cup to Mary.'
- b. TRANSFERRED  
 Lisi ba **beizi** na-gei Mali.  
 Lisi BA cup take-to Mary  
 'Lisi take the cup to Mary.'
- c. NON-TRANSFERRED  
 \*Lisi ba Mali na-gei beizi.  
 Lisi BA Mary take-to cup

Despite the descriptive naturalness of notions like disposal, affectedness or transfer, an immediate question arises as to whether they can be formulated with sufficient precision to yield an account with predictive power. Frankly, the challenges seem quite formidable. Consider (69a), for example. *Nei-ge wenti* 'that question' occurs smoothly as a post-*ba* NP. Nonetheless it is quite unclear in what sense its referent counts as a disposed, affected or transferred object in this context. How does thinking about a particular question dispose it, affect it, or transfer it in any way? Similar questions arise for the post-*ba* NP *shu* 'book' in (69b).

- (69) a. DISPOSED/AFFECTED/TRANSFERRED??  
 Ta ba **nei-ge wenti** xiang-le hen jiu.  
 he BA that-Cl question think-Perf very long  
 ‘He thought about that problem for a long time.’  
 (Li and Thompson 1981:475 [ex. 52])
- b. DISPOSED/AFFECTED/TRANSFERRED??  
 Lisi ba **shu** kan-wan-le.  
 Lisi BA book read-finish-LE  
 ‘Lisi finished reading the book.’

Put things somewhat differently, being disposed, affected, or transferred does not seem to be *necessary* for co-occurrence with *ba*.

Likewise satisfying these descriptive constraints does not seem *sufficient* for co-occurrence with *ba* either. Consider the pairs in (70) and (71).<sup>29</sup>

- (70) a. Fating caiding **Zhangsan** wei you zui.  
 court judge Zhangsan as have guilt  
 ‘The court judged Zhangsan as guilty.’
- b. Fating ba **Zhangsan** caiding wei you zui.  
 court BA Zhangsan judge as have guilt  
 ‘The court judged Zhangsan as guilty.’
- (71) a. Fating caiding **Zhangsan** you zui.  
 court judge Zhangsan have guilt  
 ‘The court judged Zhangsan to be guilty.’
- b. \*Fating ba **Zhangsan** caiding you zui.  
 court BA Zhangsan judge have guilt

Intuitively, Zhangsan may be “affected” (perhaps quite severely) by being found guilty in a court of law (70a). Hence we might (correctly) expect a *ba*-construction variant with a verb of judgment (70b). Note, however, that even though (71a) preserves the same descriptive semantic relations as (70a), its *ba* counterpart in (71b) is nonetheless unacceptable, strongly suggesting that more is required for well-formedness with *ba*.

On our (admittedly limited) understanding of notions like disposition, affectedness or transfer, it seems to us that the complement subject (*Lisi*) of (72a) is not disposed, affected or transferred by the action of the main verb *pa*. Fearing that Lisi will hit Mali does not seem to dispose of, affect or transfer Lisi in any way. Thus if this reasoning is correct, we would seem to predict—correctly—that the corresponding *ba* construction will be ill-formed (72b):

- (72) a. Zhangsan pa [**Lisi** hui da Mali].  
 Zhangsan fear Lisi will hit Mali  
 ‘Zhangsan feared that Lisi would hit him.’
- b. \*Zhangsan ba **Lisi** pa hui da Mali.  
 Zhangsan BA Lisi fear will hit Mali

<sup>29</sup>We are grateful to an anonymous reviewer for (70a, b).

And given that our analysis equates ES psych verb constructions (73a) to clausal complement constructions (72a), we would seem to generate the same prediction of ill-formedness in the corresponding *ba* construction in (73b).

- (73) a. Zhangsan pa [Lisi PRED]  
 Zhangsan fear Lisi  
 ‘Zhangsan feared that Lisi.’  
 b. \*Zhangsan ba Lisi pa.  
 Zhangsan BA Lisi fear

Hence our analysis appears compatible in broad terms with (62ii)-type analyses, to the extent that they have any predictive force.

*Aspectual analyses* The last set of accounts of the *ba* construction is of the form in (62iii), which locates the key properties of the *ba* construction in the aspectual semantics of the post-nominal predicate (XP). Specifically the latter is required to be understood as bounded in some appropriate sense. The point can be illustrated with the pair (74a, b), with (74a) adapted from Smith (1991). In (74a), even with the perfective marker *-le* attached, *xie* ‘write’ does not encode an endpoint to letter writing, and hence allows the continuation shown. By contrast, the *ba* construction encodes a bounded understanding of the letter-writing; the latter must have been carried through to completion, yielding a finished letter. This makes the “non-completion continuation” impossible, as shown in (74b).

- (74) a. Ta xie-le xin, keshi mei xie-wan.  
 he write-Perf letter but not write-finish  
 ‘He wrote a letter but didn’t finish it.’  
 b. Ta **ba** xin xie-le (#, keshi mei xie-wan).  
 he BA letter write-Perf but not write-finish  
 ‘He wrote a letter (#but didn’t finish it).’

Aspect theorists have attempted to capture this generalization by saying that the post-nominal predicate in a *ba* construction must be telic or denote an accomplishment in the sense of Vendler (1967), or that it must be temporally delimited (Liu 1997).<sup>30</sup>

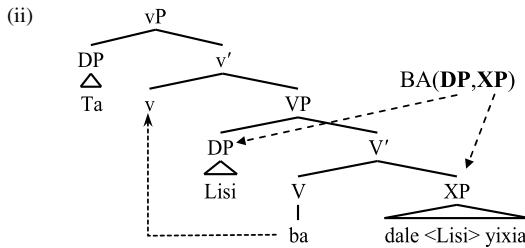
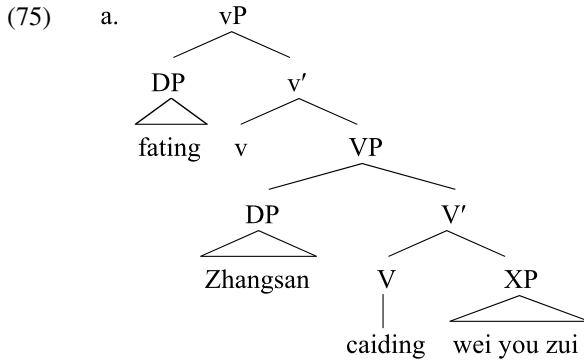
Regardless of how they have attempted to capture the relevant property, all aspect theories of the *ba* construction that we are aware of share the assumption that the post-*ba* NP and the postnominal predicate containing the main verb are part of the same thematic domain: that the post-*ba* NP is an *argument* of the postnominal predicate. This assumption is in fact necessary for appropriate aspectual description in the

<sup>30</sup>This conclusion also seems to apply to more recent accounts involving multiple elements of the *ba* construction. For example, Liu (1997) takes Chinese *ba* to express a relation (BA) between a bounded event predicate XP and a DP whose semantics is specific in a sense she defines formally (i). BA holds of its two arguments just in case the denotations of DP and XP are homomorphic images of each other. This semantic proposal seems compatible with a syntax like (ii), where BA selects XP and DP and subsequently raises. As in aspect theories, this account seems to require DP and XP to be in the same thematic domain, and hence appears compatible with our account of ES psych verbs.

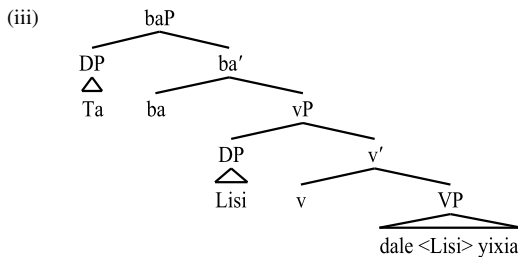
(i) BA(DP,XP)

first place. As has been noted many times in the aspect literature, it is typically predicates + their arguments that denote, for example, activities vs. accomplishments, and not verbs alone. Thus whereas *eat apples* denotes an activity, *eat an apple* denotes an accomplishment.

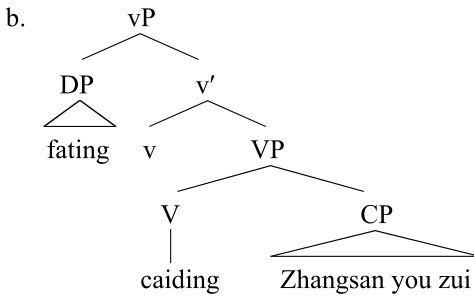
Independent support for our proposal that the post-*ba* NP and the postnominal predicate must be in the same thematic domain comes from the contrast between (70b) and (71b) we noted earlier, where the former can occur in the *ba* construction but the latter cannot. Suppose (70a) has the articulated VP structure in (75a) whereas (71a) has the clausal complement structure in (75b):



The same conclusion appears to hold of recent proposals by Li (2006) and Huang et al. (2009), who propose structures like (iii), where *ba* is the light verb head of a higher phrase (*baP*) and the post-*ba* nominal raises out of VP.



According to Li and Huang et al., the post-*ba* NP must be affected. Furthermore, the post-*ba* NP and the VP must be in the same thematic domain. Hence their accounts seem compatible with our own.



In (75a), *Zhangsan*, *caiding* and *wei you zui* are all in the same thematic domain (VP). In (75b), only *Zhangsan* and *you zui* are in the same thematic domain (CP); *caiding* is in a separate clause. This proposal is compatible with the fact that *Zhangsan you zui* can stand as an independent clause (76a), whereas *Zhangsan wei you zui* cannot (76b):

- (76) a. Zhangsan you zui.  
 Zhangsan have guilt  
 ‘Zhangsan is guilty.’
- b. \*Zhangsan wei you zui.  
 Zhangsan as have guilt  
 Intended: ‘Zhangsan as guilty.’

If occurrence in the same thematic domain is a precondition for the *ba* construction form, then (75b) will be ruled out with *ba* because the postverbal DP is not an argument of *caiding* ‘judge’. By contrast (75a) will have the possibility of a *ba* variant since *Zhangsan* is an argument of *caiding* in this structure.

Similarly, under our analysis of ES psych verb constructions the verb and the postverbal NP do *not* form part of the same thematic domain. *Lisi* in (72a) is simply not an argument of *pa*. It therefore appears to us that aspect theories predict *ba* constructions to be impossible with ES psych verbs under our account, since the verb and the postverbal NP are simply not a semantic constituent for us.

Summarizing, if ES psych verbs are concealed clausal complement constructions, we expect them to resist the *ba* construction under *any* of the most widely adopted analyses of the latter. If the *ba* construction demands a causative head à la Sybesma (1992, 1999), then ES psych verbs are expected to resist *ba* given that propositional attitude verbs are simply not causatives. If the *ba* construction is analyzed as demanding a disposed, affected or transferred object, as suggested by many authors, then ES psych verbs are expected to resist *ba* given that the embedded subject of a propositional attitude construction is not in any way affected by the subject holding an attitude toward it. Finally, if the *ba* construction requires a postnominal predicate that aspectually bounds the postverbal NP, then again ES psych verbs are expected to resist *ba* given that the postverbal NP and the postnominal predicate are not in the same thematic domain, which any aspectual account would seem to require.

### 2.3.2 Long and short passives

We observed earlier with regard to (21a, b) (repeated below as (77a, b)) that Mandarin ES psych verbs resist both the long and short forms of the *bei* passive:

- (77) a. \*Mali bei Zhangsan pa/danxin/xihuan. (ES)  
 Mary BEI Zhangsan fear/be.worried/like  
 Intended: 'Mary is feared/worried/liked by Zhangsan.'  
 b. \*Mali bei pa/danxin/xihuan.  
 Mary BEI fear/be.worried/like  
 Intended: 'Mary is feared/worried/liked.'

Once again, how one explains this fact will evidently turn on one's account of Mandarin long and short passives.

*Long passivization as Null operator movement* In recent theoretical literature, Mandarin long passives have been widely analyzed along the lines of English *tough*-constructions under the proposal of Chomsky (1981) (Feng 1995; Cheng et al. 1993, 1999; Ting 1995, 1996, 1998; Huang 1999; Huang et al. 2009; Huang 2013, among others). Chomsky argues that *tough*-constructions involve null operator movement and predication of the subject, as shown in (78).

- (78) This problem<sub>i</sub> is tough [<sub>CP</sub> OP<sub>i</sub> for us to solve t<sub>j</sub>].
- 

Developing this view, Huang (1999) proposes that the element *bei* in a Mandarin long passive such as (79a) functions like *tough* in selecting a clausal complement, which is assumed to be an IP. The null operator (OP) originating from the object position undergoes A'-movement and adjoins to IP. The null operator is subsequently predicated of the matrix subject (79b).

- (79) a. Zhangsan bei Lisi da-le. (Long passive)  
 Zhangsan BEI Lisi hit-Perf  
 'Zhangsan was hit by Lisi.'  
 b. Zhangsan<sub>i</sub> bei [<sub>IP</sub> OP<sub>i</sub> [<sub>IP</sub> Lisi da-le t<sub>j</sub>]]
- 

*Short passivization as PRO raising* Whereas Huang (1999) analyzes Mandarin long passives like English *tough* constructions under the proposal of Chomsky (1981), he analyzes Mandarin short passives like English *get*-passives under the proposals of Hoshi (1991, 1994a, 1994b). While familiar *be* passives involve raising from VP-internal position to subject position (80a), *get* passives involve a combination of raising + control. Specifically, a PRO argument raises from VP internal position to Spec-VP, for which point it is controlled by the subject (80b):

- (80) a. John<sub>i</sub> was [<sub>VP</sub> t<sub>i</sub> [<sub>V'</sub> blamed t<sub>i</sub> for the failure]] (Be-passive)  
 Movement Movement
- b. John<sub>i</sub> got [<sub>VP</sub> PRO<sub>i</sub> [<sub>V'</sub> blamed t<sub>i</sub> for the failure]] (Get-passive)  
 Control Movement

Huang extends Hoshi's basic picture to Mandarin. Mandarin *bei* in a short passive like (81a) is analyzed as an auxiliary-like element, selecting a VP complement whose PRO object has undergone A-movement and is controlled by the matrix subject (81b).<sup>31</sup>

- (81) a. Zhangsan bei da-le. (Short passive)  
 Zhangsan BEI hit-Perf  
 'Zhangsan was hit.'
- b. Zhangsan<sub>i</sub> bei [<sub>VP</sub> PRO<sub>i</sub> [<sub>V'</sub> da-le t<sub>i</sub>]]  
 Control A-movement

*Explaining the passivization facts* Given our analysis of the surface “objects” of ES psych verbs as the subjects of covert clausal complements, a crucial prediction of our account is that *ceteris paribus* the possibility of long or short passives with the former will correlate with the possibility of long or short passives with the latter. As (82) and (83) show, subject position of overt clausal complements to psych verbs is strongly unavailable for either long (82a)–(83a) or short passivization (82b)–(83b).

<sup>31</sup>One may wonder whether the subject of long and short *bei* passives need to be “affected” like the post-*ba* NP in the *ba* construction. As Huang et al. (2009) note, while the *ba* construction requires the post-*ba* NP to be directly affected by an action, *bei* passives may simply express an indirect effect of an action and the subject of *bei* passives need not be affected (see also Zhang 2001), as evidenced by the contrast between (ia, iia) and (ib, iib) (adapted from Huang et al. 2009:159).

- (i) a. \*Wo ba na-ge xiaoxi zhidao-le.  
 I BA that-Cl news know-Perf  
 b. Na-ge xiaoxi bei (wo) zhidao-le.  
 that-Cl news BEI I know-Perf  
 'That news became known (to me).'
- (ii) a. \*Laoshi ba ta-de zhitiao kanjian-le.  
 teacher BA his scrip see-Perf  
 b. Ta-de zhitiao bei (laoshi) kanjian-le.  
 his scrip BEI teacher see-Perf  
 'His scrip was seen (by the teacher).'

Since what is known (ib) or seen (iib) cannot be construed as disposed or transferred, the well-formedness of (ib, iib) suggests that the subject of *bei* passives need not be disposed or transferred, unlike the post-*ba* NP in the *ba* construction.

- (82) a. \*Lisi bei Zhangsan pa/danxin [ \_\_ hui da Wangwu]. (ES)  
 Lisi BEI Zhangsan fear/be.worried will hit Wangwu  
 b. \*Lisi bei pa/danxin [ \_\_ hui da Wangwu].  
 Lisi BEI fear/be.worried will hit Wangwu
- (83) a. \*Lisi bei Mali xihuan [ \_\_ qu Wangwu de jia].  
 Lisi BEI Mary like go Wangwu DE home  
 b. \*Lisi bei xihuan [ \_\_ qu Wangwu de jia].  
 Lisi BEI like go Wangwu DE home

Our account thus predicts—correctly—the corresponding impossibility of long or short passives with ES psych verbs (84)/(85).

- (84) a. \*Lisi bei Zhangsan pa/danxin [ \_\_ PRED]. (ES)  
 Lisi BEI Zhangsan fear/be.worried  
 b. \*Lisi bei pa/danxin [ \_\_ PRED].  
 Lisi BEI fear/be.worried
- (85) a. \*Lisi bei Mali xihuan [ \_\_ PRED].  
 Lisi BEI Mary like  
 b. \*Lisi bei xihuan [ \_\_ PRED].  
 Lisi BEI like

It is natural to ask how the ill-formedness in (84) and (85) arises. Why are these structures ruled out? In fact the ill-formedness in (84) and (85) appears to be part of a broader pattern in Mandarin that is independent of psych predicates. Consider (86a)–(88a) below, which exhibit embedded complements to verbs of saying, believing and causation. Example (86b) shows that passivization of the *object* of an embedded complement clause is licit; but (87b) and (88b) show that passivization of subjects yields severe deviance.

- (86) a. Wo jiao Lisi [qing Wangwu [tuo ta meimei ji-zou-le  
 I tell Lisi ask Wangwu request his sister send-away-Perf  
 nei-feng xin]].  
 that-Cl letter  
 ‘I told Lisi to ask Wangwu get his sister to send the letter.’  
 b. **Nei-feng xin** bei wo jiao Lisi [qing Wangwu [tuo ta meimei  
 that-Cl letter BEI me tell Lisi ask Wangwu request his sister  
 ji-zou-le \_\_ ]].  
 send-away-Perf  
 ‘That letter was “told-Lisi-to ask-Wangwu-get-his-sister-to send” by me.’  
 (Huang 1999:[ex. 25])
- (87) a. Lisi xiangxin [Zhangsan yiding hui chenggong].  
 Lisi believe Zhangsan definitely will succeed  
 ‘Zhangsan believes Zhangsan will definitely succeed.’  
 b. \*Zhangsan bei Lisi xiangxin [ \_\_ yiding hui chenggong].  
 Zhangsan BEI Lisi believe definitely will succeed  
 ‘Zhangsan is believed by Lisi that he will definitely succeed.’



- (88) a. Lisi rang [Zhangsan likai].  
Lisi let Zhangsan leave  
'Lisi let Zhangsan leave.'
- b. \*Zhangsan bei Lisi rang [ \_\_ likai].  
Zhangsan BEI Lisi let leave  
'Zhangsan was allowed by Lisi to leave.'

The constraint on passivization with ES psych verbs thus appears to be part of a broader ban on passivization of embedded subjects in Mandarin.<sup>32</sup>

<sup>32</sup>Huang et al. (2009) offer (ia) as a potential example of passivization from the subject position of a clausal complement. They note that the subject position of the embedded clause can be optionally filled by a pronoun (*ta*), which they analyze as a resumptive pronoun. A reviewer suggests (ib) as an additional example of the same thing:

- (i) a. Zhangsan bei Lisi huaiyi (ta) tou-le qian.  
Zhangsan BEI Lisi suspect he steal-Perf money  
'Zhangsan was suspected by Lisi (he) to have stolen the money.'  
(Huang et al. 2009:128 [ex. 34])
- b. Xiaotou bei jingcha kandao [ \_\_ paojin na-jia canguan le].  
thief BEI police see run.into that-CL restaurant LE  
'The thief was seen by the police to have run into the restaurant.'

We do not find (ia, b) convincing as counterexamples to the generalization in the text. Note that in both cases the matrix verbs allow passivization even without the complement clause (iia, b). This contrasts sharply with the behavior of *rang* 'let' and *xiangxin* 'believe', which disallow passivization both with and without a complement clause (iiia, b).

- (ii) a. Zhangsan bei Lisi huaiyi-guo henduo ci.  
Zhangsan BEI Lisi suspect-Exp many time  
'Zhangsan was suspected by Lisi for many times.'
- b. Xiaotou bei jingcha kandao-le.  
thief BEI police see-Perf  
'The thief was seen by the police.'
- (iii) a. \*Zhangsan bei Lisi rang (likai).  
Zhangsan BEI Lisi let leave  
Intended: 'Zhangsan was allowed (to leave) by Lisi.'
- b. \*Zhangsan bei Lisi xiangxin (yiding hui chenggong).  
Zhangsan BEI Lisi believe definitely will succeed  
Intended: 'Zhangsan is believed by Lisi (that he will definitely succeed).'

The possibility of (iia, b) suggests that (ia, b) may have alternative derivations involving extraction from matrix object position and not from complement clause subject position after all. Potential support for this view comes from corresponding English passives (iva–c), where it is quite clear that no extraction from clausal complement position has taken place:

- (iv) a. Lisi was suspected by John of having stolen the money.  
b. It was suspected of Lisi by the police that he stole the money.  
c. The thief was seen by the police, (while) running into the restaurant.  
(cf. Running into the restaurant, the thief was seen by the police.)

Given the strong empirical support for the generalization in the text, we regard the burden of proof to fall on its challengers to show that (ia, b) are truly what they purport to be, especially given the facts in (ii).

In fact this constraint does not appear to be confined to Mandarin. Resonances of it can be found in English *tough* constructions and *get*-passives, which also resist movement of ECM, small clause, and ES psych verb complement subjects, as in (89b, c), (90b, c) and (91b, c), respectively.

- (89) a. Mary believes/considers [John to be intelligent].  
 b. \*?John is tough to believe/consider [ \_\_ to be intelligent].  
 c. \*?John got believed/considered [ \_\_ to be intelligent].
- (90) a. Mary heard [John talk to Alice].  
 b. \*John was tough to hear [ \_\_ talk to Alice].  
 c. \*John got heard [ \_\_ (to) talk to Alice].
- (91) a. John feared [Mary to be dead].  
 b. \*Mary was tough to fear [ \_\_ dead].  
 c. \*Mary got feared [ \_\_ dead].

But note that this constraint, however it arises, cannot amount to a general ban on A-movement from embedded subject position given that the corresponding English *be*-passives are fully well-formed (92a–c):

- (92) a. John is believed/considered [ \_\_ to be intelligent].  
 b. John was heard [ \_\_ to talk to Alice].  
 c. Mary was feared [ \_\_ to be dead].

We will not speculate on the nature of the constraint on Mandarin passivization of embedded subjects, and the corresponding constraint on English *tough*-movement and *get*-passivization. Rather we will simply note that the exact nature of this constraint does not appear to impact our account of Mandarin ES psych verbs. To repeat, our account postulates that ES psych verbs are concealed clausal complement constructions, hence our basic prediction is that passivization with the first construction will be constrained by whatever constrains passivization with the second, whatever the precise nature and scope of those constraints turns out to be. This prediction appears to be correct.

### 2.3.3 Concluding remarks

In this section we have examined the main properties of Mandarin ES psych verbs under the hypothesis that the latter are uniformly clausal complement selecting verbs, and that surface transitives like *Zhangsan pa Lisi* ‘Zhangsan fears Lisi’ are in fact concealed complement clause constructions with a hidden predicate. The concealed clause view, which has parallels in well-known accounts of *seem*, *feel* and concealed question selecting verbs, explains and/or is compatible with the key properties of Mandarin ES psych verbs discussed in Sect. 1, including the intensionality of their complements, their nonoccurrence in the *ba* construction, and the fact that they resist both the long and short forms of the Mandarin *bei* passive.<sup>33</sup>


<sup>33</sup>Our account essentially precludes a genuinely transitive ES psych verbs with the properties observed. Given that the “objects” of ES psych verbs are intensional, sententialism requires them to be contained

### 3 EO psych verbs

We now turn to EO psych verbs. As discussed in Sect. 1, these include English examples like (93) and their Mandarin counterparts (94).

- (93) That event infuriated Mary.
- (94) Na-jian shi jinu-le Mali.  
that-C1 matter infuriate-Perf Mary  
'That matter infuriated Mary.'

Our approach to these forms is based on a main assumption: Belletti and Rizzi's (1988) unaccusative analysis of EO psych verb sentences like (93), according to which the surface subject has raised from a position structurally lower than the surface object (95).

- (95) [That event] infuriated Mary \_\_\_\_.
- 

We begin in Sect. 3.1 by revisiting Belletti and Rizzi's (1988) analysis of EO psych verbs, updating it in some respects in the light of modern developments. In Sect. 3.2 we show this updated view extends naturally to Mandarin accommodating key empirical observations made earlier regarding backward binding and availability with the *ba* and *bei* constructions.

#### 3.1 EO psych verbs as subject raising predicates

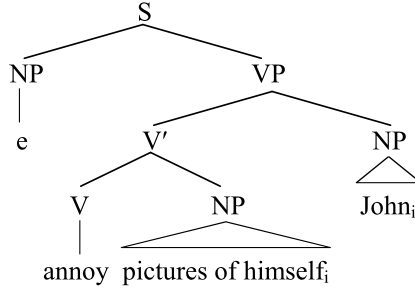
##### 3.1.1 Belletti and Rizzi (1988)

Belletti and Rizzi (1988) motivate their unaccusative analysis of EO psych verbs in part through the facts of "backward binding" noted earlier. Anaphor binding is possible in (96a), despite apparent absence of appropriate c-command conditions. Belletti and Rizzi analyze this situation as in (96b), where *pictures of himself* is initially projected below, and in the c-command domain of, the Experiencer *John*, but subsequently raises to the empty subject position (*e*). Anaphor binding is licensed by this initial configuration.

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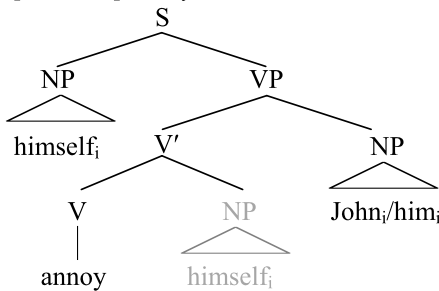
within a clausal complement. In certain cases, however, it seems possible to imagine what the genuinely transitive counterpart of an ES psych verb might look like. Peter Ludlow (p.c.) suggests that a hypothetical English verb "phobe", meaning 'have a phobia about' might come close to a genuinely transitive version of *fear* insofar as it would involve a similar emotion and would seem to be extensional in the object position. The latter point is not entirely clear to us, however. We are not certain whether it is possible to have phobias about non-existent objects like, for example, vampires and werewolves. We leave this as an open question.

- (96) a. [Pictures of himself<sub>i</sub>] annoy John<sub>i</sub>.  
 b.



Belletti and Rizzi's specific proposal allows the conditions of binding principles to be met at different derivational stages. In (96a) the conditions for anaphor binding (Principle A) are met *before* the raising of *pictures of himself* to the subject position, but not afterwards. Hence Belletti and Rizzi propose that Principle A should be understood as a "somewhere" condition: anaphor binding is possible if its conditions are met at *some* stage in the derivation. By contrast (97a) meets all binding conditions appropriately before the raising of *himself* to the subject position (97b), but violates principles B and C *after* raising occurs: *John* is bound, in violation of Principle C, and *him* is bound locally, in violation of Principle B. Thus to correctly rule out (97a), Principles B and C must be understood as "everywhere" conditions. They are required to hold at *all* derivational stages.

- (97) a. \*[Himself<sub>i</sub>] annoys John<sub>i</sub>/him<sub>i</sub>.  
 b.



Belletti and Rizzi's derivational approach to binding is not the only one possible. Alternative representational theories take binding principles to hold at a single level (LF) but allow reference to prior derivational stages in the form of copies of moved items or pre-movement sites as targets for reconstruction.<sup>34</sup> Note, however, that these differences do not affect Belletti and Rizzi's core point, viz., that examples like (96a) can be brought under standard binding principles only if the surface subject of an EO psych verb falls within the binding domain of the surface object at some derivational

<sup>34</sup>Derivational binding in the sense of Belletti and Rizzi (1988) is pursued by Abe (1993), Kitahara (1997), Epstein et al. (1998), Lasnik (1999), Grewendorf and Sabel (1999), Kayne (2002), Zwart (2002), Epstein and Seely (2002, 2006), Saito (2003, 2005), and Bailyn (2007), among others. Representational binding is developed by Pica (1991), Lebeaux (1983), Cole and Sung (1994), Hestvik (1992), Baltin (2003), Fox and Nissenbaum (2004), among others.

stage, however binding theory is formulated to reference this fact—through copies, reconstruction or derivationally stated principles.<sup>35</sup>

Belletti and Rizzi (1988) argue that EO psych verb subjects are not “deep” subjects based on a range of data from Italian. English offers independent evidence for this view in examples like (98a–d). Along with simple nominals, English EO psych

<sup>35</sup>The claim that backward binding is a structural phenomenon falling under Principle A is disputed by (a.o.) Zribi-Hertz (1989), Bouchard (1992), Pollard and Sag (1992), Reinhart and Reuland (1993), Iwata (1995), Arad (1998), Cançado and Franchi (1999). Typical counter-examples include (ia–d) (adapted from Landau 2010:72–73) and (ii) (from Robert Fiengo, p.c.), which show binding of a subject-contained reflexive and do not involve psych verbs.

- (i) a. [Pictures of himself] give John the creeps.  
 b. [Pictures of each other] caused John and Mary to start crying.  
 c. [The picture of himself in *Newsweek*] shattered the peace of mind that John had spent the last six month trying to restore.  
 d. [These nasty stories about himself] broke John’s resistance.
- (ii) [Pictures of himself] festooned/decorated John’s room.

A notable feature of these examples, in our view, is that they all arguably involve a derived subject. For example, (ia, b) show expletive variants with clausal subjects (iii–b), counterpart to those observed with EO psych verbs:

- (iii) a. **It** gave John the creeps [**to look at pictures of himself**].  
 b. **It** caused John and Mary to start crying [**that pictures of each other would be on-sale**].

Examples (ic–d) and (ii) present a more interesting case. Note first that all have ditransitive variants (iva–d) in which the subject occurs within an instrumental PP, projected lower than the object (see (ivd) for evidence from NPIs). Arguably, then, (ic–d) and (ii) all involve instrumental subjects.

- (iv) a. We shattered John’s peace of mind [**with pictures of himself in *Newsweek***].  
 b. We broke John’s resistance [**with nasty stories about himself**].  
 c. We festooned/decorated John’s room [**with pictures of himself**].  
 d. We festooned/decorated [**no room**] [with pictures of **anyone**]. (NPI)

Instrumental subjects of surface transitives like (va) have been argued to derive from an underlying low position (vb) by raising (vc):

- (v) a. **This key** opens the lock.  
 b. The lock opens [pp with **this key**].  
 c. [**This key**] opens the lock [**this key**]  
 ↑

(ia–d) and (ii) might thus be assigned a parallel raising derivation, in which the subject originates from a position below the surface object (vi):

- (vi) **pictures of himself** decorated [John’s room] [**pictures of himself**].  
 ↑

Note that this view, even if correct, does not entirely resolve the binding issues raised by (i)–(ii). In (vi), for example, *John* fails to c-command the reflexive *himself* even before raising. Although we cannot defend the proposal here, we believe that the reflexive in a “picture noun phrase” like (vi) is not in fact bound directly by the understood antecedent *John*. Rather *himself* is bound by a DP-internal empty operator (*OP*) that moves to the edge of a representational nominal (vii<sub>a</sub>). This operator takes as its antecedent a subsequently introduced, but not necessarily c-commanding, higher “topic” (vii<sub>b</sub>). The full analysis for (vi) is thus as in (viii), where, crucially, *OP* establishes its antecedence relation with *John* prior to raising.

verbs permit clauses in subject position (98a), and such forms alternate with examples showing an expletive subject (98b). Furthermore, backward binding is observed in clausal subject cases. The pronoun *he* can be bound by the quantifier *no candidate* in (98c), in parallel to (98d), despite an apparent violation of the usual c-command conditions on quantifier binding in the former.

- (98) a. [That he<sub>i</sub> wasn't elected] annoyed John<sub>i</sub>.
- b. It annoyed John<sub>i</sub> [that he<sub>i</sub> wasn't elected].
- c. [That **he**<sub>i</sub> wasn't elected] annoyed **no candidate**<sub>i</sub>.
- d. It annoyed **no candidate**<sub>i</sub> [that **he**<sub>i</sub> wasn't elected].

The possibility of an expletive subject supports Belletti and Rizzi's diagnosis of EO psych verb subject position as non-thematic. And the parallelism with binding suggests a parallel raising account in which the quantifier binding relation is either established beforehand or afterwards, following reconstruction (99).

- (99) [that **he**<sub>i</sub> wasn't elected] annoyed **no candidate**<sub>i</sub> [that **he**<sub>i</sub> wasn't elected].

Note, however, that if these parallelisms are real, they raise important questions.

First, if the nominal and clausal subjects are projected and derived in parallel, what exactly is their  $\theta$ -role? *John* is presumably an Experiencer argument in (100a, b), but what is the role borne by *photos of himself/that he was photographed*? This question is important since the latter needs to be projected lower than the former.

- (100)                                    **EXPERIENCER    ??**
- a. annoyed John                    [photos of himself]
- b. annoyed John                    [that he was photographed]

Second, why does the clausal form admit an expletive variant while the nominal form does not, given that the subject position is assumed to be non-thematic in both cases (101a, b)?

- (101) a. It annoyed John [that he was photographed].
- b. \***It/there** annoyed John [photos of himself].

Third, how exactly does raising work? In the modern Minimalist Program (Chomsky 1995), movement derivations involve a higher head  $\alpha$  bearing at least two features: an edge feature and second feature [F] that may undergo agreement.  $\alpha$  probes for an [F]-bearing element  $\beta$  within its c-command domain (102a). On finding such

- 
- (vii) a. [<sub>DP</sub> OP<sub>i</sub> [<sub>DP</sub> OP<sub>i</sub> pictures of himself<sub>i</sub> ]]
  - b. DP ... [<sub>DP</sub> OP<sub>i</sub> [<sub>DP</sub> OP<sub>i</sub> pictures of himself<sub>i</sub> ]]
  - ↑                                    ] antecedent topic
  - c. \_\_\_ decorated [**John**'s room] [<sub>DP</sub> OP<sub>i</sub> [<sub>DP</sub> OP<sub>i</sub> pictures of **himself**<sub>i</sub> ]]

This proposal agrees with Belletti and Rizzi (1988) that a "picture noun phrase reflexive" is bound in accordance with Principle A, but disagrees insofar as the binder is not the understood surface antecedent but rather *OP*, which relates to the understood antecedent as a topic introduced higher in the derivation.

a  $\beta$ ,  $\alpha$  agrees with it on [F], activates its edge feature and draws  $\beta$  to its Specifier position (102b). Importantly, the probe relation respects Minimality;  $\alpha$  is not permitted to probe down to  $\beta$  past an intervening  $\gamma$  that is a potential bearer of the [F] feature (102c):

- (102) a.  $[_{\alpha P} \alpha \dots [ \dots \beta \dots ]]$   
           [F]  $\rightarrow$  probes  $\rightarrow$  [F]  
 b.  $[_{\alpha P} \beta \alpha \dots [ \dots \beta \dots ]]$   
           ↑  
 c.  $[_{\alpha P} \alpha \dots [ \dots \gamma \dots [ \dots \beta \dots ]]]$   
           [F]  $\rightarrow$  probes  $\rightarrow$  X  $\rightarrow$  ...  $\rightarrow$  [F]

Applying these points to Belletti and Rizzi's analysis, EO psych verb derivations would seem to involve exactly the situation in (102c). It would seem that for raising to occur as in (103a), a higher head  $\alpha$  would need to probe down to the low argument *photos of himself*, past the intervening argument *John*, as in (103b), violating Minimality. Belletti and Rizzi's raising analysis would thus seem to run afoul of modern views of movement.

- (103) a. [photos of himself] annoyed [John] [photos of himself]  
           ↑  
 b.  $\_\_\_ \alpha$  annoyed [John] [photos of himself]  
           [F]  $\rightarrow$  probes  $\rightarrow$  X  $\rightarrow$  ...  $\rightarrow$  [F]

Finally, are the nominal and clausal subject variants really parallel after all? Compare (104a, b). Whereas EO psych verbs with animate subjects can co-occur with a wide array of agent-oriented adverbs, EO psych verbs with clausal or non-animate nominal subjects evidently cannot.

- (104) a. John **(un)intentionally/deliberately/purposely/willingly/willfully/wittingly/voluntarily** frightened Mary.  
 b. \*[That John was present]/[photos of Bill] **(un)intentionally/deliberately/purposely/willingly/willfully/wittingly/voluntarily** frightened Mary.

On reflection, more is involved in (104a) than just parallelism. Agent-oriented adverbs are widely viewed as a diagnostic for Agentive subjects. The possibility of agent-oriented adverbs in (104a) thus strongly suggests that *John* is a "deep" (Agentive) subject in this sentence, and *not* one raised from another argument position. Briefly put, examples like (104a) do not appear compatible with a raising analysis at all.

### 3.1.2 Updating Belletti and Rizzi

We suggest an update of Belletti and Rizzi's account that preserves its spirit, but addresses the issues just mentioned. First, and most basically, we propose that EO psych verbs are uniformly *ambiguous* between two variants (Landau 2010; see also

Grimshaw 1990; Anagnostopoulou 1999; Arad 2000). One is a simple transitive verb (105a), involving an Agentive subject and a Theme object that undergoes a change of (mental) state. This variant permits agent-oriented adverbs and requires an animate, Agentive subject. The second is a raising verb (105b), involving a non-thematic subject position, an Experiencer object, and a nominal or clausal argument that we diagnose as a Source, with interpretation comparable to the *because*-clause in (105c).

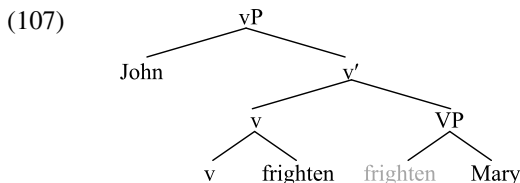
- (105) a. AGENT                      THEME  
 John    frightened    Mary.  
 b.                                      EXP    SOURCE  
       frightened    Mary    John/that John was present.  
       └──────────────────────────┘  
 c. Mary became frightened **because of John/because John was present.**

With (105a), John is understood to have acted in some way to scare Mary, for example, by threatening her. With (105b), John is understood simply to have induced or caused fear in Mary, e.g., by his rough appearance or (unconscious) aggressive posture, or even by his simple presence (cf. 105c).

Native speakers immediately intuit the sense difference we are positing in *John frightened Mary*, and standard tests show this difference to be one of ambiguity, not vagueness. Thus (106), which conjoins clauses with the same VP, requires the subject of *frighten* to be understood identically in both conjuncts. If *John* is understood as an Agent in the first conjunct, *Bill* cannot be understood merely as a Source in the second, and vice versa.

- (106) John frightened Mary and Bill did too.

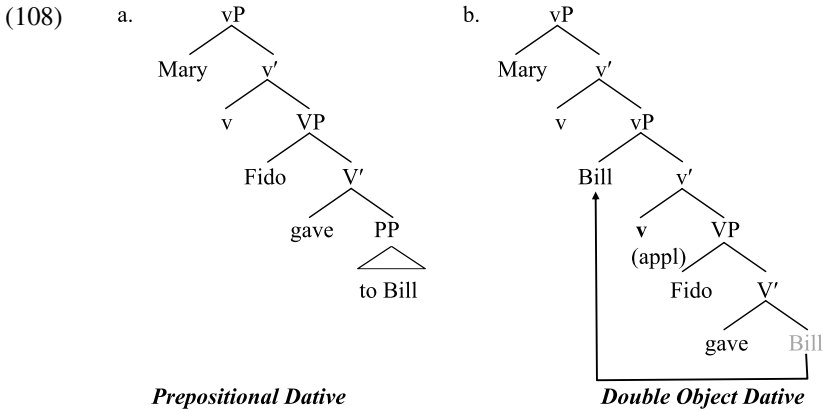
Our analysis of the agentive variant (105a) is shown in (107). Specifically, we propose that the agentive variant involves a simple transitive structure, where *John* is understood as an Agent and *Mary* is a Theme of frightening:



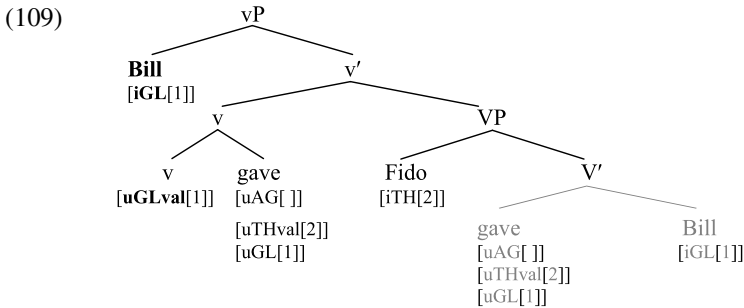
By contrast, our analysis of the raising variant (105b) is based on Belletti and Rizzi's explicit comparison of EO psych verb constructions with double object constructions, together with the derivational analysis of the latter proposed by Larson (2014), where prepositional datives and double object datives are assigned the configurations in (108a) and (108b), respectively. The former is a shelled vP/VP structure of the familiar sort (Larson 1988; Chomsky 1995). The latter is, in essence, a derivational version of Marantz's (1993) account of double object structures, in which an applicative head (here analyzed as *v*) hosts the Goal object in its Spec position (Geor-



gala et al. 2008; Georgala 2011):



In the double object derivation (108b), the applicative v head is analyzed as the probe responsible for raising the Goal *Bill*. Example (109) below spells out the lower vP in more detail, and shows how this derivation works. The features specified in (109) are  $\theta$ -features, understood according to the theory of Pesetsky and Torrego (2007), which classifies features into three basic sorts: interpretable and unvalued, uninterpretable and valued, and uninterpretable and unvalued. Features undergo agreement creating (in essence) a single feature with multiple instances. Acceptable, interface-legible features are ones having both an interpretable and a valued instance.

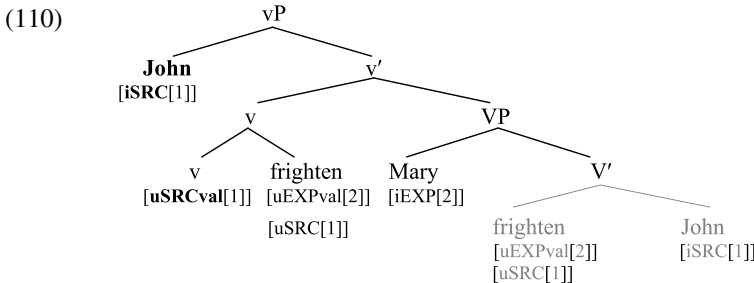


In (109) the verb *give*, carrying Agent (AG), Theme (TH) and Goal (GL) features, first composes with the Goal *Bill*; the resulting v' then composes with the Theme *Fido*. The [TH] feature is interpretable (*i*) on *Fido* and valued (*val*) on *give*, hence [TH] is legible at this derivational stage. However the Goal feature is not legible. [GL] is interpretable (*i*) on *Bill* but not valued on *give*, hence [GL] is unvalued at this stage. It is assumed in Larson (2014) that applicative v heads carry valued  $\theta$ -features, and that v carrying an edge feature and a valued (uninterpretable) [GL] feature can be merged.<sup>36</sup> *Give* raises to v and undergoes agreement with it on GL. Now, since *give*

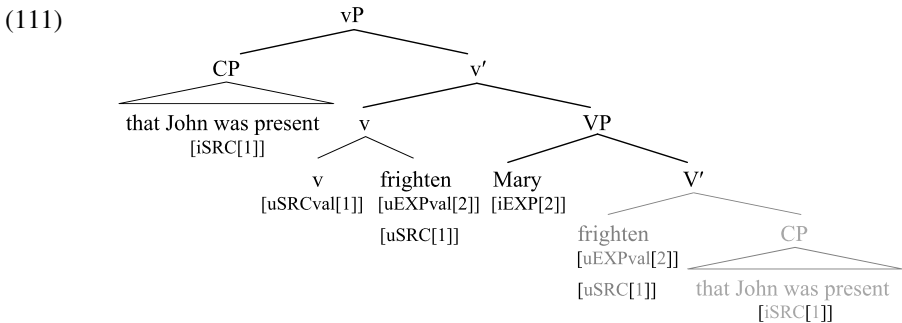
<sup>36</sup>The [AG] feature in (109) is assumed by Larson (2014) to be valued by a similar v head added above in the vP. See Larson (2014) for detailed discussion.

already agrees on [GL] with *Bill*, this yields agreement between v and *Bill* on [GL], without a direct probe-goal relation. This permits *Bill* to raise to the Spec of v without violating Minimality. In essence the raising of *give* to v allows v and *Bill* to agree “by transitivity,” and without intervention by *Fido*.

Our analysis of raising EO psych verbs (105b) is that they involve vPs equivalent to (109) above and no higher verbal structure. That is, the highest vP in a raising EO psych verb construction is headed by an applicative v. The chief difference with (109) lies in the specific  $\theta$ -features involved. In datives they are Theme (TH) and Goal (GL). In raising EO psych verb constructions, we propose that they are Experiencer (EXP) and Source (SRC) (110). In other words, we analyze EO raising psych verbs as source applicatives:



We assume that examples with clausal subjects have a derivation parallel to (110), but with a CP originating in and raising from the position of *John*; compare (111).

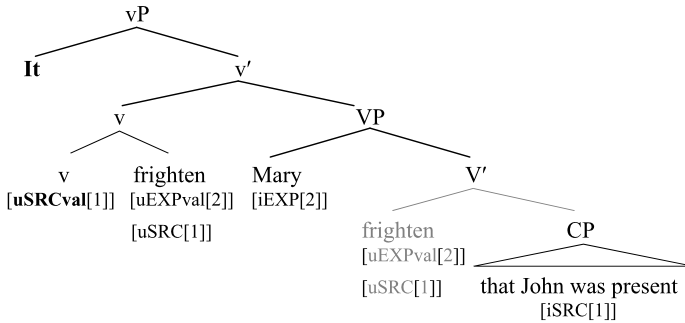


But we take these cases to have an additional possibility as well. In (110) the raising of *John* not only satisfies applicative v’s edge feature, it also allows *John*’s nominative Case feature to be checked locally by a higher T (not shown).<sup>37</sup> With clauses we as-

<sup>37</sup>In the double object construction (108b), the Agent *Mary* is Case-checked by a higher T, the Goal *Bill* is Case-checked by the higher v, and the Theme *Fido* is Case-checked by the lower, applicative v. We assume that in (110), the Experiencer *Mary* is Case-checked by the source applicative v, in parallel to the Theme in (108b) and (109). Landau (2010) notes that in many languages, the Experiencer argument of an EO psych verb is marked with an oblique preposition. In our account we may attribute this to whether the source applicative head v assigns an oblique Case itself, or requires the equivalent of a differential object marker (equivalent to Spanish *a*) in this construction. See Larson (2014) for further discussion.

sume the Case checking requirement to be absent. This fact allows for the satisfaction of *v*'s edge feature in a different way, viz., by insertion of a pleonastic *it* (112):

(112)



In this way we account for the possibility of expletives in EO psych verb constructions with clausal source arguments vs. their absence with nominal source arguments. The difference is fundamentally the presence of Case-checking requirements with DPs (*John*) versus their absence with CPs (*that John was present*).

The account identifies the role borne by the raised subject of an EO psych verb as Source, understood in this class of examples as a cause. It furthermore assumes Source phrases to project low in the structure. In support of the first point, we note that in many English examples, Source arguments (identified by their use of *from*) clearly describe causes, and freely alternate with explicit causative forms (*because*, *cause*) in discourse (113a–c):

- (113) a. John died **from** hypothermia/exhaustion/starvation/shock.  
 b. John died **because of** hypothermia/exhaustion/starvation/shock.  
 c. Q: What was the **cause** of death?  
 A: John died **from** hypothermia/exhaustion/starvation/shock.

Indeed, English often employs the literal words *source* and *from* in talking about the causes of the psychological states involved with EO psych verbs:

- (114) John: I'm feeling very angry.  
 Analyst: I see. Where is this anger coming **from**?  
 Can you identify the **source** of your feelings?

We also note that in some languages, e.g., Japanese, the morpheme *-kara* used to mark source of location and source of possession is also used to mark cause (115a, b).

- (115) a. *Hanako-kara* 'from Hanako'/'because of Hanako'  
 b. *Byooki da kara* 'because (I) am sick'

On reflection, these facts aren't surprising. Intuitively, the notion "source" is just the notion "point of origin". In the context of spatial relations, "source" denotes the point from which a chain of locations extends via motion (*from Tokyo*). In the context of possession relations, "source" denotes the point from which a chain of ownership extends via transfer (*from Bill*). In the context of causal relations, "source" denotes

the point from which a chain of events or states extends via cause and effect (*from hypothermia*). On our view, what are sometimes informally described as “causer” subjects with EO psych verbs are really sources. It’s simply that, in the context of these particular predicates, “source” refers to the point of origin for the psychological state described by the verb—its cause.<sup>38,39</sup>

<sup>38</sup>Our assessment of thematic relations seems broadly compatible with the analysis of Pesetsky (1995), who also projects the surface subject (DP2) into a low position associated with causes (i); DP2 subsequently raises:

- (i)  $[_{VP} DP2 [_{v'} \text{annoy} + \text{CAUS} [_{PP} DP1 [_{P'} \text{CAUS} DP2 ]]]]$  DP1 = Experiencer  
 ↑ DP2 = Causer

As we have noted, all such theories face Minimality problems under modern probe-goal analyses of movement; we are unclear about the solution to this problem under Pesetsky’s account. By contrast, our assessment of thematic relations appears incompatible with the analysis of Landau (2010), who assumes a high unraised Causer DP1 with role assigned by the light *v* head (ii):

- (ii)  $[_{DP} DP1 [_{v'} v [_{VP} V [_{PP} \emptyset DP2 ]]]]$  DP1 = Causer  
 DP2 = Experiencer

On Landau’s analysis the surface subject of an EO psych verb (DP1) is its deep subject as well. This proposal requires an approach to backward binding fundamentally different than Belletti and Rizzi (1988) and some account of subject expletives with these constructions.

<sup>39</sup>An anonymous reviewer notes examples like (ia), which realize the notional “causer” with a low source phrase, and their relation to apparent causatives like (ib, c). In view of this relation, examples like (ia) have sometimes been referred to as “anti-causatives” (see DeLancey 1984; Piñón 2001; Alexiadou et al. 2006; Levin 2009 among others):

- (i) a. The window cracked/broke from the pressure/from the explosion.  
 b. The pressure/The explosion cracked/broke the window.  
 c. The pressure/The explosion made the window crack/break.

This point raises the much broader question of the relation of EO psych verbs to psychological ‘make’ causatives in general, both in English and in Mandarin (see footnote 4). This relation can be seen in pairs like (iia, b) and (iiia, b):

- (ii) a. John angered Mary.  
 b. John made Mary angry.
- (iii) a. Zhangsan jinu-le Mali.  
 Zhangsan infuriate-Perf Mary  
 ‘Zhangsan infuriated Mary.’  
 b. Zhangsan shi Mali hen fennu.  
 Zhangsan make Mary very furious  
 ‘Zhangsan made Mary furious.’

In fact psychological *make*-causatives show many of the properties of EO psych verbs (and vice versa) including backward binding and the presence of subject expletives in the case where the source is clausal (iva, b).

- (iv) a. [Nude pictures of himself<sub>i</sub>] made John<sub>i</sub> annoyed.  
 b. It made John annoyed [that Mary left].

We believe that the inversion analysis of EO psych verbs proposed here can in fact be generalized to the class of *make*-causatives like (iva, b), with a corresponding explanation of their binding and thematic properties, but since this would lead us to many additional considerations not directly relevant to psych

In regard to the projection of Source phrases lower than verbal objects, this view seems uncontroversial with Source phrases of motion or possession, as shown in (116a, b). Verbal objects plainly c-command *from*-objects according to standard tests like quantifier binding and NPI licensing, as in (116c) and (116d), respectively.

- (116) a. John entered [the stage] [<sub>PP</sub> from the right side]. (Location)  
 b. John inherited [the money] [<sub>PP</sub> from Bill]. (Possession)  
 c. John entered [**every stage**] [<sub>PP</sub> from **its** right side].  
 d. John inherited [**no money**] [<sub>PP</sub> from **any** of his relatives].

We note that the same seems true with *from* phrases identifying the cause of the verbal action or state (117a, b):

- (117) a. John accepted [the offer] [<sub>PP</sub> from a deep sense of obligation]. (Causation)  
 b. John accepted [**no offer**] [<sub>PP</sub> from **any** sense of obligation].

Thus the general picture sketched above seems plausible in its basic assessment of thematic relations for EO psych verbs and their projection in structure.<sup>40</sup>

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verbs (see footnote 4), we put aside this extension and the general question of relations to overt causatives for separate exposition elsewhere.

<sup>40</sup>We noted earlier in footnote 2, following Landau (2010), the existence of a third class of psych verbs exemplified by the verb *appeal*. These resemble EO psych verbs not only in thematic structure (ia, b), but in other important respects as well. Thus Class III psych verbs exhibit backward binding (iia) and allow clausal subjects that alternate with expletives (iib, c), respectively:

- (i) a. THEME EXPERIENCER  
 The idea frightened Julie.  
 b. THEME EXPERIENCER  
 The idea appealed to Julie. (Landau 2010:6)
- (ii) a. [Nude pictures of **himself<sub>i</sub>**] never appeal to **John<sub>i</sub>**.  
 b. [**That her room overlooked Waimea Bay**] appealed to Mary.  
 c. **It** appealed to Mary [**that her room overlooked Waimea Bay**].

At the same time Class III psych verbs differ from EO psych verbs in two key respects. First, EO psych verbs require a simple accusative Experiencer object (iiia) and disallow a dative preposition (*to*) (iva); Class III psych verbs show the opposite pattern (iiib, ivb):

- (iii) a. John frightened Julie.  
 b. \*John appealed to Julie.
- (iv) a. The idea frightened (\***to**) Julie.  
 b. The idea appealed \*(**to**) Julie.

Second, EO psych verbs always permit an agentive variant, as evidenced by co-occurrence with agentive adverbs, whereas Class III psych verbs never do (va, b) (Landau 2010). (Note that the relevant sense of *appeal* in (vb) must be kept constant; i.e., ‘attract’, not as ‘implore’ or ‘entreaty’.)

- (v) a. John deliberately frightened Julie.  
 b. \*John deliberately appealed to Julie.

## 3.2 EO psych verbs in Mandarin

Mandarin EO psych verbs parallel those of English in major respects. They permit both nominal and clausal subjects (118a–c) and allow backward binding with both subject types (119a–d):

- (118) a. Mali jinu-le Lisi  
Mary infuriate-Perf Lisi  
'Mary infuriated Lisi.'
- b. [Mali de piping] jinu-le Lisi  
Mary DE criticism infuriate-Perf Lisi  
'Mary's criticisms infuriated Lisi.'
- c. [Mali turan likai] jinu-le Lisi.  
Mary suddenly leave infuriate-Perf Lisi  
'That Mary suddenly left infuriated Lisi.'
- (119) a. [**Ziji**<sub>i</sub> de zhichizhe de beipan] jinu-le **Lisi**<sub>i</sub>. (EO)  
self DE supporter DE betrayal infuriate-Perf Lisi  
'Self<sub>i</sub>'s supporters' betrayal infuriated Lisi<sub>i</sub>.'
- b. [**Ziji**<sub>i</sub> de zhichizhe de beipan] jinu-le **meige houxuanren**<sub>i</sub>.  
self DE supporter DE betrayal infuriate-Perf every candidate  
'Self<sub>i</sub>'s supporters' betrayal infuriated every candidate<sub>i</sub>.'
- c. [**Ziji**<sub>i</sub> de zhichizhe turan likai] jinu-le **Lisi**<sub>i</sub>.  
self DE supporter suddenly leave infuriate-Perf Lisi  
'That self<sub>i</sub>'s supporters suddenly left infuriated Lisi.'
- d. [**Ziji**<sub>i</sub> de zhichizhe turan likai] jinu-le **meige houxuanren**<sub>i</sub>.  
self DE supporter suddenly leave infuriate-Perf every candidate  
'That self<sub>i</sub>'s supporters suddenly left infuriated every candidate<sub>i</sub>.'

Mandarin EO psych verbs also permit agent-oriented adverbs with simple Agentive, animate subjects (120a), but disallow them in all other cases (120b):

- (120) a. Mali **guyi** jinu Lisi.  
Mary **intentionally** infuriate Lisi  
'Zhangsan infuriated Mary deliberately.'

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Although we do not have space to develop our views here, we believe the analysis offered in Sect. 3.1 for EO psych verbs can be extended directly to Class III psych verbs. Specifically we propose: (i) that *appeal* type psych verbs are not valued for the experiencer  $\theta$ -feature. This requires insertion of *to* for this purpose (or, in other languages, inherent dative case-marking tied to this  $\theta$ -feature), and (ii) that the little *v* associated with Class III psych verbs cannot host an accusative case feature; this entails, under the usual correlation with  $\theta$ -role (Burzio's Generalization), that *v* cannot host an agentive  $\theta$ -feature either. Class III psych verbs will thus have no agentive variants, but will exclusively require raising structures together with the presence of the preposition *to*. We hope to develop these points elsewhere.

- b. \*[Mali de piping]/[Mali turan likai] **guyi** jinu Lisi.  
Mary DE criticism Mary suddenly leave **intentionally** infuriate Lisi

One important difference between English and Mandarin is the lack of expletives with clausal arguments in the latter. English (121a) has no acceptable counterpart in Mandarin (121b), suggesting that Mandarin does not have an expletive ( $\alpha$ ), either null (121b) or overt (121c).<sup>41</sup> Clausal Source arguments of Mandarin EO psych verbs must occur in the subject position, as in (118c):

- (121) a. It infuriated Lisi that Mary suddenly left.  
b. \*Jinu-le Lisi [Mali turan likai].  
infuriate-Perf Lisi Mary suddenly leave  
c. \* $\alpha$  jinu-le Lisi [Mali turan likai].  
infuriate-Perf Lisi Mary suddenly leave

Our account of (118)–(119) essentially parallels that of the corresponding English forms. We assume that Mandarin EO psych verbs have transitive versions with “deep” Agentive subjects and Theme objects (122a), and that it is these variants that allow agent-oriented adverbs. Likewise we assume that Mandarin EO psych verbs have raising versions (122b), involving an Experiencer argument and a low Source argument with a role comparable to the *because*-clause in (122c).

- (122) a. AGENT THEME  
Mali jinu-le Lisi.  
Mary infuriate-Perf Lisi  
‘Mary infuriated Lisi.’  
b. EXP SOURCE  
Lisi jinu-le Lisi Mali/Mali turan likai.  
↑  
infuriate-Perf Lisi Mary/Mary suddenly left  
c. Lisi feichang fennu shi **yinwei** **Mali/Mali turan likai**.  
Lisi extremely angry be because Mary/Mary suddenly leave  
‘That Lisi was/became angry was because of Mary/because Mary suddenly left.’

An anonymous reviewer observes an interesting prediction arising from our three claims: (i) EO psych verbs appear ambiguously either as regular agentive transitive constructions or raising structures, (ii) agent-oriented adverbs require the former, and (iii) backward binding requires the latter. These claims predict that the presence of an agent-oriented adverb should inhibit backward binding, since this will disambiguate a structure in which backward binding cannot occur. This prediction seems correct in our judgment for English and Mandarin. Thus backward binding in English and Mandarin appears considerably less accessible with the agent-oriented adverbs than without them, as shown in (123a, b) and (124a, b).

- (123) a. A clone of **himself<sub>i</sub>** (?\*intentionally/deliberately) frightened **John<sub>i</sub>**.  
b. **Each other<sub>i+j</sub>**’s supporters (?\*intentionally/deliberately) frightened/worried/annoyed **John<sub>i</sub> and Mary<sub>j</sub>**.

<sup>41</sup>An anonymous reviewer suggests an interesting possibility that the lack of overt expletives in Mandarin could be related to the general lack of overt expletives in null subject languages. Since this issue is beyond the scope of this study, we leave this possibility for future study.

- (124) a. [Ziji<sub>i</sub> de duishou] (?\*guyi) jinu-le Lisi<sub>i</sub>.  
 self DE opponent intentionally infuriate-Perf Lisi  
 ‘Self<sub>i</sub>’s opponent infuriated Lisi<sub>i</sub>.’  
 b. [Ziji<sub>i</sub> de duishou] (?\*guyi) jinu-le meige xuanshou<sub>i</sub>.  
 self DE opponent intentionally infuriate-Perf every contestant  
 ‘Self<sub>i</sub>’s opponent infuriated every contestant<sub>i</sub>.’

Regarding the lack of expletive variants with EO psych verbs, we assimilate this to a wider fact about Mandarin. In our discussion of (121), we proposed that expletive constructions were possible in English because English clausal complements are not Case-checked. This allows them to remain *in situ* with EO psych verbs, and for English to employ a non-movement strategy—expletive insertion—in satisfying applicative v’s edge feature. Crucially, Li (1985, 1990) and Tsai (1994) have argued that Mandarin CPs resemble Mandarin (and English) DPs in *always* requiring Case-checking. If these authors are correct, the key facts are predicted immediately. Expletives will be unavailable with Mandarin CPs (see (121b, c)) for the same reason they are uniformly unavailable with Mandarin and English DPs, viz.: Case. Mandarin CPs and DPs will both need to raise to Spec-*v*P position in order to check Case via T (125a). Only English CPs will be able to remain *in situ* with insertion of *it* because only English CPs do not require Case-checking (125b).

- (125) a. T CP/DP v V DP CP/DP (English/Mandarin)  
  
 b. T it v V DP CP (English only)

### 3.2.1 Explaining the *ba* facts

We noted earlier that simple Mandarin EO psych verb examples like (126a) permit *ba*-construction variants (126b):

- (126) a. Mali jinu-le Lisi.  
 Mary infuriate-Perf Lisi  
 ‘Mary infuriated Lisi.’  
 b. Mali ba Lisi jinu-le.  
 Mary BA Lisi infuriate-Perf  
 ‘Mary infuriated Lisi.’

In fact *ba*-construction alternates seem to be available with *all* Mandarin EO psych verb examples, whether their subjects are animate/inanimate or clausal/nonclausal (127)–(129).

- (127) a. Zhe-jian shi jinu-le Lisi.  
 this-Cl matter infuriate-Perf Lisi  
 ‘This matter infuriated Lisi.’  
 b. Zhe-jian shi ba Lisi jinu-le.  
 this-Cl matter BA Lisi infuriate-Perf  
 ‘This matter infuriated Lisi.’



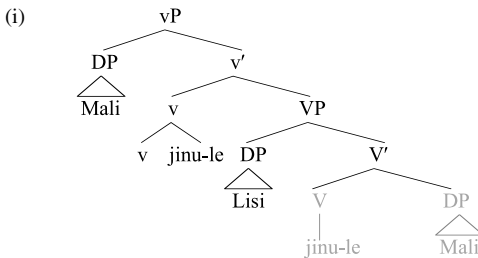
- (128) a. Mali de piping jinu-le Lisi.  
Mary DE criticism infuriate-Perf Lisi  
'Mary's criticisms infuriated Lisi.'
- b. Mali de piping ba Lisi jinu-le.  
Mary DE criticism BA Lisi infuriate-Perf  
'Mary's criticisms infuriated Lisi.'
- (129) a. Mali turan likai jinu-le Lisi.  
Mary suddenly leave infuriate-Perf Lisi  
'That Mary suddenly left infuriated Lisi.'
- b. Mali turan likai ba Lisi jinu-le.  
Mary suddenly leave BA Lisi infuriate-Perf  
'That Mary suddenly left infuriated Lisi.'

Our analysis of Mandarin EO psych verbs appears to be compatible with two out of the three main approaches to the *ba* construction discussed earlier (Sect. 2.3.1) although the compatibility does not appear to hinge on any specific features of our proposal.

For example, under approaches taking affectedness as the core licensing factor for the *ba* construction, the key question with EO psych verbs will plainly be: are their Experiencer objects affected objects? It's hard to see how this could fail to be true under any reasonable construal of "affectedness". In EO psych verb sentences, the individual denoted by the object is represented as undergoing a change of psychological state as a result of the verbal action. It would seem that *any* syntactic analysis compatible with this basic descriptive semantics would predict the possibility of a *ba* variant under the affectedness account. Ours is such a theory. We assume the postverbal DP to receive an Experiencer  $\theta$ -role, and the individual to undergo a change of psychological state, the latter determined by the verb.<sup>42</sup>

Likewise for aspectual approaches taking boundedness as the core licensing requirement for *ba*. For them the key question is: are EO psych verbs temporally bounded? English EO psych verbs pattern as accomplishments in the Vendler/Dowty

<sup>42</sup>Our account of EO psych verbs appears compatible with Li's (2006) and Huang et al.'s (2009) analysis of *ba* construction (see footnote 30). Consider, for example, the raising variant of *Mali jinu-le Lisi* 'Mary infuriated Lisi' in our account (i):



Under Li (2006) and Huang et al. (2009), the subject of *ba* will be derived by movement of the Source DP *Mali* to Spec-*ba*P and the post-*ba* NP will be derived by movement of the Experiencer object *Lisi* from Spec-VP to the higher Spec-vP, as in (ii).

aspectual class system, describing a (mental) state reached by their (Experiencer) objects as a result of the verbal action. They are thus telic and bounded, a point confirmed by their acceptance of delimitative (*in*-type) temporal modifiers, as in (130).

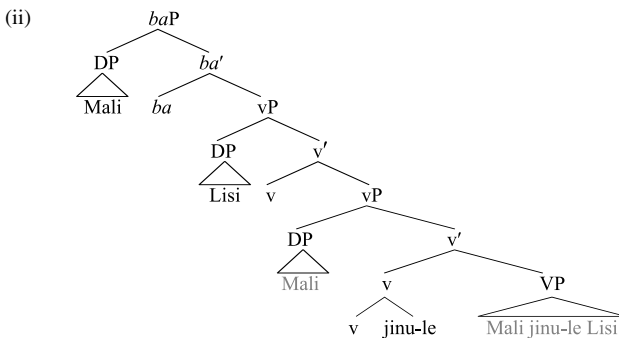
- (130) **In a short time**, John’s humble demeanor had infuriated/touched/insulted everyone in the room.

Assuming verbs with the same meaning will have the same aspectual properties, we expect Mandarin EO psych verbs (*jīnu* ‘infuriate’, *gāndòng* ‘touch’, and *wūru* ‘insult’) to denote accomplishments as well, and hence to be lexically telic. Interestingly, Liu (1997) observes that simple lexical telicity is often insufficient to guarantee boundedness in Mandarin. Telic predicates, including accomplishments, can require the perfective marker *-le* or some other element to receive a bounded interpretation. Thus whereas English *read* is telic in (131a), accepting a delimitative time phrase (*in an hour*), the corresponding Mandarin *kan* ‘read’ is unacceptable in the corresponding form unless marked by *-le* (131b):

- (131) a. He read that book **in an hour**.  
 b. Ta **zai yi-ge zhongtou nei kan\*(-le)** nei-ben shu.  
 he at one-Cl hour in read(-Perf) that-Cl book  
 ‘He read that book in an hour.’ (Liu 1997:[ex. 66a])

Mandarin EO psych verbs resemble *kan* in requiring *-le* (or some other element) in order to be understood as temporally bounded (132a, b):

- (132) a. Mali **zai wu fenzhong nei jīnu\*(-le)** Lisi.  
 Mary at five minute in infuriate(-Perf) Lisi  
 ‘Mary infuriated Lisi in five minutes.’  
 b. Mali dongren de gesheng **zai wu fenzhong nei gāndòng\*(-le)**  
 Mary moving DE singing.voice at five minute in touch(-Perf)  
 suoyou zai chang de guanzhong.  
 all at scene DE audience  
 ‘Mary’s moving singing voice touched all the audience at the scene in five minutes.’



Li (2006) and Huang et al. (2009) take the post-*ba* NP to be an “affected” object. As discussed above, this follows from our analysis of EO psych verbs, in which the post-*ba* NP is an Experiencer.

Putting these points together, we thus predict under the aspectual theory that Mandarin EO psych verbs will be licensed in the *ba* construction when marked by *-le* (or some equivalent delimiter), since it is in this situation that they will denote a bounded event. This prediction seems correct: the *ba*-construction examples in (127b)–(129b), and their counterparts with EO psych verbs, all require the presence of *-le* for well-formedness. For example, (127b) (repeated here as (133)), is unacceptable in its absence:<sup>43</sup>

- (133) Zhe-jian shi    ba Lisi jinu\*(-le).  
 this-Cl    matter BA Lisi infuriate(-Perf)  
 ‘This matter infuriated Lisi.’

Once again, however, these results do not seem to require the specific details of our theory. Status as an accomplishment is a matter of the lexical semantics of EO psych verbs, and the need to be marked with *-le* (or other delimiting element) for temporal boundedness is apparently part of a broader fact about Mandarin. Thus it would seem that any theory accommodating the basic lexical semantics of EO psych verbs and the requirements for temporal boundedness would predict the possibility of *ba* constructions under the aspectual theory. Our analysis is compatible with the aspectual theory’s predictions in this sense.

Our analysis is not compatible, however, with the approach to *ba* construction by Sybesma (1992, 1999) discussed above. Recall that for Sybesma, members of an EO psych verb pair like (134a, b) both involve a higher CausP. In the derivation of the former, the main verb raises to the head of CausP (135a); in the latter *ba* is inserted into the head position and the verb remains *in situ* (135b).

- (134) a. Zhe-jian shi    jinu-le        Lisi.  
 this-Cl    matter infuriate-Perf Lisi  
 ‘This matter infuriated Lisi.’  
 b. Zhe-jian shi    **ba** Lisi jinu-le.  
 this-Cl    matter BA Lisi infuriate-Perf  
 ‘This matter infuriated Lisi.’

<sup>43</sup>Feng-hsi Liu (p.c.) points out to us that whether and when Chinese EO psych predicates occur with or without *-le* (or some other delimiter) is complex. Thus in an embedded complement *jindu* can occur without *-le* (ia). Furthermore, EO psych verbs like *xia ~ yi tiao* ‘to startle someone’ (lit. ‘frighten a jump’) do not require *-le*, apparently in virtue of coming with an intrinsic delimiter (*yi tiao*) (ib):

- (i) a. Bu pa    [ba ta **jindu** ].  
 not afraid [BA him infuriate]  
 ‘(She is) not afraid to infuriate him.’  
 b. Lisi ba wo xia(-le)        yi tiao.  
 Lisi BA me frighten(-Perf) one jump  
 ‘Lisi startled me.’

We cannot pursue this issue further here.

- (135) a. Zhe-jian shi [<sub>CausP</sub> **jīnu-le** ... [<sub>SC</sub> Lisi **jīnu-le**]]  
 b. Zhe-jian shi [<sub>CausP</sub> **ba** ... [<sub>SC</sub> Lisi **jīnu-le**]]

These structures analyze the subject *zhe-jian shi* as a “deep” subject of CausP in both cases, receiving its “causer” role from this element. As we have noted, our analysis assumes a non-thematic subject position for examples like (134a) to which the subject raises. Raising is crucial for our explanation of subject expletives and backward binding with EO psych verbs. Our proposal is thus incompatible with Sybesma’s analysis of *ba*, with its non-raising/ $\theta$ -assigning Caus head.

Of course, as we have discussed, we do agree with Sybesma (1999) (and many others) in associating a causative meaning with EO psych verb subjects. We simply differ regarding where this meaning comes from. Our proposal associates the causative element with the subject itself—with the fact that it originates as a Source/Cause argument of the verb and retains this  $\theta$ -role after raising to the subject position. We do not attribute causativity to a higher verb-like head.

In summary, our account of EO psych verbs appears compatible with two of the main approaches to *ba* construction licensing—affectedness and aspect. It agrees with a third line of analysis in taking the *ba* construction subject as a Causer, but disagrees with the latter regarding the source of causativity.

### 3.2.2 Explaining the *bei* facts

We also noted earlier that Mandarin EO psych verb examples like (136a) permit both long and short *bei*-passives, as in (136b) and (136c) respectively.

- (136) a. Mali jīnu-le Lisi.  
 Mary infuriate-Perf Lisi  
 ‘Mary infuriated Lisi.’  
 b. Lisi bei Mali jīnu-le.  
 Lisi BEI Mali infuriate-Perf  
 ‘Lisi was infuriated by Mali.’  
 c. Lisi bei jīnu-le.  
 Lisi BEI infuriate-Perf  
 ‘Lisi was infuriated.’

Short *bei*-passives seem to be available with all Mandarin EO psych verb examples (137). Long *bei*-passives seem to be available with Mandarin EO psych verb examples with a non-clausal subject, as shown in (138b)–(140b).

- (137) Lisi bei gandong-le/jīnu-le/wuru-le.  
 Lisi BEI touch-Perf/infuriate-Perf/insult-Perf  
 ‘Lisi was touched/infuriated/insulted.’  
 (138) a. Zhe-jian shi jīnu-le Lisi.  
 This-Cl matter infuriate-Perf Lisi  
 ‘This matter infuriated Lisi.’

- b. Lisi bei zhe-jian shi jinu-le.  
Lisi BEI this-Cl matter infuriate-Perf  
'Lisi was infuriated by this matter.'
- (139)
- a. Mali de piping jinu-le Lisi.  
Mary DE criticism infuriate-Perf Lisi  
'Mary's criticisms infuriated Lisi.'
  - b. Lisi bei Mali de piping jinu-le.  
Lisi BEI Mary DE criticism infuriate-Perf  
'Lisi was infuriated by Mary's criticisms.'
- (140)
- a. Mali turan likai jinu-le Lisi.  
Mary suddenly leave infuriate-Perf Lisi  
'That Mary suddenly left infuriated Lisi.'
  - b. \*Lisi bei Mali turan likai jinu-le.  
Lisi BEI Mary suddenly leave infuriate-Perf  
Intended: 'Lisi was infuriated by the fact that Mary suddenly left'/  
'Lisi was infuriated by Mary's sudden departure.'

The acceptability of Mandarin short *bei* passives with EO psych verbs appears straightforward under the analysis of Huang (1999). Recall that short passive *bei* is analyzed as an auxiliary-like element, selecting a VP complement whose PRO object raises and is controlled by the matrix subject. Applied to (141a) we suggest the analysis in (141b), where the Source argument of *jinu* 'infuriate' is unexpressed and PRO realizing the Experiencer argument is raised to the Spec of v carrying a valued version of the [EXP]  $\theta$ -feature. PRO is controlled by the subject *Lisi*.<sup>44</sup>

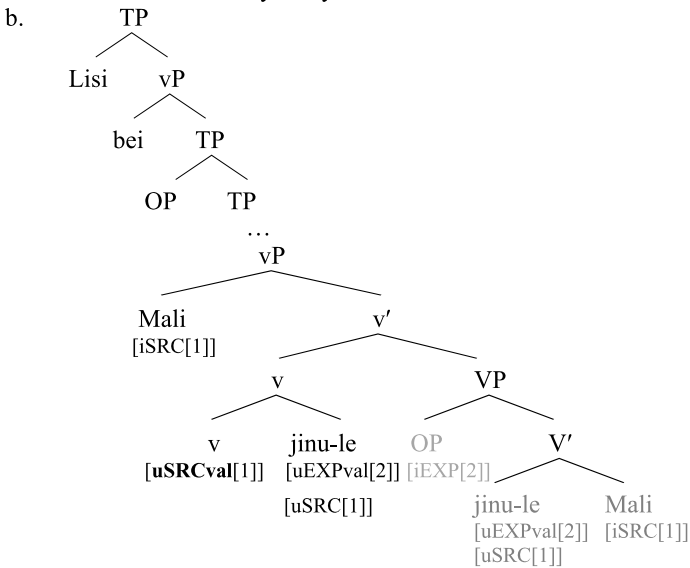
- (141)
- a. Lisi bei jinu-le.  
Lisi BEI infuriate-Perf  
'Lisi was infuriated.'
  - b.

<sup>44</sup>Larson (2014) makes the general proposal that passivization involves devaluing of a  $\theta$ -feature borne by V, with the value supplied by a little v head. Passives of standard transitives involve devaluing a [THEME] feature, with raising to a little v head valued for [TH]. Passives of EO psych verbs involve devaluing an [EXP] feature, with raising to a little v head valued for [EXP]. We assume a similar picture for Mandarin *bei* passives.

Raising from object position is unproblematic in Mandarin, hence we expect no constraints on Mandarin short *bei* passives with EO psych verbs.

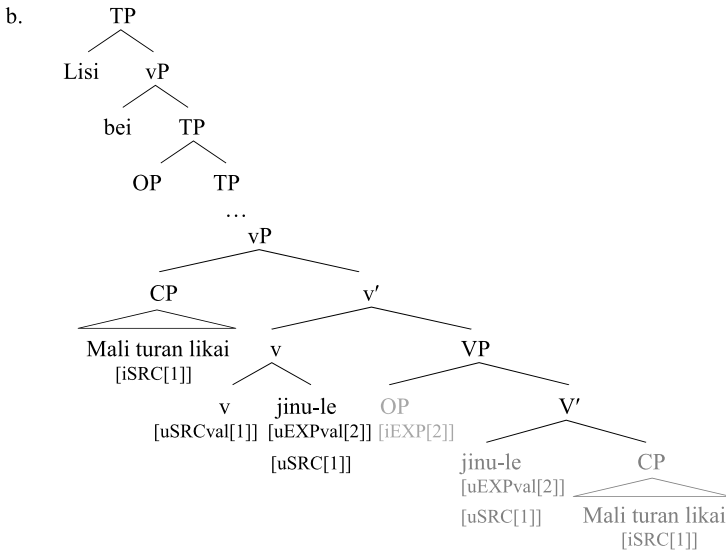
Regarding long passive *bei*, recall that for Huang (1999) the latter functions like English *tough*, selecting a clausal complement that contains an A'-moved null operator (OP) that is predicated of the matrix subject. Applied to (142a) we propose (142b), where the Source argument (*Mali*) of *jinu-le* 'infuriated' raises to Spec-vP position in the usual way for EO psych verbs (cf. 110), and where the Experiencer is realized as an empty operator (OP) that undergoes A'-movement and adjoins to the TP à la Huang (1999). Following Huang (1999) we assume that the OP is predicated of the main clause subject (*Lisi*):

- (142) a. Lisi bei Mali jinu-le.  
 Lisi BEI Mary infuriate-Perf  
 'Lisi was infuriated by Mary.'



Since the site of origin for the OP in (142b) is unproblematic for extraction, we expect long passive *bei* formation to be well-formed with EO psych verbs in the general case. This is correct, as we have noted. However we also pointed out that (140b) (repeated below as (143a)), with a clausal Source argument, is ill-formed. Our analysis would assign this example the representation in (143b).

- (143) a. \*Lisi bei Mali turan likai jinu-le.  
 Lisi BEI Mary suddenly leave infuriate-Perf  
 Intended: 'Lisi was infuriated by the fact that Mary suddenly left /  
 'Lisi was infuriated by Mary's sudden departure.'

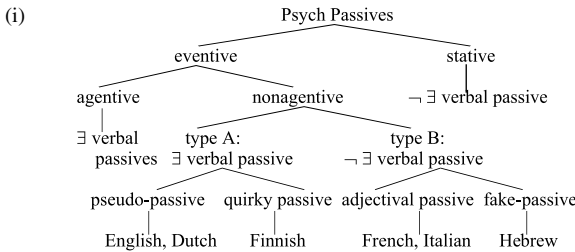


At present we have no explanation of the ill-formedness of (143a). In English many differences in DP/CP distribution can be attributed to Case (see Pesetsky 1995). However, as we have noted, Li (1985, 1990) and Tsai (1994) argue persuasively that Mandarin CPs and DPs have the same distribution with respect to Case. The relevant factor in DP/CP asymmetry in Mandarin long passives is thus unknown to us at present.<sup>45</sup>

### 4 Coming full circle: the challenge of psych verbs

We began this paper by looking at so-called Experiencer Subject (ES) and Experiencer Object (EO) psych verbs and the challenges they pose for syntactic theory. One

<sup>45</sup>Landau (2010) proposes the following crosslinguistic typology for EO psych passives:



As mentioned in footnote 9, Mandarin EO psych verbs are unambiguously eventive. Furthermore, they are ambiguous between two variants, viz., agentive and causative, as discussed in Sect. 3.2. Laudau’s typology of psych passives correctly predicts that Mandarin allows agentive EO psych verbs to appear in verbal passives (i.e., long and short *bei* passives) (see (136a–c)). However, Mandarin also allows causative EO psych verbs to appear in long and short *bei* passives (see (137)–(139)) even though EO psych verbs taking a clausal Source argument is disallowed in long passives (see (140)). Given these facts, Mandarin is neither type A nor type B language; rather, it seems to represent a third type of languages that allows eventive (agentive and non-agentive) EO psych verbs to appear in verbal passives.

was apparent inversion of arguments bearing the same  $\theta$ -roles, as observed in pairs in (144a, b). This situation raises problems for any account of structure projection in which thematic role determines either absolute structural position or relative structural prominence (UTAH, Universal Alignment).

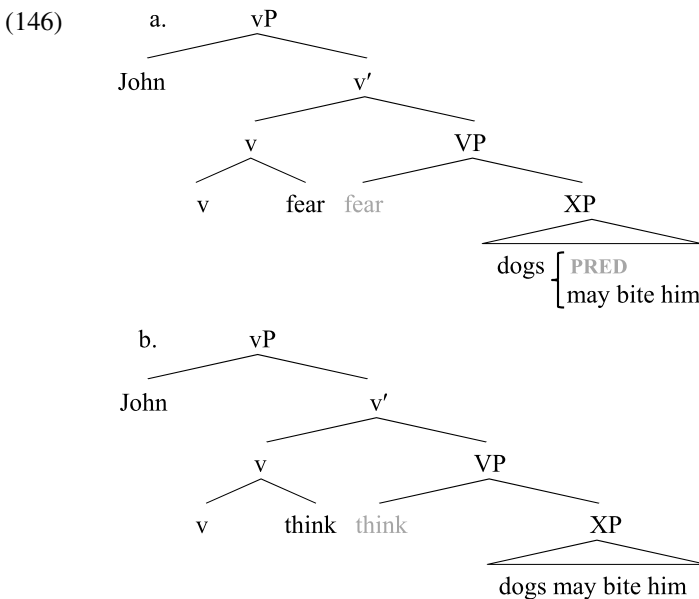
- (144) a. EXPERIENCER                      THEME                      *Experiencer Subject (ES)*  
           John                      fears    dogs.
- b. THEME                      EXPERIENCER                      *Experiencer Object (EO)*  
           Dogs    frighten    John.

A second problem was apparent backward binding in examples like (145), despite the lack of c-command between the antecedent and the reflexive:

- (145) [Rumors about himself<sub>i</sub>] enraged John<sub>i</sub>.

In this paper we have proposed structures that address both of these challenges.

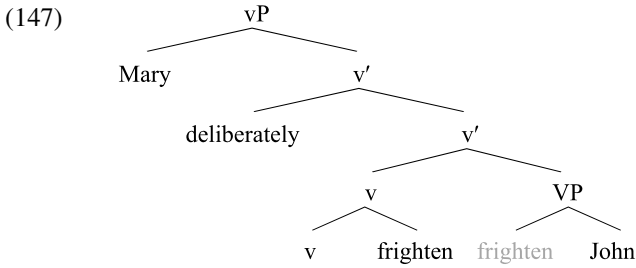
Sentences with ES psych verbs are argued to project a clausal complement, with the post-verbal nominal not functioning as a true object of ES psych verbs, but rather the subject of a clausal projection XP selected by ES psych verbs (146a); ES psych verbs thus resemble propositional attitude verbs (*think, believe, etc.*) with the difference that they allow their complement predicate to be unexpressed (PRED). A diagnostic for propositional attitude constructions is semantically intensionality in the complement clause. We have seen that (146a) displays intensionality. It should be evident that propositional attitude constructions like (146b) also display intensionality, just like (146a).



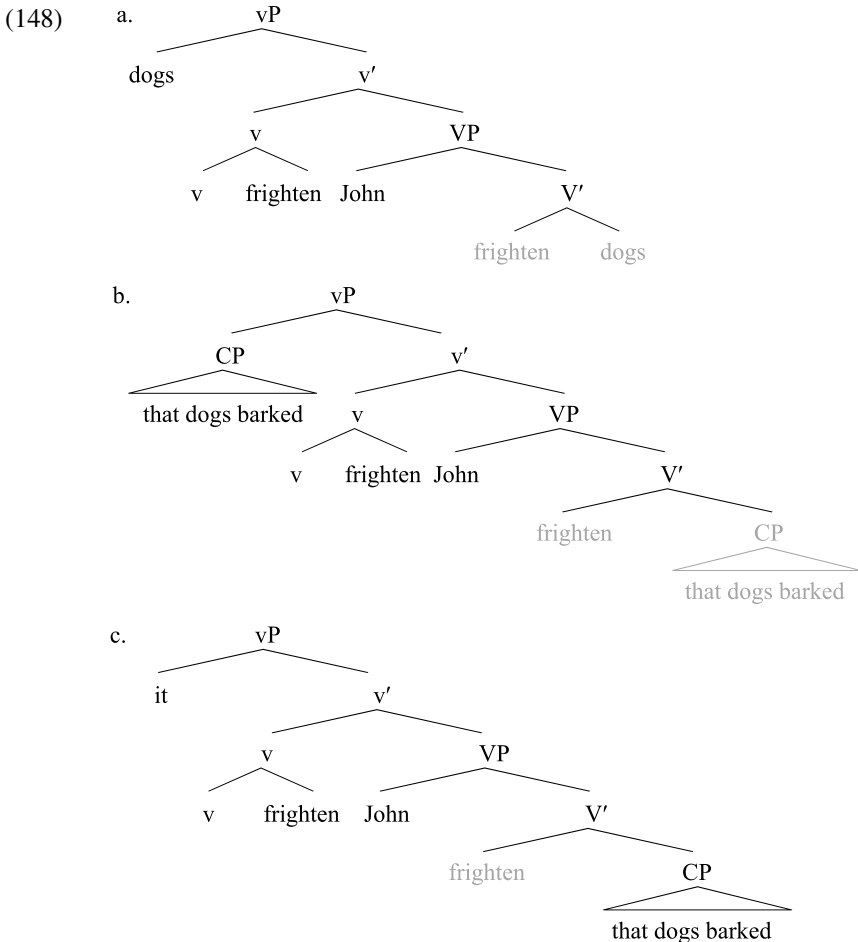
EO psych verbs receive quite a different account. In the case where the subject of the EO psych verb is interpreted agentively, e.g., when co-occurring with an agent-



oriented adverb like *deliberately*, we have proposed a simple transitive structure like (147), where *Mary* is understood as an Agent and *John* is a Theme of frightening:



In the case where the EO psych verb subject is understood non-agentively, we have proposed raising structures. Specifically, we offer (148a) for EO psych verbs with a DP subject, (148b) for EO psych verbs with a clausal (CP) subject, and (148c) for EO psych verbs with an expletive (*it*) subject and an *in situ* clause.



These proposals resolve the problem of the  $\theta$ -roles and projection in our view. In both (146a) and (146b), the subject is understood as a “cognitive agent”—someone holding a certain stance or attitude toward a proposition. In the first, John regards a certain proposition, e.g., that dogs may bite him, with an attitude of fear—he fears it may prove true. In the second he simply holds it as true—he thinks it. The term “Experiencer” seems inaccurate as a description of the common subject role determined by *fear*, *think* and *believe*; individuals do not, as normally described, ‘experience’ thought and belief. In this case we think the term “Experiencer” is simply misapplied. Correspondingly we prefer the term “Emotional Attitude Verbs” to “ES Psych Verbs”.<sup>46</sup>

In (148a–c) the subject argument (*dogs, that dogs barked*) is analyzed as an initial Source; it expresses the grounds of the psychological state associated with the verb. By contrast, the object argument is analyzed as an Experiencer, not in the sense of a cognitive agent who stands in an attitude relation toward a proposition, but instead rather like a recipient or goal.<sup>47</sup> The Source argument is understood as initiating a causal chain that terminates in John experiencing or “receiving” fear. Thus for *Dogs frighten John* to be true, it needn’t be true that John stands in a relation of fear toward any proposition about canines—that they will undertake some action or have some property. Suppose, for instance, that when John was very young he heard a dog being violently beaten; its cries and barks impressed a deep sense of fear upon him. In his adult state, dogs, and/or dogs barking, continue to invoke fear in John, even though he has no worries about dogs approaching him, assaulting him, etc. John does not fear dogs. Knowing his past, observing him in a troubled state and inquiring about the source, we have no expectation that his answer will be “dogs”. Nonetheless, dogs do elicit fear in him. Dogs are a source of fear, but they are not an object of fearful thoughts.

Our analysis of EO psych verbs also addresses the problem of backward binding in (145), basically following the strategy of Belletti and Rizzi (1988). Examples (148a) and (148b) involve derivations where the surface subject phrase containing the anaphor (DP or CP) is initially projected lower than its antecedent. Assuming a derivational approach to binding or some version of reconstruction, the necessary c-command relation can be established. The evident relation between the DP and

<sup>46</sup>Since the underlying subjects of ES psych verbs are cognitive agents—holders of propositional attitudes, and since clauses do not denote agents, it follows that clauses (overt or covert) cannot be underlying subjects of ES psych verbs. This means that we do not expect underived subjects of ES psych verbs to be intensional.

*Derived* subjects of ES psych verbs—for example, those raised by passive (i), are predicted to be intensional on the assumption that raising can extract the subject of the postulated small clause (ii). This prediction appears correct on our view. Note that plural agreement on *be* in (i) shows that it is only the subject *vampires* of the covert clauses that has raised, not the whole clause itself; compare (iii).

- (i) Vampires are feared by John.
- (ii) Vampires are feared [ \_\_\_ PRED] by John.
- (iii) [That vampires might bite him] is feared \_\_\_ by John.

<sup>47</sup>From this perspective it is non-accidental, and unsurprising that Experiencers in EO psych verb constructions are often marked with dative case, or co-occur with a dative preposition.

clausal subject arguments, plus the option of an expletive subject with a clausal source provides further support for the basic correctness of a raising analysis.

Finally, we have seen that these structures for psych verbs seem appropriate not only for English, but also for unrelated languages like Mandarin, explaining similar properties of projection and binding, and also different properties of ES and EO psych verbs in certain Mandarin constructions, such as the *ba* construction and the long and short *bei* passives.

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