Licensing Non-Culminating accomplishments in Mandarin. Experimental & theoretical evidence.

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Hamida Demirdache (LLING Nantes/CNRS)
Jinhong Liu (LLING Nantes/CNRS)
Fabienne Martin (U. Stuttgart)
Hongyuan Sun (LLING Nantes/CNRS, CERCLL/U. de Picardie Jules-Verne)
Introduction

Mandarin Chinese is reported to be a language where transitive change of state (CoS) verbs license non-culminating (NC) readings. (Tai 1984, Chief 2007, Koenig & Chief 2008, Demirdache & Martin 2015)

• Little work on licensing of NC readings in Mandarin
  “Zero-CoS reading” (Tatevosov & Ivanov’s 2009 failed-attempt)
  “Partial-CoS reading” (Tatevosov & Ivanov’s 2009 partial result)

• Contributions of this study:
  • Relevant verb classes
  • Experimental evidence (Liu in prep.) on the role of iterative adverbs in licensing NC readings
  • Contribution of the aspectual marker le
Introduction: Mandarin accomplishments

• 2 types of accomplishments in Mandarin:
  - Monomorphemic verbs (MMVs)
  - Resultative verb compounds (RVCs):

• Most Mandarin accomplishments are RVCs:
  activity (V1)+resultative complement (V2).
  ex.  că-diào ‘wipe-drop’: wipe/erase, dǎ-suì ‘hit-break’: break

• This study focuses on MMVs
  • Verbs in limited number (Lin 2004: 53);
  • MMVs allow non-culminating readings;
  • Overt resultative complements trigger event culmination.
Non-culminating CoS verbs in Mandarin
Road map

Part 1. Experimental evidence
Mandarin follow up on the experiment just presented by Angelieik with
iterative adverbs → robust evidence for NC CoS construals & the ACH

Part 2. Theoretical discussion
Distinguish 2 classes of MM verbs: depending on whether they require or
not 1 require an adverbial to license zero-CoS

• What is the source of the non-culminating readings?
• Event structure & lexical semantics of CoS-MMVs
  → Not activites, Not coerced into activity predicates on zero-CoS reading
  → Do not involve a covert try-head
• The source of the non-culminating readings: verbal le
  Altshuler 2014: Hindi simple verb-perfective as a partitive operator
  Deriving Zero CoS construals
  Further evidence: Boundedness requirement
Iterative Adverbs Increase Zero—CoS Reading of MMV

Experimental Evidence
1st Experiment:
Testing the Agent Control Hypothesis with non-culminating events in Mandarin
(2016 DGF workshop, Angeliek van Hout’s Telic 2017 talk for crosslinguistic comparison)

- **Participants**
  - 30 Mandarin native speakers

- **Full vs. Zero Change of State**
  - *Truth Value Judgment Task*

- **Agents vs. Causers**

- **8 MM CoS:**
  - suì (break)
  - kāi (open)
  - zhé (cut)
  - jiě (untie)
  - guān (close)
  - mái (bury)
  - shā (kill)
  - xī (blow out)
Testing Probes: Yes or No

Agent-Subject

Cause-Subject

1. Hǎidào  guān-le  nà shàn mén ma?  
   Pirate close-PERF that CLF door Int?  
   ‘Did the pirate close that door?’

2. Nà-zhèn fēng  guān-le  nà shàn mén ma?  
   That –CLF wind close-PERF that CLF door Int?  
   “Did the wind close that door?”
Results: MMV

<table>
<thead>
<tr>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F value</th>
<th>Pr(&gt;F)</th>
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<tbody>
<tr>
<td>SubjectType</td>
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<tr>
<td>Situation</td>
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<td>144838</td>
<td>462.26</td>
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<tr>
<td>Subject type:situation</td>
<td>1</td>
<td>3979</td>
<td>3979</td>
<td>12.70</td>
</tr>
</tbody>
</table>
Results: Mandarin MMV

- Mandarin simple verbs: Participants accepted zero-CoS significantly more often for Agent than for Causer subjects ($F=27.73$, $p<.001$).

- Confirms the role of agenthood, as predicted by the ACH, with culmination behaving as a cancellable implicature with Agents, but as an entailment with Causers.
Questions

- Why is there only 38% of acceptance for the nonculminating reading in Agent-Zero CoS condition?
- Sun’s observation: ZeroCoS reading with certain verbs is in fact acceptable only when the verb is modified by an adverbial, like haoji-ci ‘several times’.
- Can adding an iterative adverbial increase the acceptance of nonculminating readings in Agent-Zero CoS condition? (2nd experiment)
2nd Experiment:
MMV + ʰǎojǐcì “several times”

- **Participants**
  - 20 Mandarin native speakers

- **Zero Change of State**
  - Short movie clips showing events with **no** such CoS at all (as encoded by the predicate)
  - *Truth Value Judgment Task*

- **Agents vs. Causers**
  - Subject argument either an **Agent** (clown, pirate)
  - or a **Causer** (wind, explosion)
2 x 1 design varying Subject type

<table>
<thead>
<tr>
<th>Zero CoS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent</td>
<td>8</td>
</tr>
<tr>
<td>Pure Causer</td>
<td>8</td>
</tr>
</tbody>
</table>

16 testing probes (8*2)

2 types of pure causers: wind, explosion

8 MMV:

- suì (break)
- kāi (open)
- zhé (cut)
- jiě (untie)
- guān (close)
- mái (bury)
- shā (kill)
- xī (blow out)
TVJ Task

1. Watching short Movie Clip (No CoS)

2. Testing Probe: Yes or No

3. Nà-gè hǎidào guān-le hǎojīcí nà-shàn mén ma? That –CLF pirate close-PERF several times that CLF door Int?
   “Did the pirate close that door several times?”

4. Nà-zhèn feng guān-le hǎojīcí nà-shàn mén ma? That –CLF wind close-PERF several times that CLF door Int?
   “Did the wind closed that door several times?”
“Did the pirate close that door several times?”

“Did the wind close that window several times?”
## Results

**MMV + Iterative Adverb**

### Table 1. Descriptive Statistics

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean percentage of “yes” responses</th>
<th>Number of “yes” responses</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent-Zero CoS</td>
<td>0.82</td>
<td>121 (147)</td>
<td>0.12750</td>
</tr>
<tr>
<td>Cause-Zero CoS</td>
<td>0.05</td>
<td>8 (150)</td>
<td>0.12752</td>
</tr>
</tbody>
</table>
Results: MMV+Iterative Adverb

Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>subject</td>
<td>6.139</td>
<td>1</td>
<td>6.139</td>
<td>382.930</td>
<td>.000</td>
</tr>
</tbody>
</table>
Result 1: Agenthood

Participants accepted zero-CoS significantly more often for Agent than for Causer subjects (F=382.932, p<.001).

✓(Re)confirms the role of agenthood, with culmination behaving as a cancellable implicature with Agents, but as an entailment with Causers.
Agent Zero Vs. Cause-Zero

Figure 3: Adult *yes* responses across verb types

![Graph showing adult yes responses across verb types for Agent-Zero and Cause-Zero]
Agent Zero Vs. Cause Zero

- 20 adults: 82% Yes for agent-zero
- 2 types of Causers
  - Explosion (4 items): break, cut, bury, kill
  - Wind (4 items): open, close, untie, blow out
- Only 3 adults: say “yes” on the cause-zero condition
- 8/9 yes responses for 3/4 items: open, untie, close
- where the causer is the wind.
- Personification of the wind?
- No yes with ‘blow out? Accident or something to explain?
Comparing Results across experiments

- Exp 1 Agent zero (without adverb): 38% “Yes” Responses
- Exp 2 Agent zero (with adverb): 82% “Yes” Responses
- Exp 1 Cause zero (without adverb): 7% “Yes” Responses
- Exp 2 Causet zero (with adverb): 5% “Yes” Responses
Figure 4: % of “yes” across verb classes in 1st vs. 2nd experiments
Result 2 Iterative Adverbs

- Chinese adults (and children) accept more easily Agent zero CoS with an adverb such as *several times*.

- Confirms the role of *iterative adverbs* in facilitating zero CoS construals.
Theoretical discussion
2 subclasses of MM verbs

Robust experimental evidence confirming D&M’s (2015) claim that the zero-CoS reading is possible with an agentive subject, but not with a non-agentive subject, and this even when the verb is modified by an iterative adverb.

→ Distinguish 2 subclasses of verbs:
  With an agentive subject
  • Class 1: zero-CoS OK without an iterative adverbial
  • Class 2: zero-CoS out without an iterative adverbial

Why is the zero-CoS reading acceptable without an adverbial with class 1 verbs but only with an adverbial with class 2 verbs?
CoS MMVs : 2 subclasses

Class 1 (larger): \(shāo\) ‘burn’, \(rǎn\) ‘dye’, \(sī\) ‘tear’ (cf. table 1)

- Partial CoS reading: \(\rightarrow\) OK
  The CoS does not occur to any positive degree
- Zero CoS reading: \(\rightarrow\) OK
  A proper part of the lexicalized CoS occurs only

(1) Yuēhàn shāo le tā-de shū, dàn méi shāo-zháo/shāo-huǐ
  Yuehan burn PERF 3SG-DE book but NEG burn-touch/burn-destroy
  ‘Yuehan burned his book, but it didn't get burned at all/completely.

(2) Tā sī le nèi-ge běnzi, kěshì (běnzi
tái hòu) méi (wánquán) sī-huài
  3SG tear PERF that-CL notebook but notebook
too thick NEG (completely) tear-damage
  ‘She tore that notebook, but didn’t (completely) tear it up (the notebook
being too thick).’
CoS MMVs: 2 subclasses

Class 2 (smaller): *shā* `kill’, *chú* ‘get rid of (a tyrant)’, *zhāi* 'pick (a flower)'.

- Partial CoS reading → No
- Zero CoS reading → No

(3) # Tā shā le Yuēhàn, Yuēhàn hái huó zhe.
3SG kill PERF Yuehan Yuehan still alive DUR

Intended: ‘He killed Yuehan, but Yuehan is still alive.’

(4) # Qùnián, cūnmínmen chú le cūnzi lǐ nèi-ge èbà, èbà hái zài.
last.year villagers get.rid.of PERF village inside that-CL tyrant, tyrant still exist

Intended: ‘Last year, the villagers got rid of the local tyrant, but the tyrant is still there.’

[except in a situation where the tyrant came back after being expelled.]

Notes: Judgement variation: *shā* `kill’ allows zero-Cos reading (Talmy 2000)
Monomorphemic CoS: 2 subclasses

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>Class 1</th>
<th>Class 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>shāo 'burn', sī 'tear', rān 'dye' mái ‘burry’ fā ‘leaven’, zhé ‘cut’, jiē ‘unknot (a tie)',</td>
<td>shā 'kill', chú 'get rid of (the tyrant)' zhāi 'pick (a flower)' xī ‘blow out’ sui ‘break’</td>
</tr>
<tr>
<td>Partial CoS reading</td>
<td>√</td>
<td>#</td>
</tr>
<tr>
<td>Zero CoS reading</td>
<td>√</td>
<td>#</td>
</tr>
<tr>
<td>Zero CoS reading with once/several time(s)</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Zero CoS reading with causer subject (+once/several times)</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>for-adverbial</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>in-adverbial</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>
Adverbs that license NC readings
Iterative adverbs

The zero-CoS reading of verbs of class 2 is acceptable only when the verb is modified by an iterative adverbial (Demirdache & Sun 2014), like hǎojǐ-cì `several times'(5), see also Tai (1984:291).

(5) Tā shā le Yuēhàn hǎojǐ-cì, Yuēhàn hái huó zhe
3SG kill PERF Yuehan several.times Yuehan still live DUR
Literally: ‘He killed Yuehan several times, but Yuehan is still alive.’

Liu (in prep.) observes that (5) is also salvaged with yí-cì ‘once' (6).

(6) Tā shā le Yuēhàn yícì, Yuēhàn hái huó zhe
3SG kill PERF Yuehan once Yuehan still live DUR
Literally: ‘He killed Yuehan once, but Yuehan is still alive.’

De Swart (1991): adv. like once/several times are associated with a plurality condition on quantifying domains (that forbids quantifying on a set whose cardinality is known to be less than two).

(5) and (6) normally do not trigger the odd inference that death is reversible: the adv. quantifies over unsuccessful attempts.
Adverbs that license NC readings: Durative adverbs

Durative adverbials like *shí fēngzhōng* ‘for ten minutes’ (7) or *liǎng-nián* ‘for two years’ (8) also license zero-CoS readings of verbs of class 2.

(7) Nóngfū shā nèi-tóu niú shā le shí fēngzhōng
    farmer kill that-CL ox kill PERF ten minute
    niú dou méi sǐ
    ox DOU NEG die
    ‘The farmer killed the ox for ten minutes, but the ox didn’t die.’

(8) Cūnmínmen chú nèi-ge èbà chú le liǎng-nián,
    villagers get.rid.of that-CL tyrant get.rid.of PERF two-year
    èbà hái zài.
    tyrant still exist
    Literally: ‘The villagers got rid of the tyrant for two years, the tyrant is still there.’
Event structure and lexical semantics of CoS MMVs

Not activity verbs

Mandarin Cos MMVs are activity verbs conventionally associated to a result of a certain type (Talmy 2000, Chen 2016) (e.g. wash-verbs in English).
→ The result is implied (by the context), rather than entailed/encoded by the verb. Cancellation is expected.

**Counter argument:** Verbs of class 1/2 accept both the so-called counterfactual and scalar readings of chàdiǎn `almost’, see (9).

(9) a. Lùlu chàdiǎn shāo le yì-běn shū
    Lulu almost burn PERF one-CL book
    ‘Lulu almost burned a book.’
    [Lulu didn’t put it into fire.] OR [Lulu burned the book, but not the whole book.]

  b. Nóngfū chàdiǎn shā le nèi-tóu niú
    farmer almost kill PERF that-CL ox
    ‘The farmer almost killed the ox.’
    [The farmer chose another ox after hesitation.] OR [The ox survived from an event that could lead to its death.]

Conclusion: verbs of class 1/2 are causative accomplishments.
Event structure and lexical semantics of CoS MMVs

Not coerced into an activity verb

Verb + adverbial $>$ coerced into an activity?

‘Subtractive coercion’ hypothesis: CoS MMVs allow the zero-CoS reading iff they are reinterpreted (through coercion) into activity predicates. 
→ The coerced verb does not entail a CoS anymore (in Bott’s 2010 terms, they are ‘subtracted’ of their culmination point).

Counter Argument:
Accomplishments modified by once are still accomplishments

Pinon (2005): denying culmination is possible only with telic predicates. 
→ “(not) completely” (adv. of completion) is odd with atelic predicates
(10) He ate his cereals, but not completely.
(11) He ate cereals, #but not completely.

Accomplishment verb keeps its accomplishmenthood, even when modified by ‘possibly coercing’ adverbials, such as “for ten minutes” (12).
(12) He ate his cereals for ten minutes, although not completely.
Event structure and lexical semantics of CoS MMVs

*Not coerced into an activity verb*

Mandarin accomplishment MMVs keep their accomplishmenthood even when modified by adverbials like *yīcì* ‘once’, see (13) below:

(13) Lùlu shāo guo nèi-xiē shùyè (yīcì), suīrán méi quán shāo
    Lulu burn EXP that-Cl.Pl leaf once although NEG complete burn
    ‘Lulu burned those leaves (once), although not completely.’

(14) Lùlu shāo guo (yīcì) shùyè, #suīrán méi quán shāo
    Lulu burn EXP once leaf although NEG complete burn
    ‘Lulu burned leaves (once), #although not completely.’

Conclusion: **verbs of class 1/2 are not coerced into activities**
Event structure and lexical semantics of CoS MMVs
No covert try-head

Alternative account: a (silent) voice head meaning ‘try’

\[ \text{shā ‘kill’ = chángshì [try] shā} \]

The zero-CoS reading comes from the fact that try V does not entail V.

- Perfective sentences with causative change of state verbs entail that the causation event started (i.e. a causing action of the relevant type must have started), even under the zero-CoS reading;
- The try-counterpart of these sentences does not carry this entailment; that is, it is compatible with a situation where the agent has not started to perform a causation event of the relevant type. (See Grano 2011)
Event structure and lexical semantics of CoS MMVs
No covert *try*-head

In a situation where Lulu is unknowingly paralysed in her bed and only *mentally* tried to kill a cockroach (without managing to do any movement), (15) below is false, but its overtly conative counterpart (16) is true.

(15) Lùlu shā le yí-cì nèi-zhī zhāngláng
    Lulu kill PERF one-time that-CL cockroach
    ‘Lulu killed the cockroach once.’

(16) Lùlu shì zhe shā le yí-cì nèi-zhī zhāngláng
    Lulu try DUR kill PERF one-time that-CL cockroach
    ‘Lulu tried to kill the cockroach once.’

Zero-CoS reading of accomplishments require *more than a try* (but less than a success), cf. Martin 2015
-- no covert conative head involved in their semantics.
-- The English *try* is a misleading translation of CoS MMVs under the zero-CoS reading.
The source of non-culminating readings: the aspectual marker *le*

Aspectual marker *le* in Mandarin is most commonly referred to as a perfective marker (Wang 1965; Chao 1968; Smith 1991, Sybesma 1999, Lin 2006, Sun 2014, a.o.),

Many authors distinguish

- verbal *le*: perfective
- sentence final *le*: inchoative --> “currently relevant state”

(Li & Thompson 1981:238, Paul 2015)

Concerned here only with verbal -*le*, which we take to be a perfective marker.

Drawing a parallel between MMV-*le* and the Hindi Simple Verb-perfective (SV-PFV<sub>Hi</sub>) on Altshuler’s 2014 account,

→ argue that the source of NC construals in Mandarin is MMV-*le*

→ Advantage: crosslinguistic difference between Mandarin & English does not lie in the lexical meaning of CoS verbs (e.g. of burn or kill) across languages.
Altshuler 2014: Simple Verb-perfective in Hindi (SV-PFV$_{HI}$) as a partitive operator

SV-PFV$_{HI}$ is a partitive operator, combining with a VP and requiring that there be an event $e'$ in the world of evaluation $w^*$ that is a stage of a VP-event $e$ in a ‘near enough’ world $w$.

Differs from the Progressive in one core respect:

(17) Prog requires that $e'$ be a proper subpart of $e$ ($e' \subset e$)

(18) SV-PFV$_{HI}$ merely requires that $e'$ be a subpart of $e$ ($e' \subseteq e$)

$e' = e \rightarrow$ culminating CoS reading

$e' \subset e \rightarrow$ nonculminating CoS reading

Applied to an accomplishment VP does not lead to a culmination entailment assuming that accomplishment events have at least two stages.
Deriving zero CoS construals

Assuming that verbal *le* is a partitive operator requiring that $e'$ be a subpart of $e$ ($e' \subseteq e$)

→ Zero CoS construal arises when $e'$ is an *event part that excludes any change of state*.

→ Correctly predicts that perfective sentences with CoS verbs:

i. require *more than a try*: entail that the causation event started (that a proper causing action of the relevant type must have started) even under the zero-CoS reading [See discussion of (15) vs (16) No covert *try*-head slide]

ii. But even a very minimal initial proper event part suffices to make a telic *LE* sentence true: e.g. (19) will be true as soon as the hair dresser starts applying the dye on the hair.

(19) Fàxíngshī rǎn le tā de tóufa
hair.dresser dye PERF 3SG DE hair
‘The hair-dresser dyed her hair.’
Further evidence:  
The boundedness requirement

Although SV-$PFV_{HI}$ allows NC construals (20), it is incompatible with the Prog (21):

(20) maïne aaj apnaa kek khaayaa, (aur baakii kal khaũũgaa).
I.ERG today mine cake eat.PFV and remaining tomorrow eat.FUT
‘I ate my cake today, (and I will eat the remaining part tomorrow).’ (Singh 91)

(21) maayaa-ne biskuT-kokhaa-yaa # aur use ab tak khaa rahii hai
May-ERG cookie-ACC eat-PFV and it still eat PROG be PRS
Intended: `Maya ate a cookie, and is still eating it’ (Altshuler 2014:759)

→ Why? Because SV-$PFV_{HI}$ imposes a boundedness requirement: e’ must be a bounded event part (did not develop further in the world of evaluation, possibly because it was completed)

→ Same contrast attested with Mandarin LE:

(22) Lùlu kāi-le nà-shàn mén, dànshì mén gēnbĕn méi kāi.
Lulu open-PERF that-CL door but door at all not open
‘Lulu opened the door, but it didn’t move at all.’

(23) Lùlu kāi-le nà-shàn mén, # érqië hái zài kai
Lulu open-PERF that-CL door and still PROG open
‘Lulu opened that door, and she is still opening it.’
Conclusion

Q. What is the source of non-culminating CoS readings in Mandarin?
The perfective marker: verbal LE

Welcome implication:
Mandarin Class 1/2 verbs are **standard causative verbs**
No differences in meaning between Mandarin CoS verbs such as *kill* or *burn* and their English counterparts

Proposal explains why Mandarin sentences with perfective CoS verbs require *more than a try*, but even a *very minimal initial event part* suffices to make them true

Remaining question:
Why do iterative/durative advs increase the acceptability of NC CoS?
Rough illustration: by *e.g.* coercing atomic events (‘pick’) into events with stages/event parts. *To be continued.*