A FORCE-THEORETIC APPROACH TO MANDARIN SINGLE-CLAUSE RESULTATIVE CONSTRUCTIONS*

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1. Introduction

Resultative Constructions (hereafter RCs) are found in quite a few languages. In the English example (1a), the waiter’s wiping serves as a causal event for the table’s becoming clean. To express the same meaning, Mandarin uses a single clause with a ‘V₁ - V₂’ predicate\(^1\), as exemplified in (1b)\(^2\). In the complex predicate, V₁ usually represents a causal action, while V₂ can be a result state or action. Other ‘V₁ - V₂’ examples include da-shang ‘hit-injured’, ma-ku ‘scold-cry’, etc.

(1) a. The waiter wiped the table clean.
   b. fuwusheng ca-ganjing-le zhuozi.
      waiter wipe-clean-PERF table
      ‘The waiter wiped the table clean.’

Like their English counterparts, Mandarin RCs also face the problem of theta-role assignment. Li (1998) points out that sentence (2) with the complex zhui-lei ‘chase-tired’ is ambiguous in three different interpretations, with each embodying distinct theta-role assignments, as shown in Table 1.

(2) Zhangsan zhui-lei-le Lisi.
    Zhangsan chase-tired-PERF Lisi
    Reading A: ‘Zhangsan chased Lisi so that Lisi got tired.’
    Reading B: ‘Lisi chased Zhangsan so that Lisi got tired.’
    Reading C: ‘Zhangsan chased Lisi so that Zhangsan got tired.’

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\(^1\)The verbs in ‘V₁-V₂’ encompass both action verbs, states of being, and adjectives used predicatively. Note that Mandarin RCs can also surface in the form of ‘V-de + clause’ (i.e. not single-clause), as exemplified below. Since this paper mainly deals with single-clause resultative constructions, later mentions of Mandarin RCs only refer to RCs with ‘V₁-V₂’ predicates, unless indicated otherwise.

(i) ta qi-de wo bu xiang xin le.
   he annoy-DE me not want write letter SFP
   ‘He annoyed me so much that I didn’t want to write the letter.’

\(^2\)Abbreviations: DE = post-verbal resultative marker, Lv = light verb, PASS = passive marker, PERF = perfective marker, POSS = possessive marker, SFP = sentence-final particle.

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<table>
<thead>
<tr>
<th>Reading</th>
<th>External Argument: Zhangsan</th>
<th>Internal Argument: Lisi</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Agent of $V_1$ &amp; Experiencer of $V_2$</td>
<td>Patient of $V_1$</td>
</tr>
<tr>
<td>C</td>
<td>Patient of $V_1$</td>
<td>Agent of $V_1$ &amp; Experiencer of $V_2$</td>
</tr>
<tr>
<td>B</td>
<td>Agent of $V_1$</td>
<td>Patient of $V_1$ &amp; Experiencer of $V_2$</td>
</tr>
</tbody>
</table>

Table 1. Theta-role assignments in different interpretations of sentence (2)

Considering the complexity, there arises the question of how they surface with the same argument structure. In addition to the varied interpretations, sentence (2) under Reading B involves reversed theta-role assignments, with Agent placed in object position and Patient in subject position (Huang et al., 2009). The convoluted theta-role assignment is observed more apparently in (3)$^3$, which seems to allow a word order as *jiu he wo* ‘wine drink I’.

(3) na ping jiu he-zui-le Lisi.
that bottle wine drink-drunk-PERF Lisi
‘That bottle of wine got Lisi drunk.’

Some may argue that ‘wine’ appears in subject position as the causer for *Lisi*’s drunken state, rather than an agent. Following this line, *yumen-de xinqing* ‘the depressed feeling’ should be allowed in the same position, since ‘depression’ can also be a causer for *Lisi*’s intoxication, as evidenced in sentence (4a) with the causative verb *shi* ‘make’. Conversely, sentence (4b) with ‘the depressed feeling’ as its subject, turns out to be unacceptable. This gets us to wonder about the constraint on external arguments in Mandarin RCs?

(4) a. yumen-de xinqing shi Lisi he-zui-le.
depressed-POSS mood make Lisi drink-drunk-PERF
‘The depressed feeling made Lisi drunk from drinking.’

b. *yumen-de xinqing he-zui-le Lisi.
depressed-POSS mood drink-drunk-PERF Lisi
Intended reading: ‘The depressed feeling made Lisi drunk from drinking.’

This paper takes a force-theoretic approach (Copley and Harley, 2015) to Mandarin resultative constructions, attempting to answer the problems raised above. The rest of the paper is organized as follows: section 2 reviews Sybesma’s (1999) syntactic approach and Li’s (1990) lexicalist approach to Mandarin RCs, and introduces the force-theoretic framework to be applied. Section 3 elaborates on how the framework is applied to Mandarin RCs and justifies the use of this framework. In section 4, I address the aforementioned problems and discuss implications following the force-theoretic framework. Section 5 presents a summary and some concluding remarks.

$^3$Note that the two component verbs *he* ‘drink’ and *zui* ‘drunk’ are not derivationally related in Chinese.
2. Theoretical background

2.1 Previous accounts of Mandarin resultative constructions

This section presents a general picture of how the Mandarin resultative constructions with ‘V₁-V₂’ complexes have been handled, including a syntactic approach from Sybesma (1999) and a lexicalist approach from Li (1990, 1998). Sybesma proposes an analysis of Mandarin ‘V₁-V₂’ RCs on a par with the English counterparts, by including V₂ and its argument (also the internal argument of the complex) in a small clause, as in (5). He agrees with Hoekstra (1992: 160) in that the resultative V₂ functions to ‘turn a non-telic predication into a telic one, by specifying the state which terminates the event’. For example, the underlying structure of (1b) contains a small clause \([_{\text{SC}} \text{table clean}]\). Immediately above the small clause is a projection of Extent Phrase, which itself serves as the complement of V₁. Apparently, V₂ within the small clause needs to undergo head movements and incorporate with the matrix verb V₁ to derive the surface form.

(5) 

Li (1990) provides a lexicalist account for Mandarin RCs, realizing the complex theta-role assignments mentioned in section 1. In order to derive the theta-grid for a ‘V₁-V₂’ complex, theta-roles of V₁ identified with those of V₂ are first merged together to be assigned to a single argument. This manages to reduce the number of required arguments to a maximum of two and circumvent violations of theta-criterion (Chomsky, 1981), which requires that each argument bears one and only one theta-role. Then head-feature percolation comes in to ensure the theta-roles of the complex follow the same thematic prominence as the head verb (i.e. V₁ of the complex). In the case of \(zhui\)-\(lei\) in (2), its component verbs have the following theta-grids as in (6), with V₁ assigning two theta-roles and V₂ assigning only one. Following this, the three readings of (2) are explained as different identification possibilities, as presented in Table 2, with identification symbolized by ‘ = ’.

(6) \(\theta\)-grids for \(zhui\) and \(lei\):

\(zhui\) ‘chase’: < agent < patient >>
\(lei\) ‘tired’: < experiencer >
Table 2. Varied theta-identifications for different readings of sentence (2)

<table>
<thead>
<tr>
<th>Reading</th>
<th>External Argument</th>
<th>Internal Argument</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Agent of V₁ = Experiencer of V₂</td>
<td>Patient of V₁</td>
</tr>
<tr>
<td>B</td>
<td>Patient of V₁</td>
<td>Agent of V₁ = Experiencer of V₂</td>
</tr>
<tr>
<td>C</td>
<td>Agent of V₁</td>
<td>Patient of V₁ = Experiencer of V₂</td>
</tr>
</tbody>
</table>

Assuming that V₁ is the head, theta-grid for zhui-lei needs to follow the same thematic hierarchy as zhui. However, this can only account for Reading A and C, with Agent of V₁ serving as the external argument of ‘V₁-V₂’. In order to tackle the apparent violation of thematic hierarchy in Reading B, Li (1990) introduces causative structures with Causer and Causee; Causer is held responsible for putting Causee in a specific state or into action. It is stipulated that the causative hierarchy < Causer < Causee >> is able to override the thematic hierarchy percolated from head verbs. Following this, Patient of V₂ and Agent of V₁ in Reading B are assigned the new roles of Causer and Causee respectively, and are thus not subject to V₁’s (zhui) thematic hierarchy. The introduction of causation structures does provide an extended explanatory scope, but it also renders the approach less integrated.

The arguments above demonstrate that neither a syntactic nor a lexicalist approach can satisfactorily solve the problems brought up in section 1. In the next section, I will introduce a syntax-semantics interface theory of event structures, which is also the theoretic basis of this study.

2.2 Introducing the force-theoretic framework

The force-theoretic framework (Copley and Harley, 2015) originates as an alternative account for Accomplishment verbs, e.g. open in John opened the door. Traditional approaches take accomplishment verbs as composed of two sub-events chained together in a causal relationship, e.g. the causing sub-event \( e₁ \) John’s opening and the result sub-event \( e₂ \) the door’s being open. This chain is represented as \( \exists e₁ \exists e₂ : e₁ \text{ CAUSE } e₂ \). When it comes to a sentence like (7), the two sub-event analysis runs into problems, because no result sub-event \( e₂ \) occurred.

(7) Mary was painting the dresser black, but she didn’t finish.

In order to account for the non-culmination in (7), Copley and Harley (2015) develop a syntax-semantics interface theory of Accomplishments which draws on the notion of force. According to them, the verb open is understood as a force representing the energy input from a force producer; the force is inherently defeasible and thus entails no necessary effect. Semantically, forces are realized as a new type, \( f(orce) \): \( <s,s> \), denoting the function from an initial situation \( (S₀) \) to a final situation \( (S₁) \) that occurs if nothing external intervenes. In the sentence John opened the door, \( S₁ \) is encoded as a small clause [sc the door open], and \( S₀ \) is the situation immediately before \( S₁ \) with the door’s readiness to be open. This sentence has a basic structure as in (8), with a Lv (become) representing the force leading to situation changes. The external argument John is ”introduced by a Voice head, which takes a predicate of forces as its complement and returns a function
from individuals to forces” (Copley and Harley, 2015: 125).

(8)

The force-theoretic framework is also applied to compositions of other Vendlerian eventuality types, based on the underlying conception that dynamic predicates are forces while stative ones are situations. Such a treatment successfully captures non-culminated cases of accomplishment verbs.

2.3 Why a force-theoretic approach to Mandarin RCs

In Mandarin, accomplishment verbs may take the form of ‘V₁-V₂’ resultative complexes. For example, open has a Mandarin counterpart as da-kai, which literally means ‘hit-open’, although da here has lost its semantic meaning and only functions to bring the new state ‘open’. Similar complexes include da-po ‘hit-broken’, da-bai ‘hit-defeated’, etc. In the same way that open is decomposed in (8), complexes like da-kai can be accounted for by the force-theoretic framework as well, with da an overt representation of the Lv (become).

Mandarin resultative constructions also show semantic compatibility with the force-theoretic framework. On one hand, V₁ tends to encode complex manners of force exertion. For instance, in zhuang-huai ‘knock-broken’ and ya-huai ‘press-broken’, different manners of force exertion (‘knock’ and ‘press’) are involved, despite the common result state ‘broken’. On the other hand, V₂ can represent different consequences following the same force exertion, as witnessed in the contrast between zhuang-huai ‘knock-broken’ and zhuang-kai ‘knock-open’. All these suggest that the force-theoretic framework may be a promising approach to Mandarin RCs.
3. A force-theoretic approach to Mandarin RCs

3.1 An application to Mandarin RCs

With a recognition of the problems that previous accounts fail to address, this study approaches Mandarin RCs from their conceptual basis. Resultative constructions are characterized by causing actions and result states/actions. When a resultative complex ‘$V_1 - V_2$’ is understood from the perspective of Copley and Harley (2015), it necessarily involves (maybe at least) two distinct situations, an initial situation $S_0$ and a final situation $S_1$. The two situations are associated by the cause-and-effect relationship, which manifests itself in a driving force for the situation change. The force is exerted from force producer (i.e. causer in causing action) to force recipient (i.e. the affected entity). In sentence (1b), which I repeat as (9), it has the conceptual interpretations as in (10).

(9) fuwusheng ca-ganjing-le zhuozi.  
waiter wipe-clean-PERF table  
‘The waiter wiped the table clean.’

(10) Conceptual interpretations in sentence (9):
- $S_0$: the table’s readiness to be clean.
- $S_1$: the table is clean.
- Force producer: waiter.
- Force recipient: table.

Moreover, $V_2$ clean signifies the resultative situation $S_1$, while $V_1$ wipe describes the manner in which the force is exerted. Sentence (9) thus has the interpretation that the waiter causes the table to become clean through his wiping. Following the exemplar structure in (8), sentence (9) is formally represented in (11) with an addition of one intermediate projection.

Small clauses situate the new situation the table is clean; Lv (become) is a force that evokes the situation change. Note that ‘$V_1-V_2$’ resultative complexes are interpreted within a lexical-decomposition syntax, so that $V_1$ and $V_2$ are understood not as independent verbs, but as verb roots. In that case, $V_1$’s root $\sqrt{\text{WIPE}}$ is not a force in itself, but serves as a manner modifying the force. Structurally, the manner $\sqrt{\text{WIPE}}$ adjoins to the predicate of force vP, while semantically, $\sqrt{\text{WIPE}}$ and vP (become) are combined by Predicate Modification. After that, an empty voice head comes in and introduces the force producer ‘waiter’.

Copley and Harley (2015) also hint on the morphological derivation of complex predicates. In the case of ca-ganjing ‘wipe-clean’, $V_2$’s root $\sqrt{\text{CLEAN}}$ firstly undergoes head-movement to Lv (become); the intermediate outcome $[\sqrt{v^0}]v^0$ then combines with $\sqrt{\text{WIPE}}$ via m-merger (Matushansky, 2006), deriving the surface form ca-ganjing.
Generally, Mandarin sentences with ‘$V_1$-$V_2$’ resultative complexes are reconceptualized as such: $DP_1$ (external argument) exerts a force to $DP_2$ (internal argument), leading to a new situation $S_1$ for $DP_2$. That is, external and internal arguments represent force producers and force recipients respectively. $V_1$ can describe the manner of force exertion, whereas $V_2$ denotes the resultative state or action that happens to $DP_2$, the affected entity. The mapping between conceptual interpretations and linguistic representations is presented in the following figures.

3.2 Justifying the force-theoretic approach to Mandarin RCs

The conceptual structure for Mandarin RCs provides us with the following predictions. Internal Arguments (hereafter IA) are the affected entities in result situations represented by $V_2$, which predicts the dependence of IA and $V_2$. External arguments (hereafter EA) exert
forces in manners encoded in $V_1$, so that $EA$ and $V_1$ are necessarily involved in causing action with semantic relevance. In this section, we attempt to verify $EA$'s relevance to $V_1$ and $IA$'s relevance to $V_2$.

First imagine a scenario that a famous singer sang a sad song so that the audience were moved to tears. Causing action and result situation in this scenario are presented as follows.

(12) Causing action: the singer sang a song.

$$\text{NP}_1 \ V_1 \ \text{NP}_2$$

Result situation: the audience cried.

$$\text{NP}_3 \ V_2$$

It is demonstrated that $V_1$ and $V_2$ are related to causing action and result situation respectively. Moreover, three NPs appear in this scenario, with two in causing action and one in result situation. The scenario allows us to test the predictions concerning $EA$ and $IA$ by checking which specific NPs can appear in external or internal argument position. The test sentence adopts the resultative complex $\text{chang-ku}$ ‘sing-cry’, comprised of $V_1$ ‘sing’ and $V_2$ ‘cry’.

(13) $\text{EA} \ \text{chang-ku} \ \text{IA}$.

When 3 NPs are placed in 2 different slots, there are 6 arrangement possibilities. Table 3 presents the acceptability results of each arrangement possibility.

<table>
<thead>
<tr>
<th>External Argument</th>
<th>Internal Argument</th>
<th>Judgement</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) $\text{NP}_1$</td>
<td>$\text{NP}_2$</td>
<td>$\times$</td>
</tr>
<tr>
<td>(b) $\text{NP}_1$</td>
<td>$\text{NP}_3$</td>
<td>$\checkmark$</td>
</tr>
<tr>
<td>(c) $\text{NP}_2$</td>
<td>$\text{NP}_1$</td>
<td>$\times$</td>
</tr>
<tr>
<td>(d) $\text{NP}_2$</td>
<td>$\text{NP}_3$</td>
<td>$\checkmark$</td>
</tr>
<tr>
<td>(e) $\text{NP}_3$</td>
<td>$\text{NP}_1$</td>
<td>$\times$</td>
</tr>
<tr>
<td>(f) $\text{NP}_3$</td>
<td>$\text{NP}_2$</td>
<td>$\times$</td>
</tr>
</tbody>
</table>

Table 3. Acceptability results of different NPs in EA/IA positions

It is found that only arrangement (b) and arrangement (d) are compatible with the scenario in (12). The internal arguments of both arrangements are $\text{NP}_3$ in result situation; any arrangement with $IA$ position occupied by NPs from causing action is ungrammatical or conveys a meaning incompatible with the required scenario. Therefore, $IA$ is only associated with the result situation represented by $V_2$. As for the $EA$ position, either $\text{NP}_1$ or $\text{NP}_2$ can appear as an appropriate subject in (13), though $\text{NP}_3$ is not allowed here. Since $\text{NP}_1$ and $\text{NP}_2$ are both involved in causing action where forces are exerted in a manner encoded in $V_1$, $EA$'s relevance to $V_1$ is also justified.

In sentence (9), the external argument ‘waiter’ is associated with $V_1$, but the internal argument ‘table’ is ambiguous in terms of its relevance, because both causing action and
result situation here involve the entity ‘table’, as shown in (14). Does this mean that internal arguments are also relevant to \( V_1 \)?

(14) Causing action: the waiter wiped the table.

\[
\text{NP}_1 \quad V_1 \quad \text{NP}_2
\]

Result situation: the table was clean.

\[
\text{NP}_3 \quad V_2
\]

In Scenario (14), there are only two NPs, with ‘the table’ overlapping in causing action and result situation, that is, \( \text{NP}_2 = \text{NP}_3 \). Basically, there is no violation of EA’s and IA’s respective relevance, with IA zhuoz ‘table’ still the affected entity in result situation \( V_2 \). IA’s seeming relevance to \( V_1 \) or causing action arises from the special case where one entity in causing action happens to be the affected entity. This analysis echoes Huang et al. (2009), which attributes the seeming relevance to world knowledge: a table that becomes clean has to be the one that is wiped. In summary, IA’s seeming connection with \( V_1 \) is only coincidental, while EA’s relevance to \( V_1 \) and IA’s relevance to \( V_2 \) are necessary.

4. Explain the unresolved problems

4.1 Reversed theta-role assignments and constraints on external arguments in RCs

Following the current framework, it is not a problem for Mandarin RCs to involve reversed theta-role assignments, because arguments in resultative constructions are not interpreted in relation to their component verbs. In sentence (15) replicated from (3), the external argument ‘wine’ appears in the causing action and is relevant to \( V_1 \); the internal argument Lisi is the affected person in the new situation. Accordingly, the two arguments take the roles of force producer and force recipient respectively. Jiu ‘wine’ is a force producer in the sense that it can exert an influence and intoxicate the drinker. The influence is conceptually represented as a reaction force from ‘wine’ to ‘drinker’, in contrast to the force exerted by ‘drinker’ to ‘wine’. As exemplified in (16), causing actions do not directly encode reaction forces, but they are still important for exertion of reaction forces in two aspects. First, reaction forces happen at the same stages as causing actions; second, causing actions provide initiators (e.g. ‘drinker’) for exertion of reaction forces.

(15) na ping jiu he-zui-le Lisi.
    that bottle wine drink-drunk-PERF Lisi
    ‘That bottle of wine got Lisi drunk.’

(16) Causing action: Lisi drank wine.

\[
\text{NP}_1 \quad V_1 \quad \text{NP}_2
\]

Result situation: Lisi was drunk.

\[
\text{NP}_3 \quad V_2
\]
The seeming reversed theta-role assignments arise from forces exerted from Themes (or Patients) to Agents, causing changes of states to Agents. Moreover, force producers are not necessarily volitional Agents; certain inanimate objects can also produce forces as long as they are ‘teleologically capable’ of generating the energy needed to introduce situation changes (Folli and Harley, 2008).

Back to the question why causers like ‘depression’ cannot replace ‘wine’ as external arguments in (15), we have better answers. Structurally, external arguments in Mandarin RCs require relevance to causing actions and to V₂, but ‘depression’ as a causer is not involved in the causing action in (16). Conceptually, such a replacement is unacceptable because ‘depression’ does not possess the teleological capacity to get one drunk. Considering the two aspects, ‘depression’ cannot serve as an alternative external argument for the complex he-zui ‘drink-drunk’ in (15).

4.2 Multiple interpretations

This section attempts to explain the three different interpretations of sentence (2) (replicated as (17) below) based on the force-theoretic framework. As mentioned before, each interpretation embodies distinct theta-role assignments, which are understood from the component verbs of the complex zhui-lei ‘chase-tired’. Under the current framework, however, external arguments and internal arguments in Mandarin RCs are assigned the roles of force producers and force recipients respectively. In both Reading A and Reading B, EA Zhangsan is the force producer and IA Lisi is the force recipient. Despite this, the two readings involve divergent scenarios, as witnessed in (18).

(17) Zhangsan zhui-lei-le Lisi.
Zhangsan chase-tired-PERF Lisi

Reading A: ‘Zhangsan chased Lisi so that Lisi got tired.’
Reading B: ‘Lisi chased Zhangsan so that Lisi got tired.’
Reading C: ‘Zhangsan chased Lisi so that Zhangsan got tired.’

<table>
<thead>
<tr>
<th>Reading A:</th>
<th>Reading B:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ NP₁ \quad V₁ \quad NP₂ ]</td>
<td>[ NP₁ \quad V₁ \quad NP₂ ]</td>
</tr>
<tr>
<td>Result situation: Lisi was tired.</td>
<td>Result situation: Lisi was tired.</td>
</tr>
<tr>
<td>[ NP₃ \quad V₂ ]</td>
<td>[ NP₃ \quad V₂ ]</td>
</tr>
</tbody>
</table>

Causing actions in both readings involve the same force manner ‘chase’, but differ in who chased who. In other words, the affected person Lisi can get tired either because Lisi was being chased or because Lisi was chasing. The former case conforms to Reading A, where the affected entity NP₃ coincides with the chasee NP₂ (NP₂ = NP₃). Zhangsan is the chaser and meanwhile the force producer that caused Lisi to run and get tired. In the latter case with Lisi as the chaser, the chasee Zhangsan can run continuously and get the chaser tired finally, making Lisi the affected person (NP₁ = NP₃). This case is consistent with Reading
B, and satisfies respective relevance conditions of EA and IA. Moreover, the latter case also involves reversed theta-role assignments, since the patient (chasee) is in a subject position.

It seems that either NP in a causing action can serve as a force producer in relation to its relevant result situation. In the case of sentence (17) under Reading B, the chasee exerted a conceptual force to the chaser, causing the chaser tired. But for the same causing action ‘Lisi chased Zhangsan’, it is also likely that the chaser Lisi produced a force leading to Zhangsan’s tiredness, although this relevant scenario involves a different result situation ‘Zhangsan was tired’ and produces a different sentence (19). Likewise, the casing action ‘Lisi drank wine’ in (16) may also bring in a new situation for wine. The prediction is borne out by sentence (20), with a different result situation: ‘the wine was unavailable’.

(19) Lisi zhui-le-le Zhangsan.
   Lisi chase-tired-PERF Zhangsan
   Intending reading: ‘Lisi chased Zhangsan so that Zhangsan got tired.’

(20) Lisi he-wan-le na ping jiu.
   Lisi drink-finished-PERF that bottle wine
   ‘Lisi drank up that bottle of wine.’

Sentence (15) and sentence (20) involve the same causing action, though with different result situations. They represent applications of different forces embodied in the same causing action.

When it comes to Reading C, there seems to be a violation of IA’s relevance to result situation represented by V_2. As in (21), IA Lisi is not involved in the result situation. Moreover, the only NP, i.e. Experiencer of the result, is in an EA position.

(21) Reading C:
   Causing action: Zhangsan chased Lisi.
   Result situation: Zhangsan was tired.

This paper, however, does not agree with the aforementioned violation, as Lisi in Reading C is not a real argument due to the following reasons. First, Lisi does not allow passivization or topicalization, as evidenced in (22).

(22) a. *Lisi bei Zhangsan zhui-le-le.
   Lisi PASS Zhangsan chase-tired-perf
   Intended reading: ‘Lisi was chased by Zhangsan so that Zhangsan got tired.’

   Lisi, Zhangsan chase-tired-perf
   Intended reading: ‘As for Lisi, Zhangsan chased him and got tired.’
Second, non-affected entities are only allowed to supersede a limited number of Mandarin resultative complexes, including chi-bao ‘eat-full’, he-zui ‘drink-drunk’, and those in the form of V₁-lei ‘tired’, etc. Even for these complexes, not any DP is allowed, as seen in the contrast in (23).

(23) a. Lisi chi-bao fan-le.
   Lisi eat-full meal-SFP
   ‘Lisi was full because of meal-eating.’

      Lisi eat-full two-bowl rice-meal-SFP
      Intended meaning: ‘Lisi was full because he ate two bowls of rice.’

Therefore, Lisi in sentence (17) under Reading C is not a full-fledged argument, although it is still to be investigated what types of DPs can follow such complexes as chi-bao and how these DPs are involved in derivations. Following from this, resultative complexes in such cases are not two-place predicates, but used as intransitives. This is confirmed by sentence (17)’s (under Reading C) semantic relevance to sentence (24).

(24) Zhangsan zhui-lei-le.
    Zhangsan chase-tired-perf
    ‘Zhangsan got tired because of chasing’.

As an English verb may allow the causative-inchoative alternation, e.g. open in (25), the complex zhui-lei also has an inchoative use as in (24).

(25) a. Causative: John opened the door.

   b. Inchoative: The door opened.

The gloss in (24) shows that Zhangsan is the affected entity (force recipient) and the force is exerted via chasing, although there is no information on force producer. While this paper mainly focuses on causative uses of RCs, it is conceivable that derivations of inchoative RCs do not involve projections of VoiceP, thus introducing no force producers. In that case, the affected entities are raised to EA positions, which explains why external arguments in inchoative sentences appear to be related to result situations and V₂. Sentence (17) under Reading C also presents the same semantic information without identifying force producer. The ostensible IA Lisi here may be an adjunct, serving to provide supplementary information on who is chased. Therefore, sentence (17) under Reading C can be derived using a mechanism similar to that used in deriving (24), though adaptations are necessary to accommodate the ostensible IA. Full details of the derivation are left for future research.

Despite a lack of thorough knowledge concerning Reading C, it is apparent that the non-affected entity in EA position is not a full-fledged argument. This does not discredit the force-theoretic treatment of Mandarin RCs, which has proved to be feasible in accounting
for Reading A and Reading B, along with reversed theta role assignments. Furthermore, the force-theoretic framework also successfully predicts the absence of a fourth reading, Reading D. Refer to the different interpretations in (17), it is found that Reading A and Reading C involve the same causing action but differ in the affected entity. People may wonder whether there is Reading D, which shares the same causing action as Reading B, but has a different result situation? That is, Lisi chased Zhangsan → Zhangsan got tired. Reading D is not available for two reasons. First, it violates EA’s and IA’s respective relevance conditions; second, unlike Reading C, there is no way of deriving (17) from (24) with the intended interpretation (Reading D), because the additional element Lisi is unlikely to be adjoined and put in an IA position to provide supplementary information on chasers.

5. Conclusions

This study reconceptualizes Mandarin single-clause resultative constructions as force exertion from external arguments to internal arguments, with internal arguments reaching new situations $S_1$. External arguments, as force producers, are relevant to causing actions and force manners encoded in $V_1$, while internal arguments are the affected entities in result situations represented by $V_2$. Moreover, it is also suggested that in a causing action, a force is not only exerted from Agent to Patient/Theme; Patient/Theme may produce a reaction force to Agent as well. In the latter case, Patient/Theme and Agent are force producer (EA) and force recipient (IA) respectively, leading to reversed theta-role assignments. Following from this framework, external arguments in Mandarin RCs are required to be entities involved in causing actions, which explains why causers like ‘depression’ cannot serve as external arguments for the complex $he-zui$ ‘drink-drank’.

References