A Comparative Study on the Causative Alternation in Chinese and Japanese

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Abstract: This paper introduces the causative and anti-causative alternation in Mandarin Chinese and Japanese respectively. Firstly, the verbs which are allowed to appear in the causative alternation in Mandarin Chinese and Japanese are stable, although they are realized in different manners. In Japanese, the causative alternation is realized through the morpheme markings either from transitivization or intransitivization; in Mandarin Chinese, the resultative verb compounding is usually applicable in the causative alternation, as well as the very rare mono-morphemic verbs, as widely discussed in existing literature. Secondly, the derivational and non-derivational controversy of the causative alternation is introduced, and this paper adopts a non-direct-derivation-relation between the causative and anti-causative alternants in both languages, both of which are derived from a common base: Cause[√Root+Theme]. The [√Root+Theme] base expresses a resultant state, and the Cause predicate introduces a causal relation between a causing event and a resultant state. They only differ in the presence or absence of a Voice projection, which is added in the causative alternant, but lacks in the anti-causative alternant. The function of the eventive head Voice is to introduce an external argument into the causative alternant. The typology of the causative alternation applies in both Mandarin Chinese and Japanese, although the morphemic inflectional properties vary across languages.

Keywords: Chinese; Japanese; Causative; Anti-causative; Alternation

1 Introduction

Verbs with different realization of arguments are called "variable behavior verbs" [1]. When verbs are used to denote a change of state or a change of degree, they may be used either as a transitive verb or an intransitive verb, and this usage is known as the causative alternation across languages [2], as shown from (1) to (4).

(1). a. John broke the window.
   b. *The window broke.* (English, [3])

(2). a. *Gianni ha rotto la finestra.*
    John has broken the window
    'John has broken the window.'
   b. *La finestra si e rotta.*
    the window REFL is broken
    'The window broke.' (Italian, [3])

(3). a. *John-GA doa-O kowa-shi-ta.*
    John-Nom door-Acc break-Transtive-past
    'John broke the door.'
   b. *doa-GA kowa-re-ta.*
    Door-Nom break-Intranstive-past
    'The door broke.' (Japanese, [4])

(4). a. *Laozhang da-po chuangzi.*
    Laozhang hit-break window
    'Laozhang broke the window '
   b. *Chuangzi po le.*
    window break Prt
    'The window broke.' (Mandarin Chinese, [4])

It is obvious that the meanings of the two alternative variants are closely related. The object in the transitive

variant and the subject in the intransitive variant share the same thematic role. Both are used as a theme or an undergoer. In the transitive pattern, the subject is used as an agent or a causer [3]. However, not all causative constructions have the anti-causative alternations.

(5) a. *John baked the bread.*
    b. **The bread baked.* (English)
(6) a. *Yuehan da-shang le Lili.*
      John hit-injury PERF Lily
      'John wounded Lily.'
    b. **Lili da-shang le*
      Lily hit-injury Prt (Mandarin Chinese)

This paper will introduce the lexical semantic restriction of the alternative verbs and the derivation mechanism of the two alternative sentences in Mandarin Chinese and Japanese, based on existing literature.

2 Verbal Restriction on the Causative Alternation

Schäfer (2008) mentions that the verbs, which are allowed in the causative alternation, are stable in different languages (although it may not exactly the same across languages), and the domains of the verb variation are mainly divided into the verb restriction and the selectional restriction [3]. For the variation of verb restriction, Levin & Rappaport Hovav (1995) has predicted some verbs that are allowed the alternation in Greek, but do not in English or German [2, 3]. The differences are demonstrated in English in (7) & (8) and Greek in (9) & (10), which involve the verb '*destroy*' and '*kill*'.

(7) a. *John/the fire/the bomb destroyed the manuscript.*
    b.**The manuscript destroyed.* [3]
(8) a. *John/the fire/the bomb killed Mary.*
    b.**Mary killed.* [3]
(9) a. *O Petros/i fotia/ i vomva katestrepse to paketo.*
      Peter/the fire/ the bomb destroyed the package
    b. *To paketo katastrafike (apo/me tin fotia).*
      the package destroyed. NACT by/with the fire [3]
(10) a. *O Petros/o sismos/ i vomva skotose ti Maria.*
      Peter/the earthquake/the bomb killed the Mary
    b. *I Maria skotothike (apo/me ton sismo).*
      The Mary killed.NACT by/with the earthquake [3]

For the variation of a selectional restriction, Levin & Rappaport Hovav (1995) also claims that some "V+Object" combinations are not allowed the alternation in English, but possible in Greek [2, 3].

(11) a. *He broke his promise/ the contract/ the world record.*
    b.**His promise/the contract/the world record broke.* [3]
(12) a. *O athlitis espase to simvolaio/to pagkosmio record.*
      The athlete broke the contract/the world record
    b. *To simvolaio/to pagkosmio record espase*
      The contract/the world record broke.ACT [3]

Both of the two views show that there is no exactly unified conclusion on the verb restriction and the selectional restriction across languages. Alexiadou et al (2006) has the similar argument that the class of the alternating verb is not completely stable across languages [5]. In the following section, we will introduce the language-specific restriction on verbs in Mandarin Chinese and Japanese respectively.

2.1 Verb Restriction in Mandarin Chinese

Mandarin Chinese is traditionally known as a morphologically impoverished language, because there is no compulsory inflectional markings to express the tense, case, agreement. In addition, the transitivity of a verb in Mandarin Chinese cannot be encoded by the derivational morphology. Instead, it demonstrates a quite productive derivational-like process: compounding. In Mandarin Chinese, the verbal compounding plays a significant role in the argument changing process. Observe the following examples of the causative and anti-causative alternation in (13).

(13) a.**Yuehan po-le chuangzi.*
      John break-PERF window
    b. *Yuehan da-po-le chuangzi.*
      John hit-break-PERF windowb
    c. *Chuangzi po le.*
      window break Prt

The example (13) shows that change of state verbs in Chinese usually can't have an external argument in direct. Mandarin Chinese needs an extra verb to form a resultative verb compound (RVC), so as to form a causative verb, as shown in (13a). [1] For the semantic

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[1] In fact, there are monomorphemic verbs which can undergo the causative-anticausative alternation in Mandarin Chinese. For example:
(1). *Zhejia gongsi chen-le chuan.*
    This-CL company sink-ASP boat
'This company sank the boat.'
But the monomorphemic verb occurring in the causative alternation is rare in Mandarin, and only limited numbers of verbs are allowed in this usage.

meanings, a resultative verb compound expresses a complex event, which is made up of a sub-activity-event and a following sub-result-event [6, 4]. In Mandarin Chinese, the inchoativity of RVC is not from the activity or the state verb, but from the usage of the particle word LE [6, 4].

(14). Semantic Components of Mandarin RVC ([6]: 80; [4]: 182)
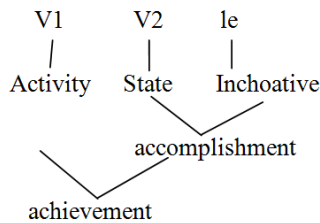
The classification of RVC in Mandarin Chinese has been widely discussed in terms of syntactic or semantic perspectives [7, 8, 6], cited in [4].

(15). Classification of RVCs ([4]: 182)

	Types	Sub-types	Examples
RVCs	Real (resultative)	simple	ku-shi 'cry-wet'
		phase	zuo-hao 'make good'
		directional	pao-guo 'run over'
	Spurious (non-resultative)	state+state	zui-dao 'drunk-fall'
		activity+activity	chang-ku 'sing cry'
		activity+state	chang hui 'sing know'

Lin (2004) has divided RVCs into two categories: real and spurious ([6], cited in [4]: 182). Real RVCs indicates the direct result of an activity, and real RVCs are further categorized into three types, based on Li and Thompson ([7]: 54, cited in [4]: 182): simple, phase, and directional. The second category of RVC in (15) is spurious RVC, in which the V1 is stative and V2 does not express the result of the event expressed by V1 ([4]: 183). The spurious RVCs are also further divided into three subtypes. The first type is comprised of two verbs denoting state rather than activity. The second type of spurious RVCs is double-activity RVCs, in which the V2 is active rather than stative. The third type of spurious RVCs is made up of an active V1 and a stative V2, but the RVCs are not resultative

compoundings. Different from English, which has monomorphemic change of state verbs, Mandarin Chinese uses RVCs to encode such events, combing an active and a stative verb [4].

Lin (2004) also argues that if there is no external argument in RVCs in Mandarin Chinese, then they cannot be unaccusatives, because the V1 usually contributes to the activity component ([6]; cited in [4]). If the argument is correct, the unaccusatives in Chinese are only restricted to the following types: exceptional monomorphemic telic verbs (such as *chen* 'sink'in footnote 1), and RVCs whose V1 is not activity, which is Lin's double stative RVCs [4]. Thus, only these two types of verbs can undergo causative-anti-causative alternation in Chinese.

2.2 Verb Restriction in Japanese

According to Levin & Rappaport Hovav (1995), "those intransitives that do not participate in the causative alternation are inherently monadic predicates, whereas the alternating verbs are inherently dyadic causative predicates" ([2]: 83). Levin & Rappaport Hovav puts forward four types of unaccusative verbs: Existence, Inherently Direction of Motion, Existence and Appearance/ Disappearance, which have been illustrated below (from A to D) [2]. Volpe (2008) argues that all of the four unaccusative classes, classified by Levin & Rappaport Hovav (1995) [2], participate in the Causative Alternation in Japanese [9].

(16). Unaccusatives in the Causative Alternation
    A. Change of State
        a. *Isu-ga koware-ta.*
            chair-NOM break-PAST
            'The chair broke.'
        b. *Gorira-ga isu-o kowashi-ta.*
            gorila-NOM chair-ACC break-PAST
            'The gorilla broke the chair.' ([9]: 4-5)
    B. Inherently Direction of Motion
        a. *Takushi-ga genkan-ni tsui-ta.*
            taxi-NOM front door-GOAL arrive-PAST
            'The taxi arrived at the front door.'
        b. *Untenshu-ga takushi-o genkan-ni tsuke-ta.*
            driver-NOM taxi-ACC front door-GOAL arrive-PAST
            'The taxi driver brought (his) taxi to the front door.' ([9]: 5)
    C. Existence
        a. *Ichioku-en-ga ginkôkôza-ni nokot-ta.*
            one hundred million yen-Nom bank

account-LOC remain PAST

‘100,000,000 yen remained in a bank account.’

    b. *Otôsan-ga ichioku-en-o ginkôkôza-ni nokoshi-ta.*

father-NOM one-hundred million yen-ACC bank account-LOC remain-PAST

‘My father left 100,000,000-yen in the bank account.’ ([9]: 6)

  D. Appearance/Disappearance

    a. *Kotozuke-ga kie-ta.*

message-NOM disappear-PAST

‘The message disappeared.’

    b. *Dareka-ga kotozuke-o keshi-ta.*

somebody-NOM message-ACC disappear-PAST

‘Someone erased the message.’ ([9]: 7)

Volpe (2008) analyses that the morphological marking in Japanese goes in both directions for change of state verbs: some change of state verbs from their partners by transitivization, while some form their partners by intransitivizaiton [9]. That is, there is no direct derivational evidence (from the lexical morphemes) between the causative alternant and the anti-causative alternants. Instead, the unaccusative verbs are all allowed to form causative alternation via the morphological markers on lexical items, as we can see in the following table [9].

(17). Causative Alternation in Japanese ([9]: 10)

ROOT	Unaccusative	Lexical Causative
Class 1: *kawak-* ‘dry’	*kawak-u*	*kawak-as-u*
wak- ‘boil’	*wak-u*	*wak-as-u*
ugok- ‘move’	*ugok-u*	*ugok-as-u*
Class 2: *war-* ‘break’	*war-e-ru*	*war-u*
tok- ‘dissolve, melt’	*tok-e-ru*	*tok-u*
yak- ‘burn’	*yak-e-ru*	*yak-u*
Class 3: *tom-* ‘stop’	*tomar-u*	*tome-ru*
shim- ‘close’	*shimar-u*	*shime-ru*
taka- ‘high’	*takamar-u*	*takame-ru* ‘heighten’

So far, we mainly introduce the verb restriction in Mandarin Chinese and Japanese, based on abundant existing literature. Mandarin Chinese and Japanese have causative alternations through different manners. In Japanese, the causative alternation is realized through morpheme markings either from
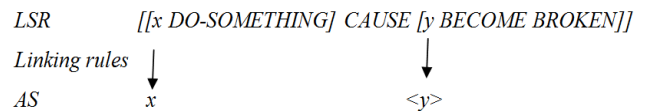
transitivization or intransitivization, according to Volpe’s (2008) discussion [9], as we have seen in the above table. However, In Mandarin Chinese, the Compounding is usually applied (which may contain the very rare monomorphemic telic verbs such as *chen* ‘sink’), and RVCs whose V1 is not activity, but double stative RVCs, based on Lin’s classification [6].

3 (Non-) Derivational Analysis of the Causative Alternation
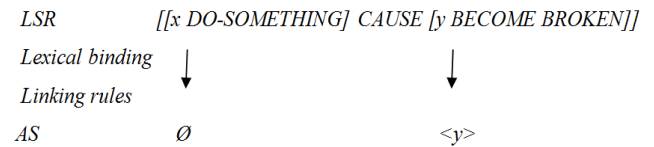
3.1 The Derivational Analysis

This section turns to the derivational mechanism of the causative alternation. Abundant cross-linguistic research on the causative alternation can be found from various perspectives of formal linguistics. In the generative perspective, there are two major different approaches: detransitivization and causativization. The detransitivization approach will be first illustrated. In the detransitivization approach, they hold that all of the intransitive anti-causatives are derived from their transitive variants. The transitive and intransitive alternates are illustrated in (18a) and (18b) respectively, based on Levin & Rappaport Hovav (1995) [2].

(18) a. Transitive *break* ([2]: 108)

LSR   [[x DO-SOMETHING] CAUSE [y BECOME BROKEN]]

Linking rules ↓ ↓

AS   x   <y>

    b. Intransitive *break*

LSR   [[x DO-SOMETHING] CAUSE [y BECOME BROKEN]]

Lexical binding ↓ ↓

Linking rules

AS   Ø   <y>

Levin & Rappaport Hovav (1995) adopted a “biclausal” or “bievent” analysis of causative verbs ([2]: 83), initially argued for by Dowty (1979) [10] and Parsons (1990) [11]. In the transitive *break*, both the cause and the theme are projected from *Lexical semantic representation* (LSR) into *Argument structure* (AS), as seen in (18a). In the intransitive break, the cause argument is lexically bound in the mapping from LSR to AS, and it is stopped from being pr ojected into the syntax in (18b) [2].

Different from the detransitivization, the causativization approach holds that the transitive pattern

is derived from the anti-causative/unaccusative structure, as shown in (19).

(19). *break*-intransitive:
λx[BECOME broken(x)]
+CAUSE
break-transitive: *λxλy[(y) CAUSE [BECOME broken(x)]]* ([10]: 206, [3]: 117)

According to the causativization approach, the causative (transitive) alternant is derived from the anti-causative (intransitive) alternant by adding of a causative predicate (CAUSE) to the semantic decompostion [10].

However, the asymmetry of the morphological marking of the alternants in some languages prevents both derivational approaches from a satisfactory solution [12-14]. Schäfer (2008) further argues that the morphological variation does not approve any direction of the derivation in a compelling way [3]. It is problematic for the causativization approach since the anti-causative variant, not the causative variant of the alternation in many languages (such as Russian and Polish[2]) is marked by special morphology. The causativizaiton approach also faces the same problem since the causative alternant in many languages (such as Georgian and Khalka Mongolian[3]) marked by special morphology ([3]: 119-120). Furthermore, Schäfer (2008) illustrates that verbs in many languages don't form dierected alternations, and neither of the causative alternation is directly derive from the other alternant [3].[4] That is, both the transitive-based approach and the intransitive-based approach constituent a challenge for the derivational relation of causative alternation [3, 14].

3.2 The Non-derivational Analysis

Unlike the direct derivational assumption, as introduced in section 3.1, some scholars ([5, 15, 16]) analyze the causative

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[2] (2). Anticausative marking ([3]: 120)
    a. Russian   *Katat'-sja* 'roll (intransitive)'
             Katat'   'roll (transitive)'
    b. Polish *Zlamac-sie* 'break (intransitive)'
            Zlamac   'break (transitive)'
[3] (3). Causative marking ([3]: 120)
    a. Georgian   *duy-s*   'cook (intransitive)'
             a-duy-ebs   'cook (transitive)'
    b. Khalka Mongolian   *ongoj-x*   'open (intransitive)'
             ongoj-lg-ox   'open (transitive)'
[4] (4). Non-directed alternations ([3]: 120)
    a. Japanese   *atum-aru*   'gather (intransitive)'
             atum-eru   'gather' (transitive)
    b. Russian   *goret'*   'burn (transitive)'
             zec   'burn (intransitive)'

alternation from a non-derivational approach, arguing that the alternating verbs share a common base. Kratzer (1996) argues that both causative and unaccusative patterns contain three predicates CAUSE, BECOME, and STATE, and they only differ in the absence of Voice, which is used to introduce external arguments, without eventive semantics [15]. Considering the function of the predicate CAUSE, which does not introduce the external argument, Kratzer further argues that the BECOME predicate can be removed out of the three predicates (cited in [3]). Thus, the decompositions of the causative and the anti-causative pattern are demonstrated in (20).

(20) a. *The door opens.*
    [CAUSE [the door OPEN]]
  b. John opens the door.
    [John [Voice [CAUSE the door OPEN]]] [3]

Alexiadou et al. (2006) puts forward a similar idea, assuming that there is no directionality between the causative and anti-causative alternants, and that they are built up from an eventive verbal head CAUSE and a [√Root+Theme] complex [5]. The [√Root+Theme] complex expresses the resultant state, and the verbal head CAUSE denotes a causing relation between the causing event and the resultant state. The difference between the causative and anti-causative pattern lies in the Voice projection, which is used to introduce the external argument (cited in [3]).

(21) a. The abstract decomposition of anti-causatives
    [CAUS[√Root+DP$_{Theme}$]]
  b. The abstract decompostion of causatives
    [DP$_{ext.arg}$ VOICE   [CAUS[√Root+DP$_{Theme}$]]]
    ([3]: 140)

In fact, Huang, Li and Li (2009) adopted a similar but not exactly the same argument on the non-derivational approach, assuming that a verb root are compatible with different light verbs (Lvs) [16]. A verb root may combine with Lv1 or Lv2, or both of the two light verbs, resulting in different configurations of the verb in the LSS, and finally, it encodes different types of events [16].

(22) a. open1 LSS: [Lv1 √ open]
    AS: V <Theme>
    e.g. *The door opened.*
  b. open2 LSS: [Lv2 [Lv1 √ break]]
    AS: V <Agent, Theme>
    e.g. *Bill broke the vase.* [16]

For instance, the verb *open* in (22a) is compatible only with Lv1, and does not allow an external causing factor, so it only conceptualizes with an internal theme argument. However, the verb *open* in (22b) is compatible with both

Lv1 and Lv2 in its LSS, so it encodes both an internal theme and an external causer argument. The difference between the verb *open* in (22) is whether the Lv2 in the LSS of the verb is present or not, instead of any directionality of derivation between them [16].

Although Huang et al.'s analysis is not exactly the same with Alexiadou et al.'s argument, both argue for a non-derivational relation between the causative and anti-causative alternants. In this paper, I will mainly follow the non-derivational approach to analyze the causative alternation in Mandarin Chinese and Japanese, demonstrating that the causatives and anti-causatives in both Mandarin and Japanese only differ in the presence or absence of the external factor introducer, which can be introduced by the Voice Projection.

3.2.1 The Derivation in Mandarin Chinese

First of all, the causative alternation which is realized by the compounding in Mandarin Chinese is presented in (23).

    (23) a. *Laozhang da-po-le chuangzi.*
        Laozhang hit-broken-PERF window
        'Laozhang broke the window.'
      b. *Chuangzi po le.*
        window break Prt
        'The window broke.'

Following Alexiadou et al. (2006) [5], there is no directionality between the causative and anti-causative alternants, and that they are built up from an eventive verbal head Cause and a [√Root+Theme] complex.

The derivation of an ordinary causative pattern is represented in (24), in which the theme DP is syntactically base-generated in the object position. The subject DP is added in the specifier position of the functional head-Voice.

    (24). Derivation of the causative pattern
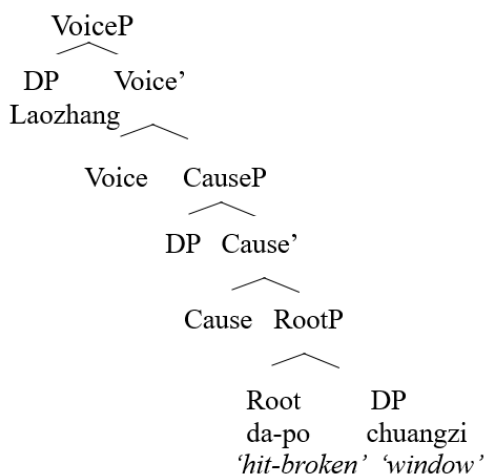
We agree with the argument that the compounding verb in Mandarin is not derived from the syntactic operation, but formed in the Lexicon as a whole, based on Li (1990) [17]. As in (24), the Root in the causative alternant is V1V2 *da-po* 'hit-broken', which is formed in the lexicon as a whole. The DP$_{Theme}$ merges with the Root, which is followed by the Cause projection and the Voice Projection. Finally, the external argument is introduced by the functional eventive head Voice.

As for the anti-causative alternant in Mandarin, we analyze that they have the derivation mechanism in (25), according to Alexiadou et al.'s (2006) model [5]. The antiative verb *po* 'break' is base generated in the verb Root, and merges with the theme DP *chuangzi* 'the window'. Then the CauseP is projected, but there is no Voice projection in the anti-causative alternant, since no external argument occurs in this construction. [5]

(25). Derivation of the anti-causative pattern
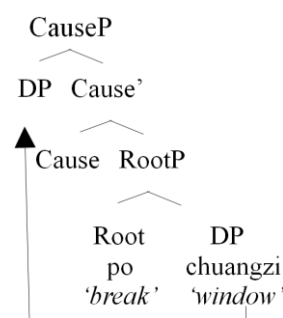
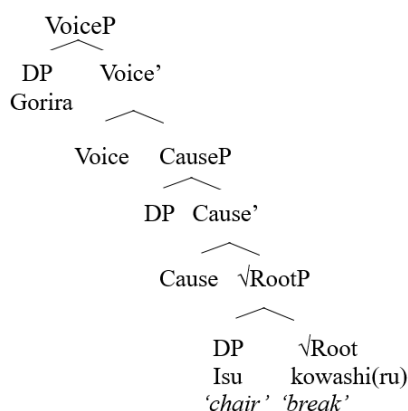### 3.2.2 The Derivation in Japanese

Different from the causative alternant in Mandarin Chinese, which needs the compounding, Japanese is well known for the morphemic marking on the lexical items. A pair of causative alternation in Japanese is repeated in (26).

    (26) a. *Gorira-ga isu-o kowashi-ta.*
        gorila-NOM chair-ACC break-PAST
        'The gorilla broke the chair.'
      b. *Isu-ga koware-ta.*
        chair-NOM break-PAST
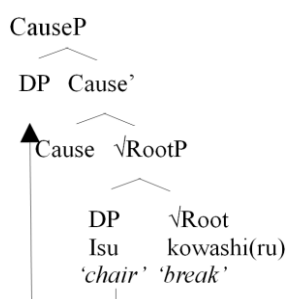   'The chair broke.'

Under the model of Alexiadou et al. (2009) [5], the difference between these two alternants lies in the presence or the absence of the eventive head Voice.

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5 In the anticausaative alternant, the theme DP moves from the complement of the Root to the specifier of the CauseP, then to the specifier of the TP, due to the inability of assigning a case by the unaccusative verb.

(27) a. Derivation of the causative pattern

```
            VoiceP
           /      \
        DP        Voice'
      Gorira      /     \
              Voice     CauseP
                       /      \
                     DP      Cause'
                            /      \
                        Cause    √RootP
                                /      \
                              DP       √Root
                             Isu     kowashi(ru)
                           'chair'    'break'
```

b. Derivation of the anti-causative pattern

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            CauseP
           /      \
        DP        Cause'
                 /      \
             Cause     √RootP
                      /      \
                    DP       √Root
                   Isu     kowashi(ru)
                 'chair'    'break'
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As in (27), the Root and the theme DP merges, and the Root is in the right position, due to Japanese is a widely acknowledged as a head-final language.

Based on the analyses on the causative alternation across languages, the causative and the anti-causative alternants bear a common base, both of which contain Cause[√RootP]. The only difference is the presence or absence of introducing the external argument.

4 Conclusion

This paper introduces the causative alternation in Mandarin Chinese and Japanese, and holds a non-direct derivational relation between the causative and the anti-causative alternants. The causative and anti-causative alternants are underlyingly represented as [DP Voice [Cause [√Root+DP$_{Theme}$]]] and [Cause [√Root + DP$_{Theme}$]] respectively, both of which share a common base: Cause[√Root+Theme]. Their major difference lies in the presence or the absence of the eventive head Voice, which is to introduce the external argument. Although the morphemic inflectional properties are different in Mandarin Chinese and Japanese, the typological analysis of the causative alternation applies in both languages.

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