Verbal reduplication in Mandarin Chinese: An HPSG account

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Outline

- Introduction
- The phenomenon
- Previous analyses
- The analysis
- Conclusion
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- Delimitativeness:
  “A short duration (i.e. transitoriness) and/or a low iteration frequency” (Xiao & McEnery 2004: 155)

(1) a. qing ni chang zhe dao cai.
   please you taste this CLF dish
   ‘Please taste this dish.’

   b. qing ni chang-chang zhe dao cai.
   please you taste-taste this CLF dish
   ‘Please taste this dish a little bit.’
Verbal reduplication in Mandarin Chinese


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- We aim to provide a formal and unified analysis for the structure of verbal reduplication in Mandarin Chinese.
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The Phenomenon

Forms

(2) for monosyllabic verbs: *shuo* ‘say’

a. shuo-shuo

say-say

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Forms

(2) for monosyllabic verbs: *shuo* ‘say’

a. shuo-shuo
   say-say

b. shuo-yi-shuo
   say-one-say
Forms

(2) for monosyllabic verbs: *shuo* ‘say’

a. *shuo-shuo*  
   say-say  
   AA

b. *shuo-yi-shuo*  
   say-one-say  
   A-yi-A

c. *shuo-le-shuo*  
   say-PFV-say  
   A-le-A
Forms

(2) for monosyllabic verbs: *shuo* ‘say’

a. shuo-shuo
   say-say

b. shuo-yi-shuo
   say-one-say

c. shuo-le-shuo
   say-PFV-say

d. shuo-le-yi-shuo
   say-PFV-one-say
Forms

(2) for monosyllabic verbs: *shuo* ‘say’

a. shuo-shuo
   say-say

b. shuo-yi-shuo
   say-one-say

c. shuo-le-shuo
   say-PFV-say

d. shuo-le-yi-shuo
   say-PFV-one-say

e. shuo-shuo-kan
   say-say-look

AA
A-yi-A
A-le-A
A-le-yi-A
AA-kan
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Forms

(2) for monosyllabic verbs: *shuo* ‘say’

a. shuo-shuo
   say-say

b. shuo-yi-shuo
   say-one-say

c. shuo-le-shuo
   say-PFV-say

d. shuo-le-yi-shuo
   say-PFV-one-say

e. shuo-shuo-kan
   say-say-look

f. shuo-kan-kan
   say-look-look
Forms

(3) for disyllabic verbs: *lai-wang* come-go ‘come and go/communicate’

a. lai-wang-lai-wang
   come-go-come-go
   ABAB
Forms

(3) for disyllabic verbs: *lai-wang* come-go ‘come and go/communicate’

a. lai-wang-lai-wang
   come-go-come-go

b. lai-wang-le-lai-wang
   come-go-PFV-come-go
(3) for disyllabic verbs: *lai-wang* come-go ‘come and go/communicate’

a. *lai-wang-lai-wang*  
   come-go-come-go  
   ABAB

b. *lai-wang-le-lai-wang*  
   come-go-PFV-come-go  
   AB-*le*-AB

c. *lai-lai-wang-wang*  
   come-come-go-go  
   AABB
Forms

(4) for V-O compounds: chang-ge sing-song ‘sing’
   a. chang-chang-ge AAB
      sing-sing-song
Forms

(4) for V-O compounds: *chang-ge* sing-song ‘sing’

a. chang-chang-ge
   sing-sing-song

   AAB

b. chang-yi-chang-ge
   sing-one-sing-song

   A-yi-AB
(4) for V-O compounds: *chang*-ge sing-song ‘sing’

a. chang-chang-ge
   sing-sing-song AAB

b. chang-yi-chang-ge
   sing-one-sing-song A-yi-AB

c. chang-le-chang-ge
   sing-PFV-sing-song A-le-AB
Forms

- There seems to be a fundamental difference between AA, ABAB and AABB (Arcodia et al. 2014; Fan 1964; Melloni & Basciano 2018; Xie 2020).
- We focus on the AA, A-yi-A, A-le-A, A-le-yi-A and ABAB forms only.
Syntactic distribution

- similar to an unreduplicated verb
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The Phenomenon

Syntactic distribution

- similar to an unreduplicated verb
- Cannot combine with an expression of quantity.

(5) a. ta yi tian pao shi li.
    he one day run ten mile
    ‘He runs ten miles a day.’

b. * ta yi tian pao-pao shi li.
    he one day run-run ten mile
Syntactic distribution

- similar to an unreduplicated verb
- Cannot combine with an expression of quantity.

\[(5) \quad \begin{align*}
a. & \quad \text{ta yi tian pao shi li.} \\
& \quad \text{he one day run ten mile} \\
& \quad \text{‘He runs ten miles a day.’}
\end{align*}
\]

\[(5) \quad \begin{align*}
b. & \quad \text{*ta yi tian pao-pao shi li.} \\
& \quad \text{he one day run-run ten mile}
\end{align*}
\]

Probably because the reduplication already contains a quantity meaning (Chen 2005: 114–115; Li 1998: 84).
Syntactic distribution

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- Cannot combine with an expression of quantity.

(5) a. ta yi tian pao shi li.
    he one day run ten mile
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Probably because the reduplication already contains a quantity meaning
- Cannot combine with aspect markers other than le.
Semantics

- Core meaning: delimitativeness
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- A-\(yi\)-A: same core meaning as AA (Fan 1964; Yang 2003)
Semantics

- Core meaning: delimitativeness
- A-\(\text{yi}\)-A: same core meaning as AA (Fan 1964; Yang 2003)
- A-\(\text{le}\)-A: a hierarchical combination of perfective and delimitativeness (Xiao & McEnery 2004: 151)
Interaction with aspect markers

- The incompatibility with aspect markers other than *le* is due to their semantics.
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- Reduplication: holistic and dynamic viewpoint (Dai 1997; Xiao & McEnery 2004)
  - Holisticity: the situation as a non-decomposable whole
Interaction with aspect markers

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  - Dynamicity: a process full of change
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  (Dai 1997; Xiao & McEnery 2004)
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(6)  

a. Wu Xumang kan-le zuo-an shi liuxia de jiaoyin
    Wu Xumang look-PFV commit-crime when leave DE footprint
    ‘Wu Xumang looked at the footprint left when the crime was committed.’

b. Wu Xumang kan-le-kan zuo-an shi liuxia de jiaoyin
    Wu Xumang look-PFV-look commit-crime when leave DE footprint
    ‘Wu Xumang looked a little bit at the footprint left when the crime was committed.’
Interaction with aspect markers

- *zhe* ‘DUR’, *zai* ‘PROG’: imperfective aspects (Xiao & McEnery 2004)
Interaction with aspect markers

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- *guo* ‘EXP’: a change out of a state (Xiao & McEnery 2004)
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(7) a. ta dang-guo bing.
   he serve.as-**EXP** soldier
   ‘He once served as a soldier.’
Interaction with aspect markers

- \textit{guo} ‘EXP’: a change out of a state (Xiao & McEnery 2004)
- \textit{le}: compatible with both changing processes and changing points (Xiao & McEnery 2004)

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\begin{enumerate}
  \item a. ta dang-guo bing.  
     he serve.as-\textit{EXP} soldier  
     ‘He once served as a soldier.’
  
  \item b. ta dang-le bing.  
     he serve.as-\textit{PFV} soldier  
     ‘He became a soldier.’
\end{enumerate}
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(7) a. ta dang-guo bing.
   he serve.as-EXP soldier
   ‘He once served as a soldier.’

b. ta dang-le bing.
   he serve.as-PFV soldier
   ‘He became a soldier.’

c. Weici, Deng Lijun shangxin de ku-le san tian.
   for.this Deng Lijun sadly cry-PFV three day
   ‘For this reason, Deng Lijun cried sadly for three days.’
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  - Similar function of constraining the event
Previous analyses

- The reduplicant as a verbal classifier (Chao 1968; Fan 1964; Xiong 2016)
  + Similar function of constraining the event
  - Differences in syntactic behaviors
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  - Difficulties with A-\(\text{-}\)yi-A
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- A special structure for reduplication
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  - Similar function of conveying aspect
  - Difficulties with A-yi-A
- A special structure for reduplication (Fan et al. 2015; Ghomeshi et al. 2004; Travis 2001; 2003)
  - No problem with A-yi-A
  - The connection with aspect markers is not captured.
Previous HPSG analysis

- Fan et al. (2015): a unified analysis for adjectival and verbal reduplication
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- Adjectival reduplication: amplifier
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- a type hierarchy for intensifier predicates:
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- Adjectival reduplication: amplifier
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- A type hierarchy for intensifier predicates:
Previous HPSG analysis

- Reduplication is modeled as a lexical rule.

\[
(8)
\begin{align*}
\text{redup-type} & \quad \text{CAT|HEAD} \quad 1 \\
\text{VAL} & \quad 2 \\
\text{CONT} & \quad 3 \\
\text{HOOK} & \quad \text{LTOP} \quad 4 \\
\text{IND} & \quad 5 \\
\text{C-CONT} & \quad \text{event-rel} \quad \text{intensifier}_{x\_rel} \\
\text{LBL} & \quad 4 \\
\text{ARG1} & \quad 5
\end{align*}
\quad \mapsto
\begin{align*}
\text{CAT|HEAD} & \quad 1 \\
\text{VAL} & \quad 2 \\
\text{CONT} & \quad 3
\end{align*}
\]
Previous HPSG analysis

(9) \[
\begin{align*}
\text{redup-a-lr} & \subset \text{redup-type} \\
\text{CAT|HEAD} & \quad \text{adjective} \\
\text{VAL} & \quad \text{SPR} \langle \rangle \\
\text{C-CONT} & \quad \text{PRED} \text{redup}_\text{up}_x\text{rel}
\end{align*}
\]
ORTHOGRAPHY: A → AA; (irregular AB → AABB)

(10) \[
\begin{align*}
\text{redup-v-lr} & \subset \text{redup-type} \\
\text{CAT|HEAD} & \quad \text{verb} \\
\text{CONT|HOOK} & \quad \text{ASPECT} \quad \text{non-aspect} \\
\text{C-CONT} & \quad \text{PRED} \text{redup}_\text{down}_x\text{rel}
\end{align*}
\]
ORTHOGRAPHY: A → AA; A → A-yi-A; (irregular AB → ABAB)
Previous HPSG analysis

- Advantages:
Previous HPSG analysis

- Advantages:
  - a unified analysis for verbal and adjectival reduplication
Previous HPSG analysis

- Advantages:
  - a unified analysis for verbal and adjectival reduplication
  - A-yi-A as an alternative form of AA

Problems:
- A-le-A is not possible because aspect markers are all blocked.
- ABAB and AAB are handled as irregular forms even though they are productive (Basciano & Melloni 2017; Melloni & Basciano 2018; Xie 2020; Xing 2000).
Previous HPSG analysis

- Advantages:
  - a unified analysis for verbal and adjectival reduplication
  - A- yi-A as an alternative form of AA
- Problems:
Previous HPSG analysis

- Advantages:
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Previous HPSG analysis

- **Advantages:**
  - A unified analysis for verbal and adjectival reduplication
  - A-\textit{yi}-A as an alternative form of AA

- **Problems:**
  - A-\textit{le}-A is not possible because aspect markers are all blocked.
  - ABAB and AAB are handled as irregular forms even though they are productive (Basciano & Melloni 2017; Melloni & Basciano 2018; Xie 2020; Xing 2000).
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Verbal reduplication lexical rule

(11)

\[
\begin{align*}
\text{verbal-reduplication-lr} & \\
\text{PHON} & 1 \oplus \_ \oplus 1 \\
\text{RELS} & \_ \oplus 2 \oplus \left[ \begin{array}{c} \text{delimitative-rel} \\
\text{ARG} 3 \end{array} \right] \\
\text{LEX-DTR} & \begin{cases} \\
\text{PHON} & 1 \\
\text{SYNSEM|LOC} & \begin{array}{c} \text{CAT|HEAD} \\
\text{CONT|IND} & \text{verb} \\
3 \end{array} \\
\text{RELS} & 2 \end{cases}
\end{align*}
\]
Type hierarchy for verbal reduplication and *le*

```
verbal-reduplication-lr
  └── perfective-lr
      └── perfective-reduplication-lr
          └── V-le-lr
              ├── AA-lr
              └── A-yi-A-lr
                   └── A-le-yi-A-lr
                   └── A-le-A-lr
```
Verbal reduplication lexical rule: AA-lr

(12)

```
[AA-lr
 PHON 1 ⊕ 1
 RELS 2 ⊕ ⟨delimitative-rel ARG 3⟩
 LEX-DTR
 PHON 1
 SYNSEM LOC [CAT|HEAD verb]
 RELS 2
 CONT IND 3]
```
Verbal reduplication lexical rule: A-yi-A-Lr

\[
\begin{align*}
\text{A-yi-A-Lr} \\
\text{PHON} & \quad 1 \oplus \langle \text{yi} \rangle \oplus 1 \\
\text{RELS} & \quad 2 \oplus \left[ \text{delimitative-rel} \right] \\
\text{LEX-DTR} & \quad \text{PHON} [1] \\
& \quad \text{SYNSEM|LOC} \left[ \text{CAT|HEAD} \text{ verb} \right] \\
& \quad \text{CONT|IND} [3] \\
& \quad \text{RELS} [2]
\end{align*}
\]
Perfective lexical rule

\[
\begin{align*}
\text{PHON} & \quad \langle \text{le} \rangle \oplus \square \\
\text{RELS} & \quad \left( \text{ARG} \; 3 \right) \oplus 2 \oplus \square \\
\text{LEX-DTR} & \quad \text{SYNSEM|LOC} \quad \text{CAT|HEAD} \quad \text{verb} \\
& \quad \text{CONT|IND} \; 3 \\
\end{align*}
\]

(14)
Perfective lexical rule: V-le-Lr

(15)
perfective-reduplication-lr

\[
\begin{bmatrix}
\text{perfective-reduplication-lr} \\
\text{PHON} \quad 1 \oplus \langle \text{le} \rangle \oplus \Box \oplus 1 \\
\text{RELS} \quad \left< \text{perfective-rel} \right> \oplus 2 \oplus \left< \text{delimitative-rel} \right> \\
\text{LEX-DTR} \quad \left[ \text{SYNSEM|LOC} \quad \left[ \text{CAT|HEAD} \quad \text{verb} \right] \right] \\
\text{RELS} \quad 2
\end{bmatrix}
\]

(16)

(17) \[
\begin{bmatrix}
A-le-yi-A-lr \\
PHON & [1 \oplus \langle \text{le}, \text{yi} \rangle \oplus 1] \\
LEX-DTR & \text{[PHON [1]]}
\end{bmatrix}
\]

(18) \[
\begin{bmatrix}
A-le-A-lr \\
PHON & [1 \oplus \langle \text{le} \rangle \oplus 1] \\
LEX-DTR & \text{[PHON [1]]}
\end{bmatrix}
\]
Advantages of the current analysis

- a unified account for all forms of verbal reduplication in Mandarin Chinese (broader coverage than Fan et al. (2015))
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- A-yi-A as an alternative form of AA
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- a unified account for all forms of verbal reduplication in Mandarin Chinese (broader coverage than Fan et al. (2015))
- A- yi- A as an alternative form of AA
- The form and the semantics of A- le- A are correctly captured.
Advantages of the current analysis

- A unified account for all forms of verbal reduplication in Mandarin Chinese (broader coverage than Fan et al. (2015))
- A-yi-A as an alternative form of AA
- The form and the semantics of A-le-A are correctly captured.
- Compatible with disyllabic verbs
Advantages of the current analysis

- A unified account for all forms of verbal reduplication in Mandarin Chinese (broader coverage than Fan et al. (2015))
- A-\textit{yi}-A as an alternative form of AA
- The form and the semantics of A-\textit{le}-A are correctly captured.
- Compatible with disyllabic verbs
- All productive forms are derivable from lexical rules.
Conclusion

- Verbal reduplication in Mandarin Chinese is handled by a lexical rule.
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- Different forms of reduplication are captured in a type hierarchy using underspecified lists.
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- Different forms of reduplication are captured in a type hierarchy using underspecified lists.
- The interaction between reduplication and aspect marking is handled by multiple inheritance.
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- Different forms of reduplication are captured in a type hierarchy using underspecified lists.
- The interaction between reduplication and aspect marking is handled by multiple inheritance.
- Aspect marking is implemented, interaction with reduplication will be implemented soon.
References


Ghomeshi, Jila, Ray Jackendoff, Nicole Rosen & Kevin Russell. 2004. Contrastive focus reduplication in English (the salad-salad paper).


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References

(12 September, 2020).


