$$
\begin{bmatrix}
word \\
\text{ORTH } \langle \textit{Grammatik} \rangle \\
\text{SYN|CAT|SUBCAT } \langle \text{ DET } \rangle \\
\text{SEM } \begin{bmatrix} \text{IND } \boxed{0} \\ \text{RESTR } \left\{ \begin{bmatrix} grammar \\ \text{INST } \boxed{0} \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
\quad
\begin{bmatrix}
word \\
\text{ORTH } \langle \text{语法} \rangle \\
\text{SYN|CAT|SUBCAT } \langle \text{ DET } \rangle \\
\text{SEM } \begin{bmatrix} \text{IND } \boxed{0} \\ \text{RESTR } \left\{ \begin{bmatrix} grammar \\ \text{INST } \boxed{0} \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
$$

$$
\begin{bmatrix}
word \\
\text{ORTH } \langle \text{قسطور} \rangle \\
\text{SYN|CAT|SUBCAT } \langle \text{ DET } \rangle \\
\text{SEM } \begin{bmatrix} \text{IND } \boxed{0} \\ \text{RESTR } \left\{ \begin{bmatrix} grammar \\ \text{INST } \boxed{0} \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
\quad
\begin{bmatrix}
word \\
\text{ORTH } \langle \text{व्याकरण} \rangle \\
\text{SYN|CAT|SUBCAT } \langle \text{ DET } \rangle \\
\text{SEM } \begin{bmatrix} \text{IND } \boxed{0} \\ \text{RESTR } \left\{ \begin{bmatrix} grammar \\ \text{INST } \boxed{0} \end{bmatrix} \right\} \end{bmatrix}
\end{bmatrix}
$$

Verbal reduplication in Mandarin Chinese: An HPSG account

Yanru Lu and Stefan Müller

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HU Berlin

July 16, 2021

Outline

- Introduction
- The phenomenon
- Previous analyses
- The analysis
- Conclusion

Verbal reduplication in Mandarin Chinese

- Mandarin Chinese: reduplication of verbs expresses a delimitative aspectual meaning (e.g. Chao 1968; Chen 2001; Dai 1997; Li 1996; Li & Thompson 1981; Tsao 2001; Xiao & McEnery 2004; Yang 2003; Zhu 1998).

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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.'

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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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Forms

(2) for monosyllabic verbs: *shuo* 'say'

    a. shuo-shuo   AA
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    e. shuo-shuo-kan   AA-*kan*
        say-say-look

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

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       come-go-PFV-come-go

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

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

  a. chang-chang-ge   AAB

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

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        sing-one-sing-song

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

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

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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
  (Chen 2005: 114–115; Li 1998: 84).

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- Cannot combine with aspect markers other than *le*.

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Interaction with aspect markers

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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.'

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            c. Weici, Deng Lijun shangxin de ku-le   san tian.
              for.this Deng Lijun sadly   DE cry-PFV three day
              'For this reason, Deng Lijun cried sadly for three days.'

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  - $+$ No problem with A-*yi*-A
  - $-$ The connection with aspect markers is not captured.

Previous HPSG analysis

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intensifier_x_rel

amplifier_x_rel   *downtoner_x_rel*

…   *redup_up_x_rel*   *redup_down_x_rel*   …
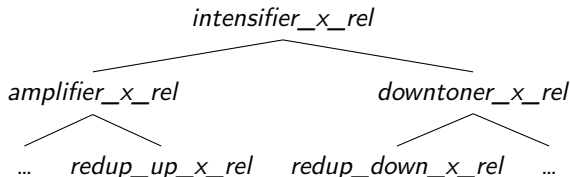
Previous HPSG analysis

- Reduplication is modeled as a lexical rule.

$$
(8) \quad
\begin{bmatrix}
\textit{redup-type} \\
\text{CAT}|\text{HEAD} & \boxed{1} \\
\text{VAL} & \boxed{2} \\
\text{CONT} & \boxed{3}\ \text{HOOK}\begin{bmatrix}\text{LTOP} & \boxed{4} \\ \text{IND} & \boxed{5}\end{bmatrix} \\
\text{C-CONT} & \left\langle\begin{bmatrix}\textit{event-rel} \\ \text{PRED}\ \textit{intensifier\_x\_rel} \\ \text{LBL} & \boxed{4} \\ \text{ARG1} & \boxed{5}\end{bmatrix}\right\rangle
\end{bmatrix}
\mapsto
\begin{bmatrix}
\text{CAT}|\text{HEAD} & \boxed{1} \\
\text{VAL} & \boxed{2} \\
\text{CONT} & \boxed{3}
\end{bmatrix}
$$

Previous HPSG analysis

(9)
$$\begin{bmatrix} \textit{redup-a-lr} \subset \textit{redup-type} \\ \text{CAT}|\text{HEAD} \; \textit{adjective} \\ \text{VAL} \qquad \begin{bmatrix} \text{SPR} \; \langle \rangle \end{bmatrix} \\ \text{C-CONT} \qquad \langle [\text{PRED} \; \textit{redup\_up\_x\_rel}] \rangle \end{bmatrix}$$

ORTHOGRAPHY: A → AA; (irregular AB → AABB)

(10)
$$\begin{bmatrix} \textit{redup-v-lr} \subset \textit{redup-type} \\ \text{CAT}|\text{HEAD} \qquad \textit{verb} \\ \text{CONT}|\text{HOOK} \; [\text{ASPECT} \; \textit{non-aspect}] \\ \text{C-CONT} \qquad \langle [\text{PRED} \; \textit{redup\_down\_x\_rel}] \rangle \end{bmatrix}$$

ORTHOGRAPHY: A → AA; A → A-*yi*-A; (irregular AB → ABAB)

Previous HPSG analysis

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- Advantages:
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  - 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).

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Verbal reduplication lexical rule

(11)
$$\begin{bmatrix} \textit{verbal-reduplication-lr} \\ \text{PHON} \quad \boxed{1} \oplus \boxed{} \oplus \boxed{1} \\ \text{RELS} \quad \boxed{} \oplus \boxed{2} \oplus \left\langle \begin{bmatrix} \textit{delimitative-rel} \\ \text{ARG} \; \boxed{3} \end{bmatrix} \right\rangle \\ \text{LEX-DTR} \begin{bmatrix} \text{PHON} \; \boxed{1} \\ \text{SYNSEM}|\text{LOC} \begin{bmatrix} \text{CAT}|\text{HEAD} \; \textit{verb} \\ \text{CONT}|\text{IND} \; \boxed{3} \end{bmatrix} \\ \text{RELS} \; \boxed{2} \end{bmatrix} \end{bmatrix}$$

Type hierarchy for verbal reduplication and *le*
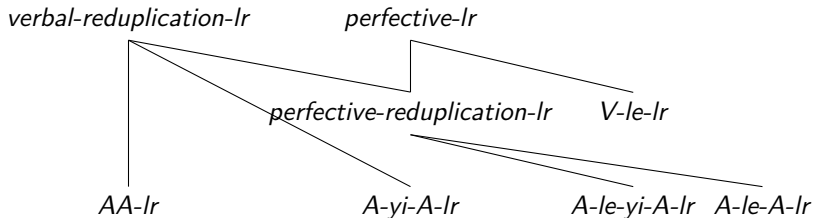
Verbal reduplication lexical rule: AA-lr

(12)

$$
\begin{bmatrix}
\textit{AA-lr} \\
\text{PHON} & \boxed{1} \oplus \boxed{1} \\
\text{RELS} & \boxed{2} \oplus \left\langle \begin{bmatrix} \textit{delimitative-rel} \\ \text{ARG} & \boxed{3} \end{bmatrix} \right\rangle \\
\text{LEX-DTR} & \begin{bmatrix} \text{PHON} & \boxed{1} \\ \text{SYNSEM}|\text{LOC} & \begin{bmatrix} \text{CAT}|\text{HEAD} & \textit{verb} \\ \text{CONT}|\text{IND} & \boxed{3} \end{bmatrix} \\ \text{RELS} & \boxed{2} \end{bmatrix}
\end{bmatrix}
$$

Verbal reduplication lexical rule: A-yi-A-lr

$$(13) \begin{bmatrix} \textit{A-yi-A-lr} \\ \text{PHON} & \boxed{1} \oplus \langle \textit{yi} \rangle \oplus \boxed{1} \\ \text{RELS} & \boxed{2} \oplus \left\langle \begin{bmatrix} \textit{delimitative-rel} \\ \text{ARG} & \boxed{3} \end{bmatrix} \right\rangle \\ \text{LEX-DTR} & \begin{bmatrix} \text{PHON} & \boxed{1} \\ \text{SYNSEM|LOC} & \begin{bmatrix} \text{CAT|HEAD} & \textit{verb} \\ \text{CONT|IND} & \boxed{3} \end{bmatrix} \\ \text{RELS} & \boxed{2} \end{bmatrix} \end{bmatrix}$$

Perfective lexical rule

$$(14) \begin{bmatrix} \textit{perfective-lr} \\ \text{PHON} \quad \square \oplus \langle \textit{ le } \rangle \oplus \square \\ \text{RELS} \quad \left\langle \begin{bmatrix} \textit{perfective-rel} \\ \text{ARG} \quad \boxed{3} \end{bmatrix} \right\rangle \oplus \boxed{2} \oplus \square \\ \text{LEX-DTR} \begin{bmatrix} \text{PHON} \quad \boxed{1} \\ \text{SYNSEM|LOC} \begin{bmatrix} \text{CAT|HEAD} \quad \textit{verb} \\ \text{CONT|IND} \quad \boxed{3} \end{bmatrix} \\ \text{RELS} \quad \boxed{2} \end{bmatrix} \end{bmatrix}$$

Perfective lexical rule: V-le-lr

$$
(15) \quad
\begin{bmatrix}
\textit{V-le-lr} \\
\text{PHON} & \boxed{1} \oplus \langle \textit{ le } \rangle \\
\text{RELS} & \left\langle \begin{bmatrix} \textit{perfective-rel} \\ \text{ARG} \ \boxed{3} \end{bmatrix} \right\rangle \oplus \boxed{2} \\
\text{LEX-DTR} &
\begin{bmatrix}
\text{PHON} \ \boxed{1} \\
\text{SYNSEM|LOC} \begin{bmatrix} \text{CAT|HEAD} & \textit{verb} \\ \text{CONT|IND} & \boxed{3} \end{bmatrix} \\
\text{RELS} \ \boxed{2}
\end{bmatrix}
\end{bmatrix}
$$

perfective-reduplication-lr

$$(16) \begin{bmatrix} \textit{perfective-reduplication-lr} \\ \text{PHON} \quad \boxed{1} \oplus \langle \textit{ le } \rangle \oplus \square \oplus \boxed{1} \\ \text{RELS} \quad \left\langle \begin{bmatrix} \textit{perfective-rel} \\ \text{ARG } \boxed{3} \end{bmatrix} \right\rangle \oplus \boxed{2} \oplus \left\langle \begin{bmatrix} \textit{delimitative-rel} \\ \text{ARG } \boxed{3} \end{bmatrix} \right\rangle \\ \text{LEX-DTR} \begin{bmatrix} \text{PHON } \boxed{1} \\ \text{SYNSEM}|\text{LOC} \begin{bmatrix} \text{CAT}|\text{HEAD } \textit{verb} \\ \text{CONT}|\text{IND } \boxed{3} \end{bmatrix} \\ \text{RELS} \quad \boxed{2} \end{bmatrix} \end{bmatrix}$$

A-le-yi-A-lr, A-le-A-lr

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

$$(18) \quad \begin{bmatrix} \textit{A-le-A-lr} \\ \text{PHON} & \boxed{1} \oplus \langle \textit{ le } \rangle \oplus \boxed{1} \\ \text{LEX-DTR} & [\text{PHON} \ \boxed{1}] \end{bmatrix}$$

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Conclusion

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