Minimality in pronominal A'-binding? The asymmetrical distribution of Mandarin Chinese resumptive pronouns in relativization

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March 2024

Abstract

Following from Aoun and Li's observation of asymmetrical A'-bound pronouns in Mandarin Chinese quantification, this thesis evaluates existing theoretical and experimental research on Chinese relative structures especially resumptive pronouns in relativization, and the pro-object resumptive clitic *suo* in relativization and the long passives involving A'-binding as well as left-dislocated topicalization.

Then, this study focuses on the subject and the direct object resumption to corroborate the corresponding theoretical description in the existing literature of Mandarin Chinese resumption in the two positions against two sentence processing approaches which yield different predictions. The experimental results confirm the existence of an asymmetry of resumption between subject and object positions, as partially predicted by minimality and not predicted by the garden-path model. However, such asymmetry is found not absolute, as subject resumptive interpretation is still possible under a disambiguating prosody, though harder to elicit than object strings, suggesting a role of prosody-directed retrieval of lexical meanings more accurately predicted by the lexical approach to sentence processing. In all, the results corroborate a non-absolute asymmetrical distribution of resumptive pronouns in the subject and object positions and support that both the theoretical constraint and lexical processing are at play.

Conceptually, the experimental results confirm that minimality is also at work for pronominal A'-binding in the case of Mandarin Chinese resumptive relativization. Moreover, the auditory experiment adds to the existing types of data and imply that Mandarin Chinese resumptive pronouns may be used in non-island conditions, apart from their usage in island conditions discussed in the literature.

Author's declaration

I declare that this thesis is a presentation of my original work and I am the sole author. This work has not previously been presented for a degree or other qualification at this University or elsewhere. All sources are acknowledged as references.

Table of contents

List of figures and tables

Abbreviations

Asp--- aspect marker *le* or *guo* (GUO), the former can also be a sentence final particle

Bei--- Mandarin Chinese passivizer argued to be a light verb (Huang, 1999) or preposition and can optionally co-occur with *suo*

Chinese--- Mandarin Chinese (Nevertheless, when 'Chinese' is used in this dissertation, the distinctions within the subvarieties of Chinese don't matter for what is being discussed.)

MC--- Mandarin Chinese

C, Comp--- complementizer

Cl--- Classifier

DE--- *de*, the MC prenominal marker which may arguably be Complementizer in relativization

Demons--- demonstrative (the distant demonstrative morpheme *na*)

Infl--- infection which may be spit into Agreement Agr and Tense T

LF--- logical form

Neg--- one of the two negation markers *bu* (the other one is *mei* which can never negate things happening in future)

PF--- phonetic form

RC--- relative clause (or relative structure)

SRP--- subject resumptive pronoun

SbjPoss--- subject possessive pronoun

SFP--- sentence final particles (le- declarative or aspectual marker; ma- interrogative)

Sg--- singular

3rd--- third-person

Suo--- preverbal object clitic or (Ting, 2003) object agreement marker (Chiu, 1999)

ORP--- object resumptive pronoun

ObjPoss--- object possessive pronoun

_P --- parasitic gap

Acknowledgements

participants in my experiment.

The funding support I received at York were the UK governmental living-crisis welfare for postgraduate researchers and the departmental reimbursement for the experimental platform. From Mar 2024- my submission of this research, I've also gained salaries as a short-term EFL&EAP Lecturer at Guangdong Peizheng College.

My linguistics journey will continue in the UK, with my wisdom inherited from the royal family of the Wei State (403 B.C.-) and where my ancestors migrated the civilised Chu State (1030 B.C.-) and the support and gifts from my family.

Chapter 1 Introduction

1.1 The notion of minimality

As a formal concept among the notion of linguistic universals, **'locality'** has long been the core in the development of generative syntactic theory for enabling natural language syntax to be unbounded by stepwise means such as recursive embedding (Rizzi, 2013; Evans and Levinson, 2009). As an overarching principle, locality describes and explains the machinery which makes possible or constrain the linking relations including the Spec-Head configuration for feature checking, movement or binding relations between a structurally higher non-argument (A'-) or argument position (A-) or a head and a lower position of the phrase or head. Firstly, locality at A'-level can be between wh-positions in the left periphery of each clause such as in (1): the temporal adverbial element first moves to the edge of the embedded clause before it then moves to the upper phase the edge of the matrix to form a wh-question. Secondly, A-level locality is instantiated by the referential behaviour of anaphors and pronouns whose references seem sensitive to certain structural domains: for English sentences like (2a), the reflexive 'himself' nearly always refers locally, i.e., in the embedded clause, to 'Sherlock'; whereas in (2b) the pronoun 'him' must refer non-locally crossing the subject of the embedded clause 'Sherlock' to the matrix subject 'John', except for the case when 'him' refers to a previous referent than other than John in the preceding context. Thirdly, locality at head level is exemplified in (3) where the auxiliary 'do' has to be inserted at Infl to satisfy the stepwise nature of head movement before it moves to C in the left periphery to form an interrogative:

(1) <u>When</u> do you think __ John left __ ?   (Rizzi, 2013, p.172)

(2) a. John thinks that Sherlock$_i$ likes himself$_i$.

b. John$_i$ thinks that Sherlock likes him$_i$.

(3) [CP Do$_{Comp}$ [IP you think he will come]]?

[IP You do$_{Infl}$ think he will come].

[IP You think he will come].

Locality can be defined representationally as the Minimal Link Condition (MLC)[1] in (4):

(4) MLC:

   a. K attracts α only if there is no β, β closer to K than α, such that K attracts β (*Attract Closest*).   (Chomsky, 1995, p.311)

   b. K attracts F if F is the closest feature that can enter into a checking relation with a sublabel of K.   (Chomsky, 1995, p.297)

Rizzi's (1990) 'Relativized Minimality (RM)' is a 'featural' approach to locality which is arguably the predecessor to MLC (especially as defined in (4b) which states that the condition to *Attract* is carrying an upper-set of feature labels).   In addition to explaining stepwise movement as the MLC also does, RM better explains the apparent non-local movement crossing an intervenor of different feature type from the displaced element but in fact can have another intermediate landing site different from the one occupied by the intervenor.   RM most notably provides the generalization that the 'intervention effects' captured by MLC is not purely structural or linear but are 'relativized 'to the specific features on the co-indexed element so that an intervenor which carries only a subset of the features of the fronted wh-phrase may not lead to total unacceptability; likewise, an intervenor whose feature set includes that of the crosser will lead to more degraded unacceptability.   This advantage of a featural (Rizzi's) approach to locality can be exemplified by (5a) and (5b) where both 'which' and 'how' carry wh-feature but 'Which' can cross 'how' for carrying a feature different to 'how':

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[1] or the Phase Impenetrability Condition (PIC) derivationally: The domain of H is not accessible to operations outside HP (phrase projected by H); only H and its edge are accessible to such operations (Chomsky, 2001, p.13).

(5) a. ? Which problem do you wonder how to solve _ _?

    b. * How do you wonder which problem to solve _ _?

<div align="right">(Rizzi, 2009)</div>

    RM is formed after the Empty Category Principle (ECP) whereby A- and A'-bound traces must be properly governed (Kayne, 1981). ECP and RM are defined in (6) and (7):

(6) ECP: A non-pronominal empty category must be

      i. properly head-governed (formal licensing);

      ii. theta-governed or antecedent-governed (identification).

<div align="right">(Rizzi, 1990, p.74)</div>

(7) RM: X α-governs Y iff there is no Z such that

      i. Z is a typical potential α-governs for Y

      ii. Z c-commands Y and does not c-command X

      iii. α-governs: heads, A-Spec, A'-Spec.

<div align="right">(Rizzi, 1990 in Grillo, 2008)</div>

(6ii) instantiates the theta criterion on A-chains which ensures that, for each chain to be interpreted as a linking relation between arguments, it contains only one argument and there is only one argument position, i.e., the theta position (Chomsky, 1981, 1986; Baker, 1988). Thereby, a trace in the theta position, i.e., a position taken by a lexical head or contributes to the event composition of the clause such as locatives and temporals (Higginbotham, 1985 in Rizzi, 1990). ECP can explain asymmetry in acceptability between subject and object traces such as in (8a) and (8b):

(8)

    a. The only person who I don't know when I can get to see _ is John.

    b. The only person who I don't know when _ can get to see me is John.

In (8a), the object trace is taken by a lexical head the verb 'see' whereas in (8b) the trace is in the subject position governed by the functional head Infl assigning nominative case to the argument and is thus not properly governed.

Apart from the definition in (6) and (7), the merit of RM lies in its discovery in the difference in feature specification to explain the subtle grammaticality contrast in the French examples in (9):

(9) a. *Voici l'homme que je crois *que*, l'annee prochaine, _t pourra nous aider.

   b.   Voici l'homme que je crois *qui*, l'annee prochaine, _t pourra nous aider.

   The meaning of (10a) and (10b):

   'Here is the man who I believe that, next year, will be able to help us.'

<div align="right">(Rizzi, 1997, p.319)</div>

The structure of (9b) is in (10):

(10) …_t qui [_t Agr [l'annee prochaine Top+ Agr [_t Fin+ Agr [_t pourra…]]]]

<div align="right">(Rizzi, 1997, p.322)</div>

As explained in (10), the subject-position trace is governed and assigned features by Infl (Agr) and thus it must be in feature agreement with the complementizer *qui* but not *que*.

1.2 Minimality in Mandarin Chinese quantified pronouns

Aoun and Li (1990) hypothesized that minimality may be pervasive across different levels in the syntax module, i.e., for both phrasal and head positions. Aoun and Li proposed that the idea of a 'Closest Functional Category (CFC)' for A-positions can be extended to A'-level for Chinese on basis of their finding that an A'-bound pronoun cannot occur in the subject position, as exemplified by (11b) with its contrast to (11a):

(11) a. Zhang$_i$ shuo *ta$_i$*   de-le   jiang.

     Zhang   say   3rd-sg obtain-Asp prize.

'Zhang said that he got the prize.'

b. *Mei-ge-ren$_i$ dou   shuo   *ta$_i$*   de-le   jiang.

Every-Cl$_{sg}$-person   all   say   3rd-sg   obtain-Asp prize.

'*Everyone$_i$ said that he$_i$ got the prize.'

(Aoun and Li, 1990)

In (11a), the pronoun 'ta' is in the subject position and is co-indexed with the matrix subject 'Zhang' by being 'referential' according to Aoun and Li (A&L); in (11b), the bound 'ta' in the subject position is not co-referential with the quantifier 'Mei-ge-ren (Every-Cl$_{sg}$-person)' except in certain fantastic or philosophical context. In the A'-level example (11b), the quantifier 'Mei (every)' in the matrix subject moves to a higher A'-level at LF according to A&L. Judging from this different distribution of referential and A'-bound pronouns, A&L argue that the A'-bound pronoun cannot occur in the subject position as in (11b) because, like A-bound pronouns, the A'-bound pronoun cannot refer to a local binder the matrix subject 'Mei-ge-ren (Every-Cl$_{sg}$-person). This is because the pronoun occupies the subject position of the embedded clause and thus enlarges the binding domain to the matrix clause, due to the lack of 'a distinct subject' which is deemed to often define a local domain. As a result, the quantificational matrix subject raised at LF to be in an A'-position is not a licit binder.

To provide further diagnostics, Aoun and Li found that the impossibility of coindexing the quantificational subject and the pronoun in (11b) becomes possible when there is an intervening operator such as a negative polarity item 'shi-bu-shi (be-Neg-be)' in (12a), a wh-word 'wei-shenme (for what)' in (12b) and a modal 'hui (will)' in (13a):

(12) a. Mei-ge-ren$_i$ dou xiang zhidao *shi-bu-shi* ta$_i$ de-le   jiang.

Every-Cl$_{sg}$-person all   want   know be-Neg-be 3rd-sg get-Asp prize.

'Everyone wonders whether he got the prize.'

b. Mei-ge-ren$_i$ dou xiang   zhidao ta$_i$ *wei-shenme* de jiang.

Every-Cl$_{sg}$-person all   want   know   3rd-sgfor-what   get prize.

'Everyone wonders why he got the prize.'

(13) a. Mei-ge-ren$_i$ dou   shuo   ta$_i$ *hui*   zhidao wo de jiang.

　　　Every-Cl$_{sg}$-personall   say   3rd-sg will know   I   get prize.

　　　'Everyone said that he would know that I got the prize.'

　　b. * Mei-ge-ren$_i$ dou shuo   ta$_i$ zhidao   wo *hui*   de jiang.

　　　Every-Cl$_{sg}$-person   all say 3rd-sg know   I   will get prize.

　　　'Everyone said that he knew that I would get the prize.'

　　c. * Wo *hui* zhidao mei-ge-ren$_i$ dou shuo   ta$_i$ de-le jiang.

　　　I   will know   every-Cl$_{sg}$-person   all say 3rd-sg   get-Asp prize.

　　　'I will know that everyone says that he got the prize.'

<div align="right">(Aoun and Li, 1990)</div>

The most important evidence supporting a minimality effect is in (13b) and (13c) where an intervention effect is not enabled by an additional operator element: in (13b), contrary to the scenario of pronominal reference in (12) and (13a) and the same as in (11b), the subject-position *ta* becomes unable to refer to the quantified subject in the matrix again because the modal 'hui (will)' will only moves to the left periphery of the most embedded clause and is located too low to constitute an intervenor between 'Mei-ge-ren (every-Cl$_{sg}$-person)' and the bound pronoun 'ta'; in (13c), the modal 'hui (will)' is at Infl of the matrix embedding the quantificational subject 'Mei-ge-ren (every-Cl$_{sg}$-one)', so 'hui' is now located too high to be an intervenor and the coreference between the pronoun 'ta' and the quantificational subject is unable to be enabled by 'hui'.

　　From examples (11) to (13), A&L conclude in the case of Mandarin Chinese quantification that the explanatory applications of minimality at A'-level is not limited to the well-documented long-distance wh-questions wherein a variety of intervenors, namely, syntactic islands, such as complex NP and relative structures (Ross, 1967, pp. 217-255) can occur, but is at work at a greater variety of A'-dependencies and A-dependencies, at least exemplified by the MC quantification cases they note, where the formation of dependency modulated by minimality is between the quantificational subject raised at LF and the A'-bound pronoun.

1.3 Extending minimality to the subject and object relativization: the asymmetrical distribution of resumptive pronouns

In oral Chinese, a resumptive pronoun can sometimes occur in relative clauses, as in the relativized object position in (14) where the prenominal adnominal *de*[2] is arguably used as a relative marker:

(14) Wo   ai-le   **ta**   san nian   de na-ge   ren.

   1sg   love-Asp3rd-sg   three year   DE Demons-Cl$_{sg}$person.

   'The person who I've loved for three years.'

<div align="right">(Chen 2012, in Pan, 2022)</div>

Cross-linguistically, there emerges a mixed view towards the facilitating or hindering effect of resumption on comprehension (Meltzer-Asscher, 2021; for hindering effect for English, see Morgan et al, 2020).   For Hebrew, Meltzer-Asscher (2015) found higher acceptability of auditory resumption for the subject and two object positions than in written modality, though all lower than auditory gaps, resembling the case for Mandarin Chinese to be tested. For Chinese, comprehensive psycholinguistic evidence to explain (i) the unacceptability and (ii) the subject-object asymmetry of resumptive pronouns seems to be lacking. Moreover, there occurs a discrepancy between the empirical data and what is reported and accounted for in the theoretical literature. Pan (2022) described an asymmetry of resumption between subject and object positions, following McCloskey (2017) who applied Aoun and Li's (1990)

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[2] Cheng and Sybesma (2009) hold that 'de' serves to separate nominals overtly from any type of modifiers including adjectives, relatives and possesor pronouns. However, 'de' is often unpronounced in pronominal possessives (Si, 2017).   While Cheng and Sybesma argue that 'de' may be a classifier, in the literature 'de' in relatives is often analyzed as the complementizer C (Cheng, 1986, among others), its obligatoriness serves as a cue indicating that the following DP or bare NP is the head noun phrase of the relative construction.   Therefore, 'de' is a cue to comprehenders (together with prosody) drawing a 'line' rightly before the emergence of the head noun phrase.

conceptual extension of the 'anti-locality[3]' property of pronominal binding to A'-domain to resumption whereby a subject would enlarge the minimal binding domain and is thus blocked from a resumptive interpretation (i.e., a subject would be unable to be bound by the relative head), as stated in (15) and exemplified in (16) a relative structure containing a resumptive pronoun:

(15) The A-bar disjointness requirement (the restriction on resumptive pronouns in the. subject position):

A pronoun must be A'-free in the least 'complete functional complex (CFC)' containing the pronoun and a subject distinct from the pronoun.

(McCloskey, 1990 in McCloskey, 2017)

(16)
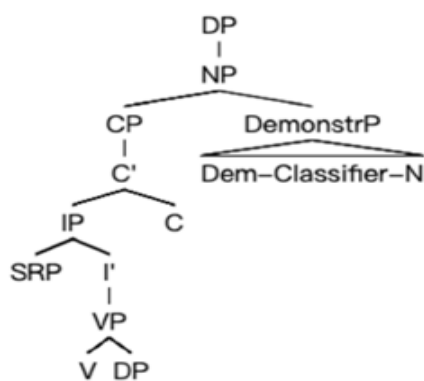
(Adapted[4] from McCloskey, 2017 to Chinese)

When a 'pro' is in the object position, a pro must be referentially free in the minimal A-bar functional layer IP and refers to Spec,CP and DemonstrativeP, that is, the head noun; however, in (17), when the pro is in the subject position, the A'-binding domain becomes enlarged to CP and is blocked from a resumptive reading for Irish (McCloskey, 2017).

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[3] i.e., in contrast to the *locality* property of anaphors.
[4] As will be explained shortly, Mandarin relatives are argued to lack the appositive-restrictive distinction (Del Gobbo, 2003), those targeting bare NP are deemed appositive by opponents of this view.   This debate starts from the phenomenon that Mandarin relatives can target any phrase level in the nominal structure: [DemonstrativeP [NumberP [ClP NP]]] (Huang et al, 2009).

However, this theoretical approach to the reported subject-object asymmetry in resumptive relatives becomes problematic when this asymmetry in resumptive pronoun distributions applies to another A'-structure, namely, left-dislocated topicalization associable with relativization (Huang et al, 2009) (i.e., the descriptive observation that each relatives may be transferred from a corresponding topicalization counterpart); meanwhile, Pan's (2022) intuition whereby subject resumption is impossible is inconsistent with empirical reports for Chinese: for example, children were found to produce 3.2% resumptive pronouns in the subject position (Hu et al, 2016, p.326).

1.4 The research questions and outline of the dissertation

This dissertation from now on will start with discussions on the syntactic analyses of Mandarin Chinese relative structures in Section 2.2 and 2.3 as well as accounts of the categorical status or syntactic function as well as the asymmetrical distribution of resumptive pronouns in the subject and object position in existing theoretical and experimental literature in Section 2.3 and 3.1. The literature converge that Mandarin Chinese may employ a mixed usage of trace or resumptive pronouns in relativization. However, an empirical gap remains regarding whether resumptive relativization strategy can be employed in simple relativization in the auditory modality (Meltzer-Asscher et al, 2015), not functioning as a last resort, or only in islands to function as a last resort (Shlonsky, 1992).

This mixed strategy of relativization may be modulated by syntactic constraints or processing factors. The syntactic constraints mainly include syntactic islands or the A'-binding constraint found in Irish relativization. Then, the dissertation focuses on motivating the experimental investigation into whether the A'-binding asymmetry, lexical-prosodic sentence processing or the garden-path syntactic processing model plays the primary role: while A'-binding predicts impossibility of subject resumption (SRP), the garden-path model predicts an advantage of SRP and the lexical-prosodic account predict a relative but not absolute asymmetrical resumptive interpretations in the two positions.

Also relevant to the A'-level asymmetrical distribution of pronouns, Section 2.4

will discuss on the other well-known MC A'-structure, that is, topicalization where such asymmetry does not seem to exist. In Section 2.3.1, the syntactic analysis of the long *bei*-passive structure which may also involve a resumptive clitic used in addition to in relativization will be provided: in addition to complement object resumptive pronouns in relativization, the optional object clitic *suo* can also occur in passives which may involve A'-binding when there is an additional subject in the clause taken by *bei*. The main research questions are in (17):

(17) The research questions of the dissertation:

i.   Do Mandarin resumptive pronouns occur in simple relativization (object or/and subject position) not as a last resort?

ii.   Does modality of presentation (i.e., in auditory conversations with a preceding structure-eliciting question, compared with the case in the written modality) affect the A'-binding asymmetry of resumptive pronouns in the subject and object positions (henceforth, A'-asymmetry) in Mandarin Chinese (MC) relativization?   In other words, does the reported A'-asymmetry (Pan, 2022) in the written modality still exist in MC relativization in auditory comprehension?

iii.   Are the subject (SRPs) and object resumptive pronouns (ORPs) ambiguous into possesor pronouns interpretations, especially when elicited by a preceding structure-corresponding question?

iv.   If (iii) stands, are subject resumptive relatives and object resumptives ambiguous to the same or different extent, as tested by comparing the comprehension accuracies of the two under corresponding disambiguating prosody?

v.   If the answer to (iv) is 'different', which factor plays the primary role in the differing extent of possesor ambiguity of SRPs and ORPs, sentence processing factors or the A'-binding constraint on the subject position? If the former, which specific processing factor (the garden-path model or lexical processing, versus the A'-binding constraint) plays a role?

vi.   Is the subject-object asymmetry reported of the resumptive pronoun *ta* support

Li and Ting's (2024) NP-head-movement analysis of the resumptive clitic *suo* in long *bei/wei*-passives?

Chapter 1 provides Rizzi's (1990) relativized minimality (RM) and A&L's (1990) extended notions of minimality to propose the further extension of applying A'-minimality to the case of Mandarin Chinese (MC) resumptive relativization following from McCloskey (2017) for Irish resumption, paving the way for the discussion in Section 3.6 that A- and A'-minimality can be unified in the case of MC pronouns. Chapter 2 reviews properties analyses and experimental research on Chinese relative and resumptive relative structures, in line with existing arguments (Ting, 2003, 2010, Ting and Li, 2024, Ou 2007, Jiang, 2012, contra Chiu, 1995) for the preverbal clitic *suo* as indication of A'-binding in the object position in relativization and long-distance passives. Section 2.4 presents the lack of subject-object asymmetry and better acceptance of resumptive pronouns in MC topicalization than in relativization. Section 3.1 motivates the experimental investigation into the theoretical versus psycholinguistic accounts. Chapter 3 is arguably the first-ever non-metalinguistic experimental evidence for resumptive relativization where relatives contain a phonetically improminent (pitch de-accented and with reduced intensity and duration) third-person singular pronoun *ta*. Moreover, Chapter 3 takes strides in providing evidence for an asymmetrical proportion of resumptive interpretations in the subject and object positions in auditory comprehension in conditions where the other interpretation is eliminated to a large extent by prosodic manipulations. Section 3.6 discusses Huang and Tang's (1987) successive A'-movement account of the anti-locality property (i.e., long-distance reference) of the MC monomorphemic reflexive 'ziji (self)' to concert MC pronouns' behaviours. The concluding chapter discusses the experimental findings against the whole backdrop of minimality, to explore a new perspective on the status of MC resumptive pronouns as an ordinary pronoun, which is new in existing experimental discussions on resumptive pronouns reviewed in Chapter 2 but is already suggested by McCloskey (2017) and Sells (1984) that resumptive pronouns still share properties of pronouns despite that they are A'-bound.

Chapter 2 The subject-object asymmetry in Mandarin Chinese resumptive relativization

2.1 Chapter introduction

Resumptive pronouns (RPs) are typically defined as pronouns which occupy a A'-bound position of an otherwise movement-derived gap (Demirdache, 1991). With the increasing attention paid to the heterogeneous nature of resumption across and within languages in recent decades, RPs are not necessarily seen as indicators of a base-generated RC forming strategy (Salzmann, 2017 for an overview). Apart from the form of pronouns, object-position resumption in Mandarin Chinese relativization, passivation and topicalization can be optionally represented by a preverbal clitic *suo* which is in complementary distribution with a third-person singular resumptive pronoun *ta* (Ting, 2003; Li and Ting, 2024) or a third-person number-neutral pronoun *zhi* in classical Chinese (Pan, 2016a). It will be argued as a superior analysis that *suo* in relatives is a resumptive clitic heading a nominal rather than the alleged optional overt realization of the head of Accusative case projection (Chiu, 1995), two major analyses of relatives as well as theoretical and experimental accounts of resumptives will be evaluated.

After reviewing the analyses of Mandarin Chinese relativization and Chinese resumption in relativization and long-distance passives argued to involve A'-binding under the backdrop of the heterogeneous nature of the cross-linguistic resumption phenomena, this chapter first evaluates approaches to the derivation of Chinese relative constructions. Yang et al (2020) and Ting's (2003) approach of base-generation and then clitic climbing seem to fare better than Ning (1993) (predecessor to Aoun and Li (2003)), Wen (2020) who adopts head-initiality for MC relative structures and a different analysis of the preverbal clitic *suo* by Chiu (1995). Yang et al and Ting differ in whether there is a null topic-like category, i.e., base-generated null operator in Ting's terminology, mediating the coreference between the head noun and the relativized element.

After reviewing theoretical analyses of relativization and elements that occur in

relativization such as the lexically ambiguous *de* in Section 2.2, Section 2.3.1 focuses on the theoretical analyses of the classical Chinese pronominals in relativization and long *bei*-passives which also involve A'-binding, Section 2.3.2 reviews both theoretical and experimental views on Mandarin resumptive relatives.

2.2 Relativization

The derivations of Mandarin Chinese against the analyses of English relative constructions (relatives) have been a topic of debate. There are views supporting a mixture view of deriving Mandarin relatives (e.g., Huang et al (2009) which maintain that both topic and relative constructions can be derived via base-generation or operator movement. This line of views, as represented by Aoun and Li (2003), does not attribute the option of two dependency formation strategies to feature strength, but to the need of extraction, i.e., when movement is blocked in line with Shlonsky's (1992) view whereby resumption never 'independently occurs', as in (18):

(18) … xiaozhang   biaoyang-guo   de (***ta***_k)   shang-ke renzhen   de laoshi_k…

    principal   praise-Asp   DE (3rd-sg) teach-class diligently DE teacher.

  '…The teacher who teaches classes diligently who was praised by the principal…'

                         Adapted from Sun et al (2016)

In (18), the extracted element serves both as the subject of the most embedded relative clause '_ shang-ke renzhen (who teaches classes diligently)' and the object of the emdedding relative clause 'xiaozhang biaoyang-guo de (who was praised by the principal', leading to the former constituting an island which blocks further extraction for the latter. Therefore, a base-generated resumptive pronoun is likely to be used to 'salvage' the illicit movement and serve as a substitute for a trace while a gap strategy is also acceptable, which predicts a complementary distribution of RPs and traces.

The analyses of MC relativization are of three sources: operator movement, head-raising or a purely externally merged approach in contrast to Move-derived

relativization characterizing merging existing merged elements.   Wen (2020) proposes an approach to adjunct relativization in Chinese and argues that 'gapless relatives' are a type of adjunct relativizations; Yang et al (2020) argue for a purely externally merged view of Chinese relatives and a distinction between restrictives and non-restrictives (appositives) against Del Gobbo (2003) who supports a lack of such distinction in Chinese.   The debate on the derivation of English relatives simply revolves around the competition between the operator movement approach whereby the base-generated relative head is externally merged and the head raising one whereby the head of the relative clause (RC) is raised from the relative IP clause (Alexiadou et al, 2000); for English, semantic diagnostics clearly points to a restrictive-appositive distinction (Safir, 1986; Ross, 1967; among others).

There has long been a dispute over whether Chinese differentiates restrictives and appositives. In literature on Chinese grammar, a fully projected DP have the following structures in (19):

(19)

[I]Demonstrative+ [II]Number+ Classifier+ [III]Noun

Adapted from Huang et al (2009)

As in (19), a Chinese relative can target I, II or III, among which III is deemed appostitive (Chao,1968). However, Del Gobbo (2003), with which Lin and Tsai (2015) echo, finds the diagnostics in (21) cannot be applied to Chinese, e.g., matrix quantifier can take scope over a pronoun in the appositive, contra Safir (1986), illustrated by the indices in (21),

(20) a. Every attendee that wears glasses is a nerd.

    b. *Every attendee, who wears glasses, is a nerd.

Adapted from (Ross, 1967)

(21) a. *Every Christian[i] forgives John, who harms him[i].

    b.   Every Christian[i] forgives a man who harms him[i].

(22) [mei yi-ge   shanliang de ren]$_i$ dou yuanliang naxie [cengjing shanghai tamen$_i$

de] ren.

Every one-CL kind   DE people all forgive those formerly   harm   them

DE people.

'Every kind person forgives those who have harmed them before.'

The contrast in acceptability in (20) suggests appositives cannot be interpreted as attached to a quantified NP (i.e., QP cannot be the antecedent of appositives). (22) provides a stronger diagnostic: a quantifier in the matrix clause cannot take scope over a pronoun inside an appositive. Judging from these, the restrictive-appositive distinction exists in English. As exemplified by (22), in Chinese a quantificational subject does takes scope over a pronoun inside the appositive whose relativized element is a bare head noun phrase 'ren (people)'. It can be concluded from (22) that existing diagnostics seem to fail to differentiate appositives from restrictives for Chinese. In light of this arguably lack of semantic distinction between the differing word order of restrictives and appositives, it won't change the conceptual conclusions to be made that this dissertation limits its discussions and experimental stimuli to restrictives only; on the other hand, discussing restrictive strings only also prevents the otherwise psycholinguistic discussions on the early disambiguation by the preceding 'Demon…Cl' in the appositives. By controlling for the disambiguating cues, comprehenders need to disambiguate between a resumptive relative and a possessive reading, as will be laid out in the experimental study in Chapter 3.

Existing analyses of MC relative structures are represented by Yang et al's (2020) externally merged approach to Chinese restrictives, Wen's (2020) head raising approach, the operator movement approach (Ning, 1993; Aoun and Li, 2003). Reviving the traditional view, Yang et al (2020) propose an externally merged approach to Chinese relatives, which brings about diagnostics that enables identification of restrictiveness: as used in literature on other languages, Yang et al's diagnostics also look at parasitic gap licensing, scope reconstruction and non-existence of island effects embodied

especially in island cases where a gap strategy is also acceptable, as in (23):

(23) [e$_j$ du-guo e$_i$ de haizi$_j$ bu duo]   de na-ben shu$_i$

     read-ASP DE child not many DE that-Cl$_{sg}$ book

   'the book$_i$ that [[there are not many children [who have read *(t$_i$)]'

Consistent with Pan (2016), the scope reconstruction evidence for movement is also controversial according to Yang et al (2020). Yang et al uses (25) to refute Aoun and Li (2003)'s data in (24) supporting for a movement analysis of gap relativization:

(24) [[wo jiao Lisi quan   mei-ge-ren$_i$ kai t$_i$ lai   de] ziji$_i$ de chez$_i$].

     I   ask Lisi persuade every-Cl$_{sg}$-person drive t come DE self   DE   car

   '*self's car that I asked Lisi to persuade everyone to drive over.'

                                                              (Aoun and Li, 2003, p.133)

(25) Counterexamples against reconstruction as a traditional diagnostic for movement:

Interlocuter A: Mei-ge-xuesheng$_i$ dou dai shu   lai   le   ma?

               Every-Cl$_{sg}$-student all bring book come Asp SFP?

                'Did every student bring a book?'

Interlocutor B: Shi-de.   Mei-ge xuesheng$_i$ dou dailai-le   yi-ben   shu.

               Yes$_{be}$-DE. Every-Cl$_{sg}$ student all   bring-Asp one-Cl$_{sg}$book.

               'Yes. Every student brought a different book.

               Erqie, mei-ben dou shi wo gei ta(men)$_i$ de.

               And, every-Cl$_{sg}$ all   be I give 3rd(pl)   DE

               'And, every book was given by me.'

                                                              (Yang et al, 2020, p.18)

In Aoun and Li (2003)'s data in (24), the quantified subject takes scope over the relativized possessee 'ziji-de chezi (self's car)', which according to A&L constitutes an indicator for movement for the gap relativization. Yang et al's argumentation for the

contrast (24) and (25) is that scope reconstruction can happen between separate sentences which are often employed in the exemplified oral context, suggesting reconstruction may not be a reliable diagnostics for movement as also justified by Pan (2016).

In Yang et al's (2020) analysis of restrictives, the relative head is base-generated and coindexed with an overt or covert resumptive pronoun inside the relative IP, as shown below in (26):

(26)
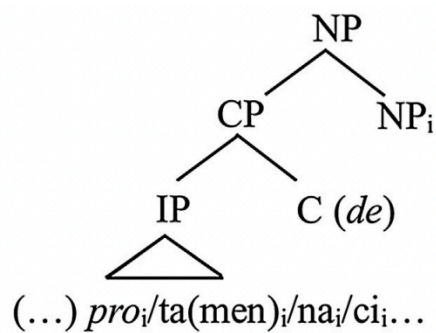
(Yang et al, 2020)

Yang et al's analysis is along the line of the *non-canonical complementation* view of for relative clauses (Alexiadou et al's, 2000), whereby the relative IP is not an argument of or sister to a lexical predicate. This external Merge approach entails that the relative IP should be grammatical as an independent clause and the meaning of an appositive IP should be different (because appositive-type relativization targets bare noun).

Wen's (2020) head-raising approach focuses on adjunct relativization and gapless relatives, where the latter is deemed to fall under the category of the former.   Wen's analysis is exemplified below in (27) where the Chinese sentence is transformed to English:

(27)

DP
IP   D'
Mary t_{PP} went to study   D   CP
DE
PP   C'
Op *city*   C t_{IP}

Wen (2020, p.112)
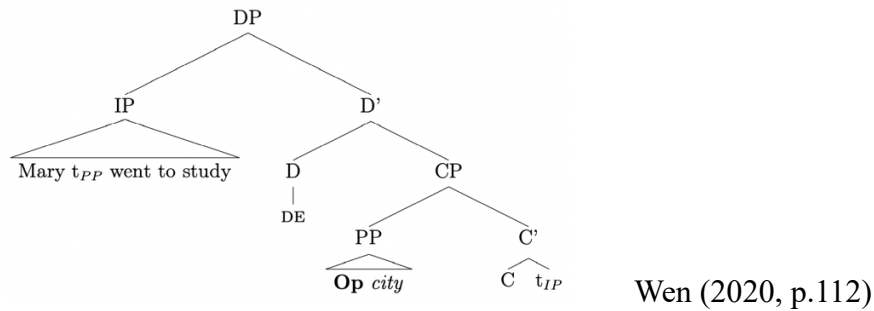
Wen (2020) unconventionally assumes head-initiality of Chinese relatives whereas existing analyses tend to conclude that modern Chinese employs a mixture of head-final and head-initial structures (Liu, 2022): Huang (1982) assumes Chinese is primarily head-final (in Huang et al (2009) and Lin's (2005)[5] analyses, AspP is head-initial).

Kayne (2011), on basis of his *antisymmetry hypothesis*, provides explanations to the cross-linguistic phenomenon where there seem to be no directionality parameters. In fact, there seems to be clear evidence that different structures in modern or vernacular Chinese adopt a mixture of head directionality: on one hand, Chinese is an SVO language (Liu, 2022) whose simple clauses clearly adopt head-initiality as in English; on the other hand, those nominals involving adjective attributives are clearly head-final, suggesting relatives which are also nominals are likely to be head-final as well, as in (28) below,

(28) Honghong de pingguo.

　　Red-red　　DE apple

　　'(fairly) red apple.

In relation to her conceptually new assumption of head-directionality in line with

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[5] Lin (2005) extends Kayne (1994)'s analysis of English to Chinese and argues for a head-initial analyse whereby sentence final particle *le* heads AspP and takes little vP as complement which then moves to Spec, AspP to derive the apparent word order. As to this head-raising analysis of MC relatives, there is controversy over whether sentence final particles are syntactic of pragmatic items: they are not in complementary distribution with aspectual clitics, thus Huang et al's (2009) analysis may be more reliable in focusing on aspectual particles attached to the verbs.

Kayne, Wen's analysis cannot explain how the Chinese example schematized in English in (25) allows adverbial resumption of the location PP analogous to demonstrative resumption in Chinese relatives (Ning, 1993, p.135). In other words, resumption can take place in t_{pp} in (27) where the resumptive adverbial is not under c-command configuration with the raised head-noun PP (but rather, in the reverse relation with the PP), which calls her analysis into question. The third questionable part in lies in Wen's straightforward view on resumptive pronouns which are taken as indicators of base-generation while gap-relatives involve movement. This view makes an analogy of relatives to the analyses of topic constructions in Chinese which are deemed to be available for either base-generation (Xu and Langendoen, 1985) or movement (Huang et al, 2009): when there is an 'aboutness relation' between the topic and the IP, they can be base-generated, especially when movement is blocked. Nevertheless, Wen's analysis is a theoretically plausible attempt to put two functional shells above the relative IP whereby Spec,CP provides a landing site for extracting the adverbial and DP serves to nominalize the whole structure.

Prior to similar conclusions made by Aoun and Li (2003), Ning (1993) proposes a well-accepted operator-variable analysis of Chinese relatives. As shown in (26), Ning, unlike Wen, respects head-finality for the representations of CP and the complementation between the head and the relative clause and analyses *de* as complementizer. The extracted object moves to Spec,CP which is a null operator under the c-command of the externally merged head noun. Following Huang's (1982) Condition on Extraction Domain (CED) whereby adjuncts are islands, Ning uses the frequent resumption in certain adjunct relativization (while adjunt resumption in (27) can be optional for another meaning, i.e., 'the bed that she used for sleep') to support the analysis as exemplified in (29),

(29)

NP

CP   NP

Op_i   C'

        IP   C°

$[_{CP}$ Op_i $[_{C'}$ [ta xihuan t_i] $[_{C_0}$ de]]   shu_i
            he like   DE   book
'The book he likes'
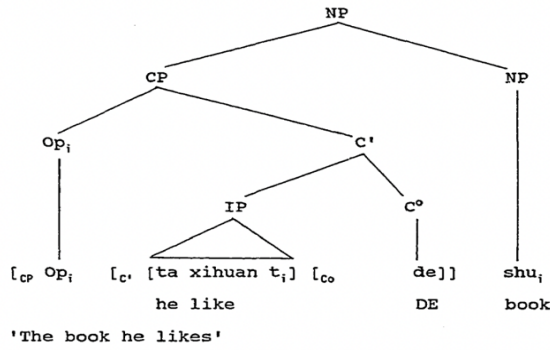
(Ning, 1993)

(30) a. *ta[6]   zai_ shuijiao de chuang.

   (s)he   in   sleep   DE bed.

'the bed (s)he sleeps in.'

b. ta   zai-(ta)-shang-mian shuijiao de chuang.

3rd-sg$_{Resumptive}$ on-$3rd_{sg}$-up-facet$_{Demons}$ sleep DE bed.

'the bed (s)he sleeps in.'

Adapted from Ning (1993, p.69)

In (30a), *chuang* (bed) is said to be illicitly extracted from the adjunct PP *zai chuang shang* (on bed), leading to mild unacceptablity; in (30b), the resumptive demonstrative 'zai-(ta)-shang-mian (on-$3rd_{sg}$-up-facet, i.e., on-there)' appears to rescue the unacceptability, which is said to be the evidence for Ning's movement analysis where the head of relativization is externally merged.   However, resumption does not only occur under such conditions, they are reported to also appear in various object positions, among which those object positions embedded deeper than direct object require obligatory resumption for Pekingnese[7] (Keenan and Comrie (1977, Table 2 on p.93).

In fact, existing literature has not provided a reliable answer to whether direct object resumptives in Mandarin are invariably optional. Hawkins and Chan's[8] (1997)

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[6] *Ta* is gender-differentiated only in writing, which is not embodied in romanized glosses here.

[7] the basis of Standard Mandarin.

[8] Hawkins and Chan note that the main variation between Mandarin and Cantonese relativization in the optionality of complementizer in Cantonese may result from phonological context, assuming *ge* and its alleged Mandarin equivalent *de* are complementizers.

claim that resumption is obligatory in embedded subject, indirect object and oblique object while freely optional in direct object and unallowed in matrix subject lacks supporting primary data, in particular, resumption in embedded subject relativization may be optional rather than obligatory as exemplified in (31),

(31) Wo jiao (ta) lai   de nei-ge   nvhai.

    I   ask her come de that-Cl$_{sg}$ girl.

<div align="right">Adapted from Hawkins and Chan (1997, p.193)</div>

Regarding the general marginal acceptability of object resumption reported in the literature, semantic factors 'definitenes and 'animacy' seem to explain the nuances in object resumption as shown by the minimal pair in (32),

(32) a. wo xihuan (*ta-men) de geshou.

    I   like   (them)   DE singer.

    'singers that I like."

  b. wo xihuan (ta)   de na-wei   geshou.

    I   like   (s)he   DE Demonstrative-Classifier singer.

    'the singer that I like.'

(33) a. wo xihuan (*ta) de shu.

    I   like   it   DE book.

    'books that I like.'

  b. ??wo xihuan du   ta   de   na-ben   shu.

      I   like   read 3rd-sg-inanimate DE Demonstrative-Classifier book.

      'the book that I like'

From (32a) and (33a), it seems object resumptive is worse in indefinite relatives, but is optionable with marginal acceptability in relatives whose head noun is a specific animate entity, judging from (32) and (33) altogether. The animacy data are similar to the format provided above, importantly, inanimate relatives are degraded, such as in

(33b) type resumption, although definiteness in such sentences has fulfilled the requirement of resumption.

There is a construction in English which apparently resembles relatives but different in nature: complement clause of a noun. In such structures, there is sisterhood between the head noun the nominal lexical predicate 'claim' and the CP holding argumentation relation with it, as exemplified in (34):

(34) [DP the [NP claim [CP that John left]]].   (Alexiadou et al, 2000)

In contrast, it is acknowledged as a standard analysis cross-linguistically that relative clauses are in modification relation with the head noun. There are two approaches that instantiate how relatives' modification of the head noun is realized. The standard view is based on the following hypotheses in (35):

(35) a. Adjunction hypothesis: relative clauses are adjoined to NP.

b. Base-generated head hypothesis: the head noun of a relative clause is base-generated outside that clause.   (Alexiadou et al, 2000)

In this approach, the head noun is externally merged and the relative CP is not in canonical complementation relation with the head noun by way of adjunction which is realized by NP multiplication in the syntactic tree, as exemplified in (36),

(36): The null operator (external head) approach:
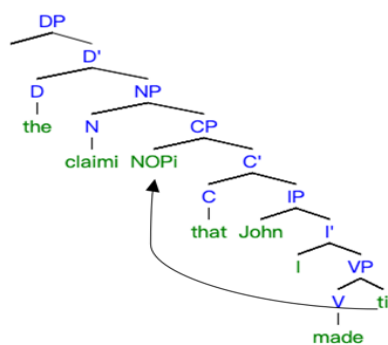
(drawn after Alexiadou et al, 2000)

The other Kayne-style approach whereby the head of relativization is raised from the relativized clause is shown in (37),

(37): The head-raising approach:

```
DP
  D'
the    CP
   claimi    C'
           that    IP
                John    I'
                      I    VP
                     made  ti
```
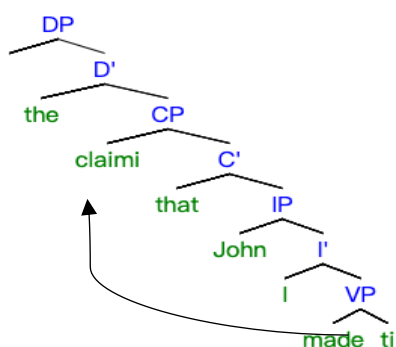
(drawn after Alexiadou et al, 2000)

In (37), the relativized element moves to Spec,CP to become the head noun shelled by a DP. In this approach, the relative head is derived from the moved element in the relative IP, thus the coreference between the relative head and the relativized element is built via operator-variable binding whereas in the afore-discussed standard view this coreference is built via the base-generated relative head c-commands (antecedent-binds) a null operator.

There remains a theoretical drawback in the Kayne-style approach. In minimalism, Chomsky (1995) continues to distinguish between non-canonical complementation structures from canonical ones and relative clauses are deemed to fall under the category of non-canonical complementation together with adjuncts. The definition of non-canonical complementation is given in (38),

(38) Non-canonical complementation: the clause is not an argument of a lexical
predicate.

(Alexiadou, 2000, p.2)

In X' theory, argumenthood is expressed via sisterhood. In the Kayne-style approach,

the relative clause is C', which is sister to the head noun in Spec,CP. This leads to a different semantic consequence from the Chomskian standard view (1981) whereby relative clauses will be an adjunct, not argumental complement, of the head noun. Closely related to this complementation issue, it is also questionable whether Spec,CP which is a location available for XP of any category to undergo 'escape hatch' can hold the head of a relative: if we delete the relative clause, the relative head also disappears because it is a raised element under this approach, which is problematic either. In contrast, the standard view suffices under this theoretical issue. Looking back to the diagram (38), the relative clause C' is in non-canonical complementation with the base-generated head noun and if we delete C' then there is no operator in Spec,CP and the head noun still exist on its own, it seems superior to apply the standard analysis to movement-derived MC relatives.

2.3 The controversial resumptive relativization in Chinese

2.3.1 The pro-object resumptive clitic *suo* in relativization and long passives

In addition to the person pronouns *ta* whose gender and animacy differentiated only in writing, there are several resumptives inherited from classical Chinese still in use: the pronominal *zhi* and demonstrative *ci* show the similar syntactic behaviour as *ta* (Pan, 2016). Among the resumptive pronominal clitics in MC, much attention has been paid to the preverbal clitic *suo*. In formal registers, the classical Chinese remnant *suo* in modern Chinese can substitute a trace or a resumptive pronoun in the thematic object position. Nevertheless, *suo* surfaces in the preverbal position as in (39):

(39) Wo suo   ai   de   ren.

   I   SUO love DE person.

 'The person I love.'

Chiu's (1995) analysis of *suo* as the head of an AgrOP (Agreement of object projection), as in (40), is proposed from a cased-based and agreement-based view of the phrase structure representation of Chinese especially as inherited from classical

Chinese. Chiu's representation adopts the notion of *affix hopping* (Chomsky, 1965) whereby affixes lower to catch the verb, which is against the norm of the direction of movement that elements should always move towards higher projections, thus the idea of affix hopping was later discarded when the Y-model capturing levels of representations was proposed under the Principle and Parameter framework. Thus, it is problematic for Chiu to place *suoP* above TP for the purpose of enabling affix hopping so that the *suo* head will not block *le* the sentence-final particle alleged to be the head of TP lowering.

(40):

(Chiu, 1995, p.91)
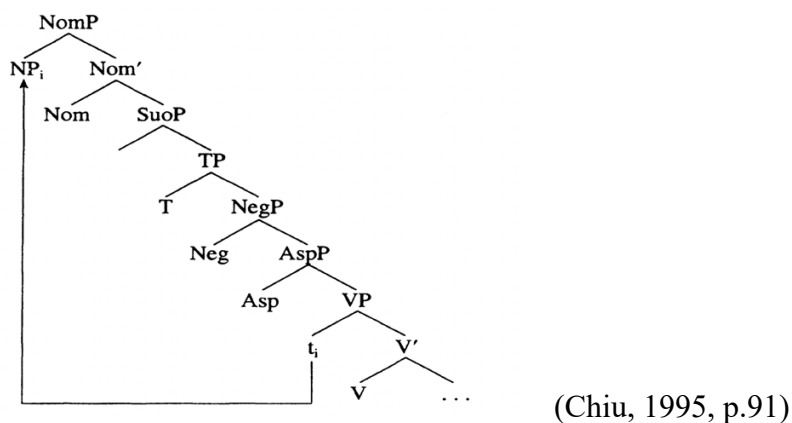
Given that Chinese is an analytic language without overt case marking, it is argued (Lin, 2005) that Chinese does not project TP and pastness is encoded by grammatical Aspect[9], moreover, Chinese does not project AgrP of any kind, neither AgrSP (agreement of subject) which is termed as NomP in (41) nor AgrOP termed as *SuoP* by Chiu.

One of the consequences of Chiu's proposal is that relatives are derived via operator movement on a par with the long-distance passive structure which involves not only A-movement but also A'-movement where *suo* is also used as a preverbal object clitic indicating A'-movement. The Chinese passive *bei*-constructions can allow unbounded dependencies as in (41a) and the *suo*-option in (41b) and is argued to

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[9] to differentiate with lexical Aspect inherited from the event ontology specified in the lexical entry in the lexicon before it enters syntactic computation, as introduced in Borer (2005).

involve both predication and operator movement by making analogies to the English *tough*-construction (Huang, 1999; Huang et al, 2009) as exemplified in (42):

(41) a. Zhang   bei Li pai jingcha   zhua-zou le.

      Zhang   BEI Li send police catch-go Asp.

   'Zhang was caught by the police asked by Li.'

  b. Zhang bei Li pai jingcha   suo   zhua-zou   le.

    Zhang BEI Li   send police   SUO   catch-go   Asp.

   'Zhang was caught by the police asked by Li.'

<div align="right">(Adapted from Huang, 1999)</div>

(42) <u>This problem</u>$_{predication}$ is easy [CP <u>Null operator</u>$_{predication}$ for you to solve _$_t$].

<div align="right">(Huang, 1999)</div>

In (42), *bei* is in complementation relation with the subject of the whole passive structure, akin to the English *tough*-construction in (43). *Bei*[10] is not a preposition as in the otherwise pure NP-movement analysis of MC long-distance passives (Huang et al, 2009) but rather takes a clausal complement holding a Spec, CP. The evidence for this A'-movement analysis of the long-distance passives lies in the ambiguous interpretations of the monomorphemic reflexive *ziji* in (43):

(43) Zhang$_j$ bei Li$_k$ guan   zai ziji$_{jk}$ de   jiali.

    Zhang   BEI Li lock   in   self   DE$_{possessive}$ home-in.

    Interpretation 1: 'Zhang was locked by Li in Zhang's own home.'

    Interpretation 2: 'Zhang was locked by Li in Li's own home.'

<div align="right">(Huang, 1999)</div>

In (44), *ziji* can refer to either 'Zhang' or 'Li'. The *Li*-bound *ziji* interpretation arises

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[10] *Bei*-construction can be converted to *ba*-construction and there is also research on ba as a light verb (Huang et al, 2009).

from the local domain delimited by Li in purely syntactical terms.   Thus, it can be concluded that Li is the subject of the IP embedded in the CP taken by *bei* rather than the subject of a gerund VP without inflection.

From the argumentation from (42) to (44), the '*bei/wei…suo* construction' as a type of the MC long passives which have one more argument in the embedded subject position than ordinary passives involves an A'-binding relation: when the clitic *suo* occurs, the A'-dependency is pronominal binding; when *suo* is absent, the dependency involves an A'-trace.

In the same vein, Ting (2003, 2010, among others) and Li and Ting (2024) as well as Ou (2007) hold that Chiu's agreement-based proposal may be not applicable for modern Chinese which has become a more analytic language compared to classical Chinese where *suo* originated despite the theoretical plausibility of Chiu's proposal. Instead, Ting (2003) analyses *suo* as head of a resumptive pronominal projection, as shown in (44),

(44):
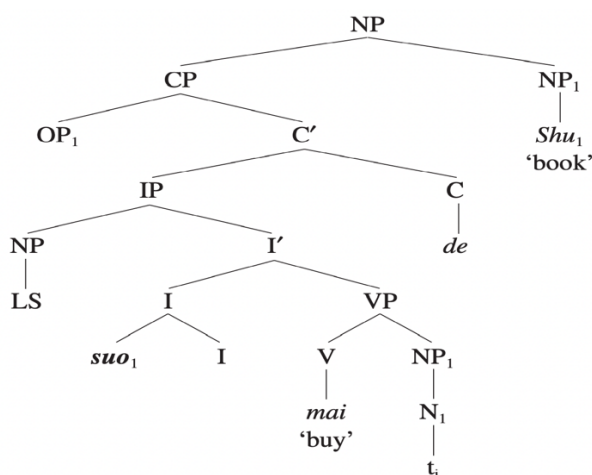
'The book that Lisi bought'

(Ting, 2003, p.129)

In Ting's analysis illustrated above, Chinese relatives are head final and derived by means of base-generation. The pronominal clitic *suo1 is base-generated* as head of the relativized object N_1 which is bound by a base-generated null operator OP*1* bound by

the base-generated head noun *shu* (book), it adjoins to I at S-structure because it is a preverbal affix. At this point, readers may have two questions. The first may be about the directionality of c-command in Ting's analysis: there are two binding relations in (35), OP_1 c-commands suo_1 and t_1 and the head of the relative structure *shu* c-command OP1, although the directions of c-command in these two are different, they suffice to satisfy the requirement of forming c-command configurations. Secondly, the coreference between the head noun and suo_1 which are both derived via base-generation is built via the mediation of OP_1 which binds suo_1 and is bound by the head noun at the same time. It is by this mechanism involving the base-generation of a null operator (or null topic in other terminology[11]) mediating between the head noun and the relativized element to build coreference that Chinese relatives are achieved without movement.

To be brief on the generic resumptive pronoun in classical Chinese *zhi, zhi* is generic (equivalent to a hypernym of the feminine, masculine and non-personal *ta*) and serves as 3rd-person pronoun and resumptive pronoun, *zhi* also serves as a prenominal modifier marker on a par with *de.* All these uses of *zhi* are still widely used in formal speech. Chinese is indeed a language with rich pronoun systems. It is a historic fact that Chinese has dual speech styles: classical Chinese used by the literate in most of their written work and vernacular Chinese used in daily life and in the novels written after the sixteenth century, thus unlike Latin and Greek, classical Chinese has been well-preserved and it is not surprising to find its pronominal residues in modern Mandarin: *suo, zhi, ci, qi*, among which *suo* is affixal and the others are independent lexical items.

As presented, a crucial piece of evidence comes from *suo* which can occur in passives and relatives. It is argued by Ting (2003, 2006, 2008) that *suo* is a pronominal clitic rather than the head of AgrOP claimed by Chiu (1995). Ting points out that it is intuitively unlikely for Chinese to have AgrOP and she refutes Chiu by analyzing the negation particle *bu* which can follow *suo* as an adverb rather than head of NegP as *ne*

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[11] Some argue that Chinese relativization may involve a step of topicalization as evidence by the fact that the two constructions are often transferable within the same sentence vocabulary (Huang et al, 2009, among others).

in Romance languages. For long-distance *bei*-passives[12], I adopt Ting and Huang et al's (2009) movement analysis where *suo* is an optional pronominal clitic, as shown in (45) where pro occurs in short passives where the agent is an unspecified pro and NP2 represents the agent in long passives,

(45) The '*bei/wei…suo*' long passive in contrast to short passives which do not hold a subject in the embedded clause:

[IP NP1$_i$ (bu) bei [CP [Op$_i$ [IP pro/NP2 suo$_i$-V t$_i$]]]

In (45), the patient moves to the null operator which forms co-reference with NP1 the subject by predication relation in which *bei* is a predication mediator, this analysis of bei-construction borrows from Chomsky's analysis of 'tough movement' whereby a trace moves to become a null operator and enters a predication relation with the subject as in 'Linguists$_i$ are tough Null-operator$_i$ to please t$_i$'. The optional pronominal clitic *suo* is argued by Ting (2003) and Li and Ting (2024) to be generated in the thematic position and then it incorporates with V and binds the trace, indicating that there is an object gap.   Therefore, *suo* is used as a pro-object pronominal clitic in both resumptive relatives and long passives reviewed above.

2.3.2 Resumptive pronouns in relativization

The definition and nature of resumptive pronouns are complicated. Although there is a surge of experimental studies on intrusive resumption languages mostly represented by English and a few on grammatical resumption languages, the fundamental conception of resumption as a rubric of cross-linguistic heterogeneous phenomena remains unclear, especially as to why resumptives, in the languages reported so far, have the same forms as those of ordinary pronouns when these two types of pronominals function differently (McCloskey, 2017).   Also, resumptives can occur in

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[12] Chinese realizes passive meaning by means of *bei/wei*-construction, as presented in Chapter 2 or passive meanings, via unaccusatives or middles (Wei, 2020).

a range of constructions as defined typically in (46),

(46) The label 'resumptive pronoun' usually refers to the overt pronominal elements found in some languages in the variable position of unbounded A'-dependency constructions--- the latter include relative clauses, constituent questions, dislocation and focus constructions.

(Rouveret, 2011, p.2)

However, the above typical definition of resumptives is not without problem: firstly, at present we still do not know whether resumptives can exist covertly in some of the grammatical resumption languages; secondly, it is too narrow to say that resumptives just occupies A'-bound variable positions, as evidenced by A-bound resumptives and intrusive ones without syntactic positions, more importantly, if there is another strand of grammatical resumptive languages represented by Chinese which can generate relatives without movement then we should not say those resumptives occupy an A'-bound variable position; thirdly, if a resumptive pronominal is a clitic and has to adjoin to the verb at S-structure due to its affixal nature, then it does not appear in the A'-bound position of an otherwise gap (as is the case with Chinese *suo* which surfaces as preceding the verb), thus the above definition needs revision. Perhaps, various relationships by which resumptives are associated with a preceding element should be extended to both filler-gap dependencies (broadly construed, where A'- or A-movement is involved) and anaphoric dependencies (including syntactic anaphors and possibly discourse ones). Unlike resumption in semitic languages (Arabic: Alghamdi, 2020; Hebrew: Shlonsky, 1992 and Borer, 1984), Mandarin resumptives are overall of at most marginal acceptability (Ning, 2008; Hitz and Francis 2016), which apparently resembles the acceptability of English resumption. However, when Mandarin resumptives are licensed, they are sometimes unpronounced for avoiding ambiguity or deleted by the PF-interface under some conditions.

From a taxonomy perspective of resumptives (Chao and Sells, 1983), Mandarin resumptives may not be a last resort strategy only occurring in the representation when

wh-movement is illicit as in Hebrew and Palestinian by Shlonsky (1992). Mandarin resumptives resemble but also differ from Celtic resumptives which are also generated under Agree (McCloskey, 2017; Adger and Ramchand, 2005).

Existing theoretical research has provided diagnostics suggesting, cross-linguistically, resumptives can exhibit both properties of an operator bound variable and an ordinary pronoun: they instantiate *strong crossover effect* typical of that in A'-binding relationships (Strong crossover effect instantiates the spirit of Principle C of the binding theory and refers to the phenomenon that a variable in wh-interrogatives is not bound by a c-commanding pronoun because it counts as referring expressions for taking open values, as in (47a),

(47) a. * Who did she$_i$ claim that ___$_i$ had arrived earliest?
    b. Irish (VSO word order):
       *fear nar   fhan   se sa   bhaile.
        Man C.Neg.Pst. remained he in-the home.
        'a man that didn't stay at home.'   (McCloskey, 2017)

Meanwhile, resumptives are subject to the *highest subject restriction* characteristic of ordinary pronouns. It is well-known that pronouns obey the *anti-locality requirement*: in the case of A-binding, anti-locality is embodied in Pinciple B of the binding theory; in A'-binding, anti-locality is captured using Irish data by McCloskey's *A-bar disjointness requirement* (1990, in McCloskey, 2017) laid out previously in (16) and here paraphrased in (48):

(48) A pronoun must be A'-free in its minimal functional projection containing it and a subject distinct from it (subject here includes structural subject in Spec of a functional projection).

In the unacceptable Irish data (47b) where the resumptive occupies subject positions and cannot be interpreted as coindexed with its immediately adjacent binder, which is

characteristic of ordinary pronouns.   Note that the minimal functional projection containing the resumptive *se* is the IP, but the local domain expands to the CP under *disjointness* requiring a structural subject that is distinct from the pronoun.   Similar to what is involved in the Irish data (McCloskey, 2017), this anti-local property of resumptives can explain why an overt resumptive in subject position is not allowed in Chinese (Keenan and Comrie, 1977, Table 2: Pattern of pronoun retention, p.93) because a resumptive occupying subject position enlarges the local domain and blocks coreference with the head noun.   However, this local-domain-based explanation to the asymmetry of subject and object resumption only comes from Pan (2022)'s metalinguistic intuition and has never been experimentally probed in oral register or auditory modality see whether a subject resumptive pronoun is indeed deprived of coreference with the head noun as *anti-locality* predicts.   The anti-locality account predicts resumption is impossible when the relativized element is subject.

However, subject resumption in oral Mandarin is possible when the pronoun *ta* is not in phonetic prominence and seems to be more available with the increase of embedding a speech-reporting verb as exemplified in (49),

(49) Zhei-wei   jiu shi wo shuo *ta* xihuan shuxue de nei-ge nansheng.

This-Cl$_{sg-person}$ just is   I   say he like   math DE Demons-Cl$_{sg}$ boy.

'This is the boy who I said *he* likes math.'

There are many studies supporting a universal subject advantage (Kwon et al, 2010) argued since Keenan and Comrie's (1977) accessibility hierarchy and explained by various processing accounts such as frequency or distance-based (linear and structural) accounts (Lin, 2018). Even if the accessibility hierarchy is confirmed, we cannot conclude that it is the found subject advantage in the case of MC gap relativization that has led to the reduced frequency of usage of the more degraded subject resumption than for object positions reported in Pan (2022) (Mandarin Chinese subject-gap advantage: Lin and Bever, 2006; Lin, 2018; MC object-gap advantage predicted by Gibson's 'dependency locality theory': Hsiao and Gibson, 2003 and Hsiao, 2003; Sun et al, 2016).

What's in common for gap and resumptive relatives is that, due to the head-finality of relativization in Chinese, both strategies of relative structures are initially ambiguous as a matrix with variable disambiguation points. The extent of the ambiguous interpretation varies across gap and resumptive strings and the point of disambiguation depends on whether there is a cue earlier than *de* which facilitates correct comprehension (Wu et al, 2018), as exemplified by the subject resumptive relative structure in (50),

(50) ?? ta xihuan shuxue de   na-   ge   xuesheng.
        3rd-sg like   math   DE Demonstrative-Cl$_{sg}$ student.
        'The boy who *he* likes math.'

The above subject resumption is claimed to be unavailable in Chinese by Keenan and Comrie (1977) for Pekingese and Hawkins and Chan for Mandarin and Cantonese (1997).

Another documented property of resumptives is that they do not allow quantificational antecedents even in restrictives, as in (51),

(51) *Every/no man that I can never tell whether *he* is going to be friendly or not.

(Sells, 1984)

In fact, cross-linguistic data seem to point to a direction that *resumptive pronominal elements* (including pronominal clitics) should have its own status in spite of their form as ordinary pronouns. From this, McCloskey (2017) conjectures that there should exist languages that have a separate system to morphologically mark resumptives, though no report of this has been made in the research realm in question.

Cross-linguistically, Mandarin Chinese resumptive pronouns as a phenomenon has not received as much special attention in the literature as those in head-initial languages such as Hebrew (Shlonsky, 1992; Borer, 1984), English (Keller and Alexopoulou, 2005), where resumption is experimented in wh-interrogatives, but the issue at stake still

revolves around the interplay between grammar and the parser), Swedish (Chao and Sells, 1983) and Irish (McCloskey, 2017). In order to decide on which analysis of relatives is more reliable, attention should be paid to two conflicting analyses of the resumptive clitic *suo* which is among the series of resumptive pronominal elements inherited from classical Chinese that can still be used in object relatives in formal speech nowadays. Other tonic resumptive pronominals (in contrast to clitics) inherited from classical Chinese are generic pronoun *zhi* and demonstrative *ci* (Yang et al, 2020). Ting (2003) argues that *suo* heads a nominal projection and adjoins to I_0 as an affix. In contrast, Chiu (1995) and Huang et al (2009) correlate *suo*'s usage in object relatives with its usage in the *bei*-construction a device for Chinese passives which is argued to involve A'-movement (rather than A-movement as in English) for allowing unbounded dependency. Chiu and Huang et al adopt movement analyses to both usages of *suo*. Under Chiu's movement analysis of Chinese relatives, the *object clitic suo* is not a resumptive pronominal, neither an intrusive surfacing at PF nor syntactic one, but the head of an agreement-of-object or accusative-case projection *suo*P. However, as the reviewer of Chiu (1995, p.115) points out, *suo* is employed more frequently in object relatives than '*bei/wei…suo* passives' in modern Chinese, thus it is reasonable to question whether we can make analogies between the two constructions. For English, there is traditionally a consensus on English as an intrusive resumption language (Chao and Sells, 1983), but acceptability judgment and processing investigations have not provided us with a clear picture of resumption's distribution (syntactic positions that they occupy and syntactic environments in which they appear) and roles during comprehension or production (Keffala and Goodall, 2011; Chacon, 2019; Hammerly, 2021; Ferreira and Swets, 2005).

McDaniel and Cowart (1999) and McKee and McDaniel (2001) confirm the 'spell-out of traces' view of resumptive pronouns (Kayne (1981); Engdahl (1985)) for English. According to this account, English speakers only accept and produce RPs for unextractable sites. As is known, traces obey the Empty Category Principle which requires them to be properly head-governed to get interpreted under proper formal licensing (Rizzi, 1990, p.28-65). The 'spell-out of traces' account takes principles of

economy into conception and predicts that RPs do not ameliorate 'locality violations' (which is plausible given current theoretical development where *Agree* also respects *locality* (Adger and Ramchand, 2005) and should only surface when there is a need to ameliorate representational Empty Category Principle violations which can be circumvented by phonetically realizing the trace given that ECP is a constraint on empty categories. The 'spell-out of traces' account predicts RPs' share the same ability as of traces to licence parasitic gaps [13], as in Swedish (Engdahl, 1985), however, this prediction is not borne out in Mandarin or English, necessitating the need to investigate the heterogeneous nature of resumption in different languages under same diagnostics.

To reveal the nature of RPs, much theoretical work has focused on their distributions and interpretation properties in wh-dependencies and quantifications, as Sells (1987) among others notes in (52):

(52) While the binding of resumptive pronouns shows very close syntactic parallels in many cases to the binding of empty categories, at the interpretive level resumptive pronouns retain their independence as pronouns and are not (necessarily) interpreted in the way that empty categories are interpreted.

(Sells, 1987, p. 261)

Quantificational properties are one dimension of RPs' 'interpretive independence' that Sells refers to in (52) by (51), Chao and Sells (1983) find English RPs behave differently from bound variables in being unable to be coindexed with a quantificational antecedent, as in (53):

(53) a. I'd like to meet <u>every linguist</u> that Mary couldn't remember if she had seen__ before.
 b. *I'd like to meet <u>every linguist</u>$_i$ that Mary couldn't remember if she had seen.

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[13] This may explain why it appears to be that parasitic-gap licensing properties seem subject to language-specific rules.

                       (Chao and Sells, 1983, p. 49)

   c. Everyman_i thinks that Rina loves him_{i/j}.   (Gu, 2001, p.25)

(53a) shows that for English a trace in a relative can be bound by a relative head which is a universal quantifier whereas an RP is unable to refer to the universal quantifier relative head. In addition to behaving differently from traces, RP's interpretative capability also differ with ordinary pronouns in (48c) where the pronoun can be non-locally A-bound by the universal quantifier.

Looking beyond the above exemplification from English, it seems that the behaviours of resumptive elements vary according to whether a language allows grammatically licensed RPs defined in contrast to 'intrusives' and may vary across different syntactic constructions within a language (e.g., left-dislocation structures including topicalization, wh-questions and relative clauses (Chung and Wagers, 2021) and long-distance passives for Chinese (Huang, 1999; Wu, 2013, p.66 (2)[14])). Although not conclusive, resumptive elements are a starting point into how dependencies are formed, such as by means of features on C in a language (Adger and Ramchand, 2005).

Since 1990s, much experimental work has started to test the acceptability and elicited production of RPs in English constructions including wh-questions, relative clauses in islands (Morgan and Wagers, 2018) and it-cleft clauses (Morgan et al, 2020). These results suggest that English RPs occur more frequently when gaps are even more unacceptable. Many explanations to existing results remain at a tentative stage.

In relatively well-studied languages, resumptives are reported to carry the same form as pronouns (McCloskey, 2017), necessitating conceptual motivations for investigating the heterogenous nature of resumption extensively in different languages.

While reported in the theoretical literature (Pan, 2016a; Pan, 2016b), Chinese RPs in relative constructions have not attracted much experimental research. Further work is needed to investigate Ning's (2008) claim based on her self-paced reading data that

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[14] The translation in Wu's glosses seems problematic: an RP in Mandarin long-distance passives should be possible to refer to the distant matrix subject.

Mandarin resumptive relatives are mis-parsed initially and then incur reanalysis (and so RPs are only better in those syntactic environments where they bring greater interpretive contribution than gaps such as in three place predicates, etc). Ning's data only reflect greater difficulty when reacting to the head of the RC in non-preferred resumption cases, but do not constitute real-time evidence for reanalysis. Ning's (2008) self-paced reading results (p.141) where resumptive RCs extracting the subject suffer longer reaction times in the critical (relative head) and spill-over regions supports their intuition that resumptive RCs, in addition to gapped ones, also suffer from matrix illusion hindering comprehenders' *interpretive resolution* of the RP. However, the data seem not lend direct support to Ning's (2007) and Ning and Lin's (2008) conclusion that Mandarin RPs are used under the same mechanism as by English, more replication studies with adaptations are needed.   Based on Ning's (2007) data, the object resumptive strings which constitute a half of the manipulated stimuli are to test a hypothesis that stands for an opposing possibility to Ning's: Mandarin gapped RCs also contain a covert RP which would possibly incur temporary misinterpretation and thus overt resumption is not an intrusive or last resort phenomenon as hypothesized by Ning. This temporary ambiguity sources from*, firstly, *de*'s multiple lexical meanings in various between-constituental relationships within nominals which appear to be of the same string but varied prosodic phrasing and, secondly, the initially ambiguous word order of relativization that the head of a relative structure comes after the relativized clause.

In addition to a total base-generation analysis of Chinese RCs or the more widely accepted conditional when in syntactic islands or dis-preferred for lexical ambiguity during sentence processing (Ning, 2007; Ning and Lin, 2008), in a wider field of literature it is reported that (A) Chinese[15] RPs are in 'free alternation' with gaps in the direct object position (Pan, 2022, among other theoreticians' and acquisitionists' intuitions) (B) RPs in subject positions (SRPs) are strongly dis-preferred in

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[15] For instance, Mandarin and cantonese are both Chinese varieties and may employ the similar relative structure and even the relative maker *de* in Mandarin and *ge* in Cantonese may be equivalent.

acceptability tasks (Fancis et al, 2015) or claimed excluded (Pan, 2022, p.2-3; Chen and Wang, 2007) by the *highest subject restriction* (McCloskey, 2017)*, the *anti-locality* property of pronouns extended from Chomsky (1981) whereby a pronoun in subject position enlarges the A'-binding domain to a higher root clause. However, there is not much experimental evidence for (A) and (B). Hitz's (2012) second language (L2) study on the native language (L1) influence of two languages reported to license RPs grammatically, Turkish and Chinese, fail to yield the predicted result that L1 speakers (L1ers) of Turkish should commit more errors in accepting SRPs than Chinese L1ers. Hitz's result that Mandarin L1 speakers did not reject, i.e., gave low-score ratings to, English SRPs at a higher accuracy than Turkish L1 speakers. This result actually indicates a gradient acceptability of Mandarin SRPs, which is not consistent with what the *highst subject restriction* predicts, suggesting the *anti-locality* property of pronouns may not be applied to Mandarin relativization or can be influenced by task or modality factors as suggested in the case of Hebrew RPs by Meltzer-Asscher et al (2015). To sum up, Hitz and Francis (2016) and Fancis et al's (2015, on Cantonese) results where ORPs and SRPs do not depart much in their below-marginal acceptability point to the gradience of SRP unacceptability, not corroborating the syntactic account excluding SRPs by anti-locality of pronouns at A'-level.

The experimental work reviewed above did not provide explanations to why they are often not instantiated in non-obligatory cases; moreover, why the reported blocking of subject RPs (Pan, 2022) is not supported by existing L1 (Hitz and Francis, 2016) and L2 judgment data (Hitz, 2012) remain unexplained. A comprehensive description of Chinese resumption is summarized in (54) from the literature:

(54) Properties of Chinese resumptive elements (pronouns, clitics and adjuncts):

    a. The reported distribution of resumptives elements and clitics in Chinese RCs:

availability	constituency
unavailable	subject
freely optional in	direct object: *ta* (3rd-sg), the preverbal clitc *suo* (3rd number-

oral speech	neutral) heading a pronominal phrase by Ting (2003)
preferred or obligatory	adjuncts (not adjunct clause), indirect objects in double object constructions, object in subject controls, obligatory under ECP requirement: prepositional object, genitive/possesive constructions

(Pan, 2022, among others)

b. Contrary to what is suggested in its name 'resumptive', an RP in a Mandarin relative occur *in advance of* the head (unlike RPs with a real antecedent in left-dislocated topics or long-distance passives arguably involving movement). In addition to this difference in the word order of the two types of resumptive constructions, RPs in left-dislocations and relative RPs behave differently in whether stably allow reconstruction which nowadays is not taken as direct evidence for movement, indicating that different internal structures yield different interpretive properties between the two (Pan, 2016).

c. Mandarin shows that resumptive elements are not limited to the form of pronouns by allowing optional PP-adjunct resumption while traditionally resumptives are defined as pronouns in place of traces in θ-positions.

d. The classical Chinese remnant *suo* which occurs preverbally in relatives and passives may be a pronominal clitic equivalent to a deficient pronoun differing with strong ones in the obligation to only occur in derived positions (Cardinaletti and Starke, 1999). Ting (2003) analyses *suo* as attached to I[16] and bound by a base-generated null operator. Given the optionality of *suo* which alternates with a pronoun in the object position, Ting's analysis of *suo*-relatives leaves the movement analysis of *suo*-free object relatives unrefuted.

There have been three lines of theoretical work on Chinese resumptive elements, all of which adopt a base-generated analysis of both gap and resumptive relatives. The

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[16] There is a debate on whether Chinese has TP, but it is clear that Chinese projects AspP though controversy remains whether Asp is caught by V at LF. Thus, here IP is used abstractly.

most recent systemic works on Chinese RPs were by Pan (2016a, 2016b). Pan lists comprehensively where resumptive elements (including adjuncts) occur in classical and vernacular Chinese left-dislocations (e.g., topicalizations) and relatives. In Pan's (2022) classification, relative RPs are null bound pronouns while RPs in topicalizations are *pro*[17]. The difference between an RP in relatives and *pro* in topicalizations is that the latter *can* be unbound since Chinese topicalizations can be derived via either fronting an element or base-generating a topic which is not an element in the clause but holds a conceptual link with a related element within (Xu, 2017). Therefore, when resolved, the feature set of a relative RP should contain interpretable variable feature $_{in}$[var] and phi-feature as well as uninterpretable [Relative] (because [Rel] on C is interpretable); in contrast, *pro* carries $_{un}$[var] when the left-dislocation structure is not derived via extraction. In addition, Pan (2016) borrows from Guillot (2006) and Rouveret (2019[18]) and argues against the traditional view that reconstruction effects indicate movement (to be reviewed shortly).

The earliest work on Mandarin RPs was by Gu (2001) categorizing Chinese resumptives as 'quasi-RPs' in comparison with those 'genuine RPs' in Hebrew Both quasi and genuine RPs should fall under the category of 'grammatically licensed RPs'. Gu's proposal of RPs' internal structures takes spirits from Hua's (2000) distinction between '*shenme*' as wh-operator and wh-variable ('*shenme*' in in-situ Mandarin wh-question is ambiguous into a variable under existential quantification). Gu classifies RPs into three types whereby Mandarin RPs are base-generated rather than phonetic realization of traces but different from Hebrew ones. The RP internal structure that Gu proposes for bound RPs contain projections different from mainstream approaches to pronoun internal structures.

In the literature, it is often observed and proposed that subject relatives obey

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[17] Pan's (2022) treatment of Mandarin RPs as *pro* is welcomed by current conceptions of arguments (objects can also be 'dropped' (Huang, 1982, p.370)) and null bound pronouns in languages without Agr are true instances of *pro* in Chomsky's standard definition, a specified unpronounced pronoun (Holmberg, 2005).

[18] 'to appear' at the time when cited by Pan (2016).

somewhat different constraints from object relatives (Borer, 1984). Apart from the 'effect of Complementizer choice on extracting subjects' (*that*-trace effect) sourced from ECP, there is another line of proposals attempting to capture the restriction on subject resumption in some languages by resorting to the notion of A'-binding domain: Borer (1984) identifies cases where Hebrew subject resumption is blocked for non-pro-drop reasons, McCloskey (2017) and Rouveret (2019) make a similar proposal for Irish and Welsh. Since this line of explanations are configuration-based, Pan (2022) directly takes them to explain the distribution of Mandarin relative RPs. McCloskey and Borer propose that subject RPs are blocked from being bound by the A'-operator for occupying the subject position and thus enlarging the A'-binding domain to the matrix which contains a subject distinct from the RP. Unpredicted by this account, Engdahl (1985) reports that Swedish RPs surface in subject extraction to salvage ECP violation when needed. It is suggested that Swedish RPs are phonetic realizations of nominative traces only when ECP is violated judging from Swedish RPs' behaviours including licensing of parasitic gaps.

Also departing from RPs' parasitic gap licensing behaviours, Adger and Ramchand (2005) propose a C_{Rel} parameter, which means languages choose between available relativization strategies to deploy while both relativization strategies respect 'identity effect' in place of the traditional diagnostics for movement: Moved RCs respect ECP; Merged RCs can be rooted in deficient projection of Spec[19] or concretely reflected in lack of lexically realized relative pronouns (That overt wh-operator is in feature agreement with a null Comp in Rizzi's (1990, p.66) explains the distribution of Comp and the obligatoriness of 'that' for subject extraction in English RCs). Adger and Ramchand argue that the resumptive and gapped RCs in Gaelic (Welsh and other possibly 'Merge languages') should have an overt Comp and a non-trace foot of the dependency, provided *syntactic featural specification* different from 'Move dependencies' (i.e., features bundled on one or more than one lexical items).

Given the pervasive use of the term 'intrusive RPs', it is useful to point out that in

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[19] Lack of lexically realized wh-operator Spec makes movement at neither clausal nor nominal domain unavailable.

Sells' (1984) terminology overt traces RPs in Swedish ECP violations are 'grammatical RPs' while intrusive RPs serving to salvage island extractions are 'intrusive' and base-generated. As mentioned, these two types of RPs also differ with respect to their ability to license parasitic gaps: English RPs do not license parasitic gaps while Swedish RPs license parasitic gaps in relatives and wh-questions, as exemplified in (55):

(55) a. English:

 Which articles did John file__without reading___P?

 b. Swedish:

Det var den fänger^ som läkarna   inte künde avgöra [s-om hanj verkligen var

it   was that prisoner that the-doctors not could decide if   he   really was

sjuk][utan att tala   med _P personligen]

ill   without to talk with   in person

'This is the prisoner that the doctors couldn't determine if he really was ill without talking to in person'

(Engdahl, 1985, p. 7)

As mentioned, the *anti-locality* account of RP asymmetry (Borer, 1984; McCloskey, 2017) might conceptually be true for Chinese. However, the prediction of this minimality-based or locality-derived syntactic constraint that Mandarin subject RPs are categorically blocked (i.e., absolutely in all modality of presentation) (though it is a lexical fact that whereas *suo* is used as object clitic there is no subject resumptive clitic in classical Chinese) has not been supported by existing L1 judgment data (Hitz and Francis, 2016) and L2 judgment data on English subject RPs refuting blocking of subject RPs in Mandarin speakers native grammar from the perspective of transfer effect (Hitz, 2012).

The resumption scenario of Palauan might be particularly relevant for investigating Mandarin: in the literature, there is a controversy as to whether wh-movement takes place in Palauan. Georgopoulos (1985) analyses all Palauan RCs as containing an RP whose covertness/overtness follows from the distribution of ordinary pronouns in the

language. Thus, according to Georgopoulos, the reason why we cannot see an RP in a relativized subject position sources from the fact that Palauan drops subject pronouns rather than the *highest subject restriction* of A'-binding. In an attempt to refute Georgopoulos' view that base-generation is the only strategy to form A'-dependencies in Palauan, Chung and Wager (2021) analyse overt RPs (as opposed to null RPs) in Georgopoulos' analysis as intrusive and capture the pattern of resumption as resulting from the requirement that traces case-marked by the preposition *er* should be instantiated morphologically. In addition to their analysis capturing the pattern of overt resumption, Chung and Wagers provide island phenomena in other languages (e.g., wh-movement languages such as Hebrew and Swedish have island-free or weak-island relative clauses, however, controversies remain as to whether Swedish adopts two strategies to form A'-dependencies and whether Swedish relatives are not strong island is due to not derived by movement or multiple Specs of CP) to argue that, firstly, there exists a distinction in Palauan whereby intrusive RPs cross island boundaries whereas grammaticalized RPs do not; secondly, the fact that Palauan sentential subjects and relative clauses seem not to exhibit island effects. Nevertheless, Chung and Wagers' argumentation is not strong enough to support their core claim that intrusive RPs which can salvage island violations exist in every language.   When *locality* is not violated (no intervening element of the same features), extractability of elements within some types of islands (e.g., nominal ones including relatives) should be a diagnostic for A'-dependency strategies.

Although numerous experimental studies on Chinese relatives take *de* in Mandarin and *ge* in Cantonese as $Comp_{Rel}$, there is in fact controversy in the theoretical literature as to whether *de* is an X_0 category or a general modification marker underspecified for whether the prenominal modifier is an RC, PP, adjective, etc (Cheng and Sybesma, 2009). A few authors motivate their studies using gapped SRC strings by noting that it is *de*'s multiple uses that are potential to incur initial misanalyses in RCs (Ng and Fodor, 2011, among others). Ng and Fodor have tentatively suggested that *de* may not necessarily be $Comp_{Rel}$ on basis of their observations (coinciding with Adger and Ramchand's (2005) hypothesis under the feature specification on Comp proposed by

Rizzi (1990, p.67) in discussion ECP) for Celtic languages introduced previously that Chinese lacks relative pronouns) and there is no overt Comp for the left periphery in non-RC cases , e.g., in embedded declarative clauses in Chinese there is no 'that' introducing the embedded clauses as in English, which suggests there might be no lexically realized Comp in RCs as well.   As discussed previously, although the adnominal *de* separating elements within NP is often taken as Comp in the experimental literature, it remains possible that there is no overt Comp$_{Rel}$ in Chinese though *de* in effect serves as an indeterminant cue for an RC parse (Ng and Fodor, 2011).

It is evident that Chinese lacks relative pronouns, which meets Adger and Ramchand's hypothesis for externally Merged RCs, unlike Move-derived ones. Moreover, RCs in classical Chinese[20] do not employ an independent lexical item such as *de* in vernacular or modern Mandarin for Comp$_{Rel.}$ Despite no phonetic realization of Comp in classical Chinese, one of the frequently used RC heads *zhe* as in (51) is semantically equivalent to '*de ren* (de people)' and is used *exclusively* (i.e., cannot be used independently) in modified nominals such as '*lao zhe* (old people)'. Despite the lesser degree of classical Chinese acknowledged in theoretical literature (e.g., Ting's (2003) pronominal clitic analysis of *suo*, C.J. Huang and T. Lin's work on light verbs), it is possible that Comp$_{Rel}$ is *incorporated* (Baker, 1988) into *zhe*, one of the clitic pronouns exclusively serve as head of RCs in classical Chinese (Pan, 2016). For vernacular Chinese which is more analytic, there is no such set of 'RC head pronouns' made up by *head incorporation* (assuming the RC head is base-generated), therefore, the traditional view that *de* is Comp$_{Rel}$ meets diachronic standards and Adger and Ramchand's prediction for Merge languages where RCs are marked with lexically realized Comp and an RP at the foot.

(56) Hao   shi zhe,   xunyang   yi chong.

   Love thing head$_{relative}$, keep(pets) one insect.

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[20] The literary classical Chinese from which *suo* is inherited is the same language as modern Chinese: it had been prioritized for non-vernacular use until the Vernacular Campaign in 1917.

'Those who love (making) activities (all) keep an insect as a pet.'

(Pu, 1640-1715, in classical Chinese)

To repeat, there are differing analyses to Mandarin relatives: most approaches adopt similar configuration to English relatives, including the 'adjunction-to-external head/ canonical complementation' analysis or Kayne's 'raised head' analysis [21] (Alexiadou, 2000)); on the other hand, existing analyses differ in whether to adopt movement or not, except Wen (2020) who analyses *de* as D in the case of gapless, locative and temporal relatives (According to Huang et al (2009), locatives and temporals, unlike other adjuncts, share properties with arguments). Kayne (1994, 2011) argues that there seems to be no word-order-based directionality parameters; Rizzi (1990, p.31, p.117) in discussions on ECP suggests that the canonical/complementation direction may vary from heads to heads within a language. Kayne's hypothesis shed light on the word order pattern that Mandarin exhibits: Mandarin is SVO at IP level but employs differing patterns of directionality in the left periphery: C carrying topic-like features results in left-dislocated constituents while relatives are head-final.

Huang et al (2009) among others hold the view that, like topic constructions, Mandarin relatives can be derived via movement or base-generation, the latter strategy is indicated by resumptive elements. This view predicts that Mandarin resumptive elements in relatives are intrusive just like English ones and should primarily surface in cases where traces are blocked. However, the relative consensus, though lacking experimental support, that RPs are acceptable in object positions casts doubt on the traditional view by Huang et al.   On the other hand, English never allows resumption of an adjunct as in (57), suggesting relativization strategies in English and Chinese are at least not completely the same:

(57) That was the time when I should go home (*at that time).

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[21] The raised-head/promotion analysis is argued to be problematic for case-checking reasons in the case of German (Salzmann, 2017).

Rethink on (58) used by Huang et al to support movement cases:

(58) ..*ruguo ta (wei-shenme$_i$) sheng-qi wo hui bu gaoxing de yuanyin$_i$.

  .. if 3rd-pron for-what bring about-anger I will Neg happy DE reason.

  '…the reason I will not be happy if he gets angry why.'

In (58), neither of the two strategies can reach the intended reading where relativization of a reason adjunct inside a clausal conditional adjunct is attempted. However, it is viable to relativize a reason adjunct attached to the matrix relative clause, as in (59) where a gap or *wei-shenme* (for-what) precedes *hui* (will) in the matrix relative IP:

(59) … ruguo ta shengqi wo (wei-shenme$_i$) hui bu gaoxing de

           yuanyin$_i$.

  …if 3rd-pron anger I (for-what) will Neg happy DE yuanyin.

  '…the reason why I will not be happy if he gets angry.'

The contrast in availability of relativization exhibited by (58) and (59) can be explained by the current conception that *Agree* is the precursor of *Move* and not all island effects are indicators of *Move* (Ager and Ramchand, 2005). *Agree* also respects *Minimal Link Condition* whereby co-indexation between the reason deeply embedded inside the clausal adjunct is blocked by the superior shorter link which can be potentially tailed by the matrix adjunct. Thus, (58) is not sufficient to support an argumentation for the movement analysis. Other diagnostics are to be discussed in the following sections.

A traditional diagnostic for movement is reconstruction effects whereby a pronoun (anaphor, reflexive or reciprocals) receives a bound variable reading iff it is bound by the trace of a quantifier (Reinhart, 1983 in Pan, 2016), including (i) quantifiers' binding of anaphoric pronouns (ii) and reconstruction of the scope of a quantifier. This effect is well-tested in gap relatives. However, recent authors Pan (2016) and Yang (2020)

following Rouveret's (2019) analysis for Welsh resumptive relatives note that Mandarin RPs in the IP of relatives but not RPs in the left-dislocation constructions also fulfil reconstruction, suggesting reconstruction may not be a sufficient condition for movement as in (60):

(60) Mei-ge   daoyan$_k$ jiang   ta$_i$ na qu   can-sai   de

Every-Cl$_{sg}$ director Lv   3rd-pron take go$_{displacement}$join-contest DE

ta-ziji$_k$ de   xin-pian$_i$.

3rdsg-self   DE new-movie.

'Each director will take his own new movie to participate to a competition.'

Pan (2016, p.169)

In (60), 'Mei-ge daoyan (every-Cl$_{sg}$ director)' has at least one new movie of him/her, reconstruction of the wide scope reading of the universal quantifier '∀ > ∃' is realized; meanwhile, the reflexive refers to elements inside the relative IP through the afore-

Lindahl (2015, 2017) note that some Swedish relatives are not strong islands by virtue of multiple Specs of a C$_{rel}$, the MC example is in (61):

(61) ..yi-ge mei-ge_$_k$ jian-guo   (ta$_j$)   de   ren$_k$ _

one-Cl$_{sg}$every-Cl$_{sg}$meet-Asp   3rd-sg   DE person gap

dou   zhidao you   ren   xihuan *(ta$_j$) de   ren$_j$

all   know exist   people like   3rd-pron DE person.

'..one who everyone who has met him all knows there are people who like him.'

In (61), relativization happens inside another RC 'mei-ge jian-guo ta de ren (every-Cl$_{sg}$ meet 3rd-sg DE person)' serving as the subject of the verb 'zhidao (know)' which takes the matrix relative IP, indicating RCs are not strong islands in Mandarin. If *de* does not tolerate multiple Specs, unlike in Scandinavian languages (e,g, Swedish and Norwegian) which show island insensitivity (Kush and Dahl, 2022), i.e., allow multiple wh-movement under superiority effect/ Minimal Link Condition, then it is likely that

Mandarin relativization is possible to be derived not via movement and resumption is likely to occur in cases where movement is blocked by syntactic islands such as another RC in (61) as a last resort strategy (Shlonsky, 1992).

In the Mandarin example in (62a) and its impossible English counterpart in (53b), the relativized element of a subject RC comes from another RC embedded in the subject position of the higher IP, as shown in (58) the tree diagram for (62):

(62) a.Xiaozhang   jieshao   de   shangke renzhen   de   laoshi.

　　　Principal   introduce   DE   teach   seriously   DE   teacher.

　　　"The hard-working teacher who the principal introduced."

(Adapted from Sun et al., 2016)

　　　b. *The teacher whom the principal introduced who teaches very diligently.

(63) Syntactic tree diagram converted to English for (62):

```
                                      NP1
                             CP                N'
                          C'                 |
                   IP            de      NOPi  teacheri
              NP2        I'
          CP       N'  I    VP
        C'      NOPi null  teach seriously
     IP      de
  principal  I'
        I     VP
     introduce proi
```
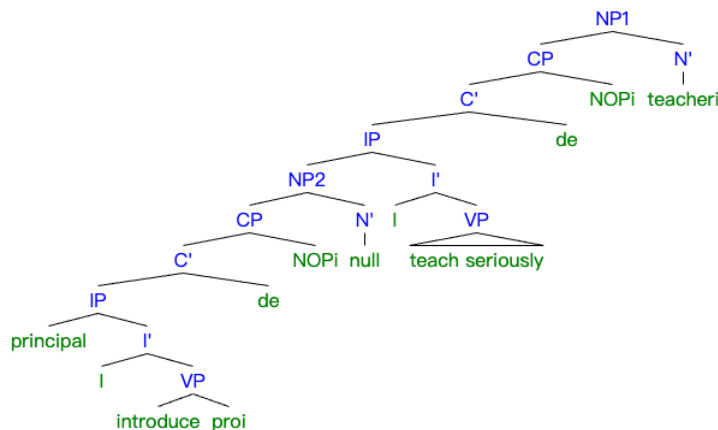
Following from the above argumentation and data, it is noteworthy that Mandarin seems not to be unique in deriving relatives via *Agree,* similar proposals, though controversially, are made by Rouveret (2019) for Welsh relative RPs and Adger and Ramchand (2005) for Gaelic. Geogopouos (1991, in Chung and Wagers, 2021) use data like (64) to argue Palauan RCs are not derived via movement:

(64) Palauan null head RC extracting an element from another RC:

　　A   buk a   [ku-dengel-ii a   [redil   [el   uldurukl-ii   _i   el

A   book   IR.1S-PF.know-3S   woman   Comp   R.PF.send-3S _i   to

mo er a del-ak]]].

Mother-1S

'The book is (the thing) which I know the woman who sent _ to my mother.'

<div align="right">(Chung and Wagers, 2021, p.793)</div>

At first glance, weak crossover exhibited in the gap relative in (65a) where the indice of the gap is likely to cross *ta-ziji de* (his-own) while this effect also holds for resumptive relatives when the crossed constituent is an epithet but appears to disappear in (65b) where ta seems not to have crossed *ta-ziji de* (his-own).

(65) a. *[[Ta-ziji   de]$_i$ lao-po sha-si   le   _$_i$ de] na-ge   ren$_i$.

He-self   DE   wife kill-die   Asp   DE Demons-Cl$_{sg}$man.

'The man that his own wife killed him.'

b. [[Ta-ziji   de]$_i$ lao-po ba ta$_i$ gei sha-si   le   de] na-ge   ren$_i$.

He-self DE wife   Lv heLv kill-die   Asp DE Demons-Cl$_{sg}$man.

'The man that his own wife killed him.'

<div align="right">(Pan, 2016a, p.56)</div>

The peculiar phenomenon in double-pronoun relatives can be explained by McCloskey (2017) proposal whereby weak crossover is obviated when there are two available mechanisms to establish the co-indexation among the three by virtue of the possibility that either 'ta-ziji de (his own)' or *ta* can be the RP. Combining this double-pronoun exception with the fact that Mandarin resumptive relatives do display weak crossover on a par with Mandarin gap relatives, Pan (2016) argues that this counts as another piece of supporting evidence that both gap and resumptive relatives in Chinese are derived via *Agree*.

In the literature, there is discrepancy and association between topicalization and relativization.   Kuno (1976 in Huang et al, 2009) proposes a 'Thematic Constraint' for Chinese relative constructions, whereby every relative construction is well-formed only if there is a corresponding topic construction but not vice versa. Several proposals (Tang

1979, Jiang, 1990, in Huang et al, 2009) on Chinese relative constructions echo Kuno's descriptive generalization, whereby relativization involves a base-generated[22] null topic coreferential with the head noun and the resumptive (covert or overt). And classical Chinese exhibits even more prominently this property where there seems to be no dividing line between a topic and a relative construction, as exemplified in (66),

(66) …Sheng, yi   wo suo   yu   ye ; yi,   yi   wo suo yu ye…

   …Life,   also I   SUO want SFP; righteousness, also I SUO want SFP…

'…Life is also what I want; righteousness is also what I want. (So I choose rightenousness and give up my life.)'

<div align="right">(Mencius, 372-289 B.C.)</div>

From (66), 'sheng (life)' and 'yi (righteousness)' are base-generated, the preverbal clitic *suo* would be in complementary distribution with a 3rd person pronoun *zhi*. Importantly, there seems to be hard to tell whether (66) is a base-generated topic construction where the topic at Spec,CP is overt and *suo* is a resumptive clitic A'-bound locally by the topic or (66) are base-generated relatives with a null topic bound by the head noun.   The word order of the two relativization structures in (66) directly resembles topic constructions. Nevertheless, as introduced, Chinese adopts a mixture of head-directionality (Liu, 2022; Kayne, 2011), thus we cannot decide that what (66) contains are topic constructions merely based on the word order.   It can be concluded from (66) that there exist data in classical Chinese where topic constructions and relatives seem to be indistinguishable for those sentences can be fitted into either representation between the two types of constructions. This points to the possibility that the formation of Chinese relatives involves a base-generated null topic. If this is on a right track, this comment-like property of relative IPs may contribute to the lack of

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[22] It is well-studied that Chinese topic constructions can be derived via base-generation or extraction, depending on whether the topicalized element is from the IP or external to the IP but holds 'aboutness' relation with an element in the IP.

distinction between appositives and restrictives for Chinese (Del Gobbo, 2003) since all seemingly restrictives would indeed be appositives.

Another well-known diagnostic of base-generated resumptives (Adger and Ramchand, 2005) is that resumptives should be unable to licence parasitic gaps as the alleged spell-outs of traces do, which supports a Merge (i.e., not Move) analysis of Mandarin relatives, as shown in (67):

(67) Example of the parasitic gap diagnostic:

*Ta shi yi ge   mei ge   jian-guo   ta   de   ren   dou zhidao you ren xihuan __ de ren.

He be one Cl$_{sg}$ every Cl$_{sg}$ meet-Asp 3rd-sg DE person all know EXIST people like__ DE person.

'*He is the kind of person whose every encounters knows that there are people who like him.' (The English translation is also ill-formed.)

Traditional analyses of Mandarin relatives are notably represented by Aoun and Li (2003) following from Ning (1993). A&L make a distinction between argument and adjunct relativization. A&Li argue that when the head noun is an adjunct it has to be base-generated[23] and binds a null operator extracted from VP. However, this analysis cannot explain the availability of an in-situ wh-resumption which, by the definition traces, can't be a spell-out of traces.

For relativization of arguments, they argue that the head noun at Spec,CP is raised from within the IP, with a DP shelling and nominalizing the CP. Under this line of analysis where Mandarin relatives are derived via two types of movement, resumptives should be intrusive as in English, nevertheless, these authors treat resumptives as anaphors paying no attention to the fact that anaphors and resumptives are by definition require different antecedents, A- and A' binders, which provides no explanation to why

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[23] As presented in Section 2 of Chapter 2, Wen (2020) argues that the head of gapless adjunct relatives is in fact raised from the IP.

resumptives can occur in both adjunct and argument relativization listed in Section 1 and why Chinese is theoretically plausible to employ the alleged three relativization strategies: raised head, operator movement and the simply alleged anaphoric resumptive. According to the established definition Gu (2001), resumptive variables should be in A-positions, however, the fact that they can occur in adjunct positions poses a problem for this definition.

I borrow Livitz's (2016, 2011, among others) defective Goal approach to the silence of dependent null subject in Russian embedded finite clauses that must refer to the matrix subject, as shown in (68):

(68) Petja skazal cto vesnoj   poedet   v Pariz.

   Petja said that Spring (null) will-go-3sing in Paris.

   'Petja said that he will go to Paris in the spring.   (Livitz, 2014)

Livitz borrows from Holmberg's (2005) and Reuland (2011) among others' analysis of the internal syntax of pronominals illustrated in (69a) and (70c): 'pronouns with independent reference' are fully projected DPs containing a fully specified ϕP or SemanticPs for Chinese illustrated in (69b) and (70c) whereas anaphors and bound pronominals are underspecified ϕPs deprived of a DP layer.

(69) a. [DP D [ϕP ϕ [NP N]]]   (Livitz, 2014)

   b. [DP D [SmtcP Smtc …[NP]…]

   c. [DemonstrativeP [NumP [ClassP NP]]]].   (Huang et al, 2009)

(70) a. A Goal is defective iff its formal features are a proper subset of those of its Probe.

                                        (Roberts, 2010, p.62)

   b. Agree is motivated by independently motivated semantic features.

                                        (Adger and Ramchand, 2005)

   c. The tail of an Agree chain cannot be fully specified for ϕ-features.

   (Reuland, 2011 in Livitz, 2014)

   Combining the above approach to pronominal syntax with Roberts' (2010, pp. 128-

155) defective goal approach to head movement in (70a) and Livitz's (2014) extension of Roberts' approach to the silence of Russian silent subject pronouns A-bound by the matrix subject, I adopt a Merge under Agree analysis illustrated previously in (26) to explain the distribution of *suo* and obligatory gap in (71):

(71) a. Zhe-xie   dou   shi   wo xihuan   de shu.

    Demons-Cl$_{pl}$ all   be   I   like   DE book.

    'These are all books that I like.'

    b. Zhe-xie dou shi wo suo xihuan de shu.

    These   all be   I suo   Like   DE book.

    'These are all books that I like.'

In (72) below representing (71b) before the clitic incorporation, N' represents the head noun which can be any layer in the nominal structure in (69c) and serves as Probe 1 with [+definite] probing for its Goal 1 the null topic also with [S1: +definite] which is Probe 2 for Goal 2 the null resumptive with no definiteness feature specified. Two times of Agree happens among the three which all possess the [S2: +theme] semantic-feature and appear to in an identical configuration to that in Move, in line with Adger and Ramchand (2005). The resumptive Goal 2 with [+theme] but with no [S1: definite] forms a subset of Probe 1 N' the head noun and Probe 2 the null topic (parallel to a null operator in a Move analysis).

(72): before-incorporation representation of (71):
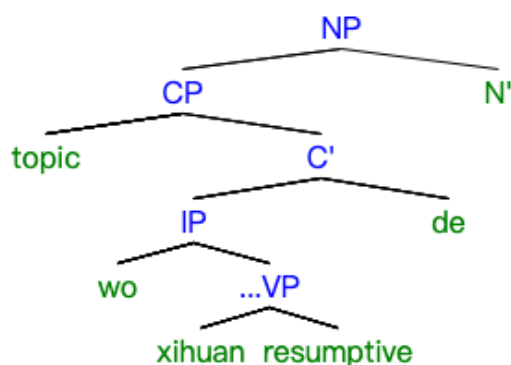
According to the derivational principle that only one copy of the lexical item carrying [S2: theme] can be interpreted when the PF-interface is reached, the resumptive should be deleted. Thus, the resumptive exist representationally and is not deleted until reaching the interface (Rouveret, 2011). This explains why overt resumptives are forbidden when the features it carries form a subset to those of its Probes. This PF-interface rule is parallel to the emergence of English resumptives surfacing in place of a deleted trace copy (McDaniel and Cowart, 1999). In other cases of Agree when the feature set of the resumptive Goal is not defective, their silence arises from the ambiguities they arouse, leading to their occasional appearance in daily speech and dis-preference by formal speech.

A question remains as to why defective Goal cases where the resumptive is deleted by the PF-interface while the pronominal preverbal clitic *suo* is optionally allowed. Following Ting's approach to *suo* in the passive *bei*-construction, before reaching the PF which would delete the resumptive directly, the resumptive can optionally moves to V according to the register of the speech (assuming V does not catch I (be it TP or AspP) until LF), instantiating *suo* and leading to the deletion of the resumptive as a trace by syntactic derivations rather than interface derivations. The cases where resumptives are nearly acceptable or obligatory exist because the three-place predicate argument structure disambiguates the independent reference interpretation of the resumptive or a preposition requires an overt object. In short, it is possible that for thoses cases where resumptives are not deleted by the PF-interface, they are dis-preferred for ambiguous inherently as a pronoun between a discourse reference or resumptive interpretation.

2.4 The lack of the subject-object asymmetry in Mandarin Chinese topicalization

Unlike resumption in MC relative structure, there does not seem to be an asymmetry of pronouns in topicalization, as exemplified in (73) (the MC topicalization where the topicalized element is a subset of the fronting element, as documented in Xu and Langendon (1985) and Xu (2000) is not relevant to this dissertation which focuses on resumption in the case of pronouns and pronominal clitics):

(73) a. Wu$_i$- xiansheng   wo renshi   ta$_i$.

Wu- Mr.   I   know   3rd-sg.

'Mr. Wu, I know him.'

(Xu and Langendon, 1985, p.2)

b. Wu$_i$-   xiansheng   ta$_i$ renshi   wo.

Wu-   Mr.   3rd-sg   know   I.

'Mr. Wu, he knows me.'

(Adapted from Xu and Langendon, 1985, p.2)

In (73), a resumptive pronoun can both occur in object and subject position with good acceptance, which makes it harder to explain why the subject-object asymmetry is reported for the other A'-structure relativization (Pan, 2022, among others) or conclude on the A'-binding account for such asymmetry. This lack of asymmetry in topicalization constitutes a motivation for the psycholinguistic hypothesis to be tested in the experiment. As shown in (73), there is less need of prosodic aid in comprehending MC topicalization since there is no misinterpretation; in contrast, the ambiguity of *de* between a relativization versus a possession marker (as exemplified in Chapter 3) necessitates a role of prosody for both subject and object resumptive strings. Due to the different pronoun positions in the subject and object strings, it is possible that it is the resulting differing extent of misinterpretations between SRPs and ORPs that leads to the different frequency of usage and acceptability reported in the literature.

2.5 Interim conclusions

Chapter 2 has approached Mandarin Chinese resumptive pronouns with analyses of the relative structures and resumptive pronouns and clitics themselves. Existing analyses of MC RCs are mainly borrowed from two movement analyses for English, namely, the head-raising approach and the operator movement (external Merge) approach. Diagnostics from various authors and existing experimental results indicate that Chinese relativization may employ a mixed usage of operator movement and base-

generated resumptive pronoun. While it is claimed that Chinese RPs are used as a salvaging device for alleviating extraction or processing load (Gu, 2001; Ning and Lin, 2008), it is reported to be used in simple relativization (Pan, 2022; Hitz and Francis, 2016; Hawkins and Chan, 1997; Hu et al, 2016; Lau, 2016). Meanwhile, it is reported by the various authors that direct object resumption is much better than SRPs. Pan (2022) borrows McCloskey's A'-binding asymmetry to explain this resumption asymmetry, which predicts a total unavailability of subject resumption unconfirmed by experimental evidence.

Chapter 3 The experimental study: the A'-asymmetry in relativization in the auditory modality

3.1 Motivations for the experiment: theoretical versus psycholinguistic accounts

Traditionally, resumptive pronouns (RPs) are defined as 'operator bound (o-bound)' pronouns which typically occupy a position of an otherwise A'-movement-derived gap (Demirdache, 1991). The precise term 'o-bound' in differentiation with 'A-bar bound' sources from Sells' (1984) distinction between a true RP and an *intrusive* RP: although the antecedent of an intrusive RP appears to be also in an A-bar position, the pronoun does not count as an o-bound variable but a device to ameliorate violations of *locality* or Empty Category Principle (Rizzi, 1990) whereby a trace needs to be governed by a lexical head to get interpreted. In (74), the intrusive RP 'him' is structurally illicit: 'him' is neither c-commanded by the empty category taken by 'hired' nor operator-bound by 'who', though 'him' shares reference with the RC head 'the man':

(74) The man who Bill hired __ without interviewing him.

<div align="right">(Sells, 1984, p.26)</div>

With increasing attention paid to the heterogeneous nature of resumption across and within languages in recent decades, RPs are not necessarily seen as indicators of a base-generated relativization strategy as assumed in early literature (Salzmann, 2017, p.182-190). Under current theoretical conception, *displacement* results from bundling more than one features which needs to be interpreted apart on one lexical item. Following this conception, languages can potentially use both or *Merge* and *Move* relativization strategies, with specific structural scenarios determining which strategy to employ; languages can also choose from one of the two strategies for all A'-constructions of the same type according to the feature-specification on lexical items or categories. The latter possibility legitimates the *Agree*-only approach to relativization in some languages (Adger and Ramchand, 2005).

So far, experimental results on English RPs' rescuing effect on illicit structures alleged in early theoretical literature (Ross, 1967; Sells, 1984) have shown inconsistent, making what 'intrusive' means becomes perplexing. McDaniel and Cowart (1999) confirm the 'spell-out of traces' view of English RPs (Kayne (1981); Engdahl (1985)). The 'spell-out of traces' account takes principles of *economy* into conception (i.e., RPs surface only when needed) and predicts that RPs do not ameliorate subjacency-violating islands and should *only* surface when there is a need to ameliorate representational violations where empty categories have to be able to get interpreted, which is corroborated by Keller and Alexopoulu's (2005) acceptability data. The 'spell-out of traces' account predicts RPs' share the same ability as of traces to licence parasitic gaps[24], as in Swedish (Engdahl, 1985). Hammerly's (2021) self-paced reading (SPR) and comprehension question results showing RPs' shorter response times (RT) and lower confusion rate representing comprehension failure in wh-islands (here more than one wh-extraction) confirms Asudeh's (2004, 2011) cross-linguistic resource-based explanation to RPs' facilitating effect on real-time comprehension. However, Hammerly's conclusion seems not to be in the same vein as previous studies, though studies differ in their dependent variables of interest (in effect, measurement), tasks or types of stimuli sentences. Heestand et al's (2011) result on the online acceptability of RPs in wh-questions or RCs in factive nominals, RC islands and adjunct islands show that RPs are never better than gaps even in the afore-mentioned three conditions tested. Keffala and Goodall (2011) and Keffala (2013) test acceptability of RPs and gaps under four structural conditions (plain, embedded, wh-island and RC island) cross two extraction positions (subject and object). Keffala and Goodall only found RPs rescuing effect when an ECP violation (here subject extraction) is combined with an island; in ECP or island violations alone, RPs do not show significant rescuing effect. One important implication from Keffala and Goodall's results is that RPs seem to have a stable level of low acceptability across all types of the embedding structures. If this is

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[24] This may explain why it appears to be that parasitic-gap licensing properties seem subject to language-specific rules.

the case for English, we have reason to conjecture that the existence of a stable level of low acceptability of RPs has something to do with whether a language has grammaticalized RPs. If RPs are not grammaticalized in a language (be it in mental or prescriptive grammar (the latter might be the case for Chinese)), future studies centring on RPs' effect (hindering or facilitating) on real-time comprehension are needed. It is along this ethos that this project is designed.

As introduced in Chapter 2, Chinese resumptive elements, especially resumptive pronouns (RPs) in relative clauses (RCs) have received a few theoretical investigations with different approaches. (75) exemplifies use of RPs without phi-feature agreement in 'movement-derived *displacement* constructions' where the object moves to Spec,vP in Cantonese (In displacement constructions, two categories share the same interpretation, regardless of whether the construction is derived by *Move, Agree* or *Match*. For other examples in Move-derived construction: see Chapter 2 for object clitic *suo* in the long passives. (76) is a resumptive RC claimed to be acceptable where the relativized element is direct object.

(75) An object RP not agreeing in phi-feature with its antecedent in a displacement construction in Cantonese:

Nei	jiu	zoeng	di	syu$_i$	tai-jyun	keoi$_i$.
You	must	light-verb[displacement]	CL-pl	book	read-finish	3rd-Sing

'You must finish reading these books.'

(Yip and Ahenkorah, 2022)

(76) Wo	ai-le	ta$_i$	san-nian	de	na-ge	ren$_i$.
I	love-Asp	3rd-Sing	three-year	DE	Dem-CL	person.

Pan (2022, p.2)

Pan (2016) and Yang et al (2020) support a base-generation or *Agree*-only analysis of Chinese relatives. According to Pan's examples (p.35-40) where an RP is unable to save the unacceptability of complex NPs (extraction from an RC inside another RC), *intrusive* RPs do not exist in Chinese RCs, as exemplified in (77),

(77) Xiaozhang   jieshao-guo   (ta) de   shangke renzhen   de   laoshi.

Principal   introduce-Asp   3rd-sing DE teach   seriously DE   teacher.

"The hard-working teacher who the principal introduced."

(Sung et al., 2016)

Pan analyses an empty category in Chinese relatives as a *null bound pronoun*, i.e., a null *true RP* in the sense of Sells and Chao and Sells (1883) (in distinction with a resumptive *pro* in left-dislocated topicalizations).

In Gu's (2001) proposal, an *apparent* empty category surfaces when a DP projected by an RP carries strong relative feature and holds a null operator morpheme in Spec to which the pronominal head moves. Under a Lexical-functional Grammar approach, Yang (2016) also concludes that Mandarin is an 'overt-or-null-RP language'. Despite different details, the above-listed works all adopt a base-generation approach to both gapped and resumptive RCs in Chinese, which differs from traditional approaches where at least gapped RCs are derived via movement (notably, Aoun and Li, 2003).

In literature on the processing of Mandarin RCs, the Comp for a Mandarin relative is arguably instantiated by '*de* (的)'. Alternatively, *de* is a cue indeterminant for an RC parse because of *de*'s ambiguous usage (Ng and Fodor, 2011), which fares well with Rizzi's (1990) view of 'Comp agreement/that-trace effect' given there is no lexical realization of relative pronouns.   Linearly, *de* separates a clause of SVO[25] word order and a following head of a relative structure.   However, *de*'s usage is not limited to separating a relative clause from its incoming head NP.   In fact, 'the *pre-nominal de*' (in distinction from its homophones) marks 'modification relations' between *all* types of modifiers and a head NP as long as the modified phrase is a nominal (Cheng, 1986; Huang, 1982). In resumptive SRCs, the RP is also said to suffer from garden-path effect (Ning, 2008): though there is not *de* separating SRP and the verb, Mandarin SRPs can

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[25] The debate on SVO-vs-SOV word order of Chinese in the diachronic literature sources from whether there is head-directionality parameter for a language (Kayne, 1993, 2011). This project assumes that at least linearly the word order of modern vernacular Mandarin is SVO (Liu, 2022).

also be ambiguous into a possessive with *de* the head of PossP omitted for semantic (Cheng and Sybesma, 2009) or contextual reasons (Si, 2017). As tested by previous studies on gapped SRCs garden-path strings, on one hand, it has been supported under multiple experimental paradigms that *de* can incur parallel analyses with possibly one analysis initially ranked high by the parser, suggesting a processor not constrained by syntactic information only (Hseih et al, 2009; Ng and Wicha, 2014); on the other, participants in a auditory comprehension task with gapped SRC stimuli should also be able to be biased towards one interpretation under manipulation of prosodic phrasing alone, according to Ning and Shih's (2012) results where pitch resets cannot counter-effect the role of pause insertion[26].

Among the temporary analyses tested by quite a few studies using gapped SRCs (Ng and Wicha, 2014) and resumptive embedded SRCs and ORCs, interpretations sourcing from whether *de* cues an upcoming RC head or serves to link a possessor and a possessee in a DP (Ning, 2008) may also arise during comprehending resumptive RCs. As confirmed by my informants, the '*de* ambiguity' pertinent to comprehending resumptive RCs also lies in the optional use of *de* in a possessive relation between two nominals: 'N1 (de) N2' means 'N1's N2' (Cheng and Sybesma, 2009). In other words, *de* is arguably D akin to '*s* in English in a phrase representing possession relationship. A terminological caveat worth our attention is that the 'possessive ambiguity' caused by an RP to test in the experiment refers to the possibility that comprehenders (here listeners) may misinterpret an RP in object positions and likewise subject position as a possessor, i,e, 'N1+*de*$_{Comp}$' into 'N1+*de*$_D$ for object resumptives and 'N1+(an omitted de)' for subject resumptives, rather than an RP serving as the subject in a possessive phrase, i.e., in Spec,possessP such as '*ta*+ kinship NP' used in Francis et al's (2015) Cantonese study, the latter are preferred cases of resumption. Though SRP and ORP ambiguity are of the same lexical sources, the experiment will only test the potential ambiguity in object resumptives given no phrasing difference exists between

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[26] In principle, heightening the initial pitch at a disambiguation cite facilitates listeners' expectation that the sentence has not finished yet (Ning and Shih, 2012).

resumptive and possessive interpretations for subject resumptives).

In addition to possible mis-resolution of RPs, if in the preceding syntactic environment there are disambiguating elements such as those being a constituent of a higher matrix expecting an incoming nominal and/or DetP-ClassfierP shelling the RC (such RCs following DetP-CLP are argued to be appositives targeting bare nouns (Huang et al, 2009)), *de* ambiguity is unlikely to happen because of listeners' predictive processing. These intuitions from the informants at York motivate the design of the experiment, that is, 'isolated' stimulus strings without preceding disambiguating elements: RPs in isolated ORC strings are said to be prone to the afore-introduced misinterpretation. In addition, the degree of such misinterpretation can be modulated by multiple factors: first, the probability of another context referent for specific sentences ; and second, for individual factors; third, prosodic phrasing, among which the first and the third are already observed in Chen and Wang's (2007) and Chen (2005) on the distribution of Mandarin RPs.

Despite descriptive observations in a cross-linguistic perspective, Chen and Wang (2007, 2008) did not provide detailed theoretical analyses of overt and null RPs, nor did they expound on what possible prosodic or contextual factors are. Thirdly, Chen and Wang's (2007) description that, when embedded, SRPs can alternate with gaps while isolated SRPs are unacceptable has never been experimentally supported. A noteworthy flaw in Chen and Wang's claim is that, in fact, it is speech-reporting predicates that embed the subject relative clause in their examples, which does not constitute all cases of embedding. In fact, there are also experimental studies suggesting embedding might not be an independent contributor to the acceptability of RPs: first, Ning's self-paced reading results (2008, p.159, the embedding verb is '*xiwang* (hope)', though no spill-over regions provided) suggest no significantly different temporal pattern in comprehending 'non-reported embedded' between gaps and RPs in simple SRCs; second, English ORPs which share similar low production rate to Mandarin RPs (though may be different in nature) uniformly receive low acceptability, regardless of embedding (Hu et al, 2016; Morgan and Wager, 2018). In Cheng's (1995, in Hu et al, 2016) children production data, Mandarin ORPs are produced at 7% and object

resumptive NPs 15.8%); Lau (2016) tested Hong-Kong-born Cantonese-speaking children on direct object resumption which was confirmed to facilitate audio-visual compression as shown by reduced error rates, although the tested children nearly never produced ORPs which Lau claims a legitimate relativization strategy for Cantonese Chinese.
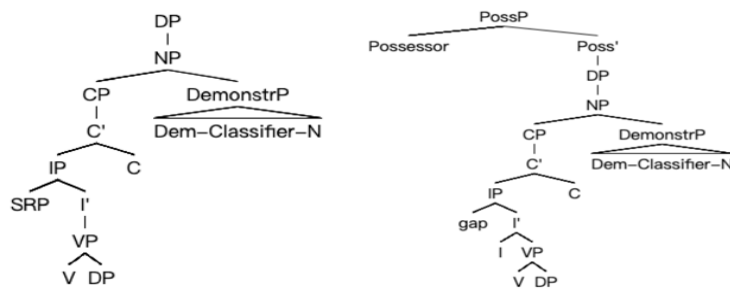
Ning's (2008) and Ning and Lin's (2008) questionnaire results suggest that RPs are preferred in object control predicate when comprehenders show difficulty in reconstructing the indirect object of such a three-place predicate. Apart from preference for RPs in control predicates, Ning and Lin conclude, on basis of comprehenders' strong preference for RPs in a variable position taken by a preposition which they deem a position impossible for extraction, that Mandarin RPs' surfacing follows from the same mechanism as by English RPs which are argued to rescue movement or representational (ECP) violations. However, if Mandarin relatives are derived via *base-generation*, the oblique object position still requires an overt pronoun since it receives inherent *case* from the preposition. Ning and Lin also note that, in addition to grammatical requirements, RPs' surfacing is also influenced by their competition with gaps as to the degree of garden-path effect that they incur: gapped RCs can potentially arouse matrix illusion due to the head-final pattern of Chinese relatives; apart from to the matrix illusion arising from head-finality, resumptive RCs can suffer from matrix readings containing a possessive made up by the RP and *de* ambiguous into a possessive marker.

Summarizing, it is reasonable for this project to hypothesize that SRPs are not categorically blocked in all modalities but are covert in formal register, they seem to be worse than ORPs for different degrees of garden-path effect between the two. This experimental study also aims to test whether SRPs tend to become covert for syntactic reasons other than *anti-locality*: Gu (2001, p.149) adopts the view in Huang (1989)'s *generalised control theory* that subject position in Chinese intrinsically is not a variable position to argues that covert SRPs are formed by means of either the null wh-morpheme in Spec of post-base-generation A'-movement in Spec,ResumptiveP or controlled as a *'Pro'*.
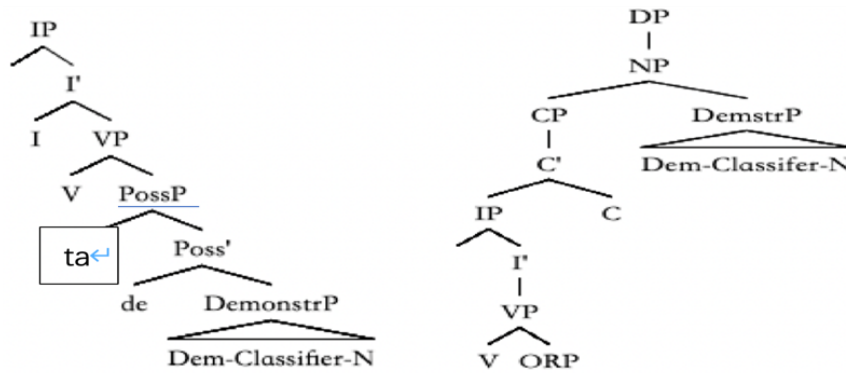
Apart from being inconsistent with existing data (Hu et al, 2016), the theoretical account *A'-binding restriction on subject resumption* is also at odds with the predictions of Frazier's *garden-path model* consisting of two syntactic processing principles 'late closure' and 'minimal attachment' (Frazier and Rayner, 1982; Frazier and Fodor, 1978; Frazier, 1995, 1979). Unlike the more emergentist '*constraint satisfaction*' models (MacDonald 1994; MacDonald et al, 1994), the model prioritizes 'syntactic processing' over other factors (lexical and discourse factors, etc) for the first-pass processing (Frazier and Rayner, 1982) but not for the optional second-pass revision process. Accordingly, the garden-path model predicts involvement of other factors (such as lexical-semantic information) in the possible revision process triggered by the structure-disambiguating cue which contradicts comprehenders' first analysis. Taking the initial and revision processes together, the model predicts *a singular analysis at a time* (rather than multiple analyses in competition) for adopting an initial analysis and the possible revised analysis (Fodor and Inoue, 2000). In (78) and (79), the structures in the two ambiguous strings favoured by the syntactic processing model are on the left:

(78) The diagrams of subject resumptive (left) and the corresponding possessive (right)

(79) The diagrams of object resumptive (right) and the corresponding possessive (left)

IP
I'
I VP
V PossP
ta
Poss'
de DemonstrP
Dem-Classifier-N

DP
NP
CP DemstrP
C' Dem-Classifer-N
IP C
I'
VP
V ORP

In (78), the principle *late closure* predicts an advantage of subject resumptive over subject possessive during initial analysis; on the left of (79), object possessives are predicted by *minimal attachment* to be advantages in initial reading during comprehension. Therefore, object resumptive strings are disadvantages during syntactic processing whereas subject strings are advantageous. Thus, the garden-path syntactic processing model produces predictions contrary to the A'-binding restriction. Different from the predictions of the garden-path model (Frazier and Rayner, 1982), due to the higher lexical frequency of possessive '*ta..de*' over resumptive '*ta de*', MacDonald et al's (1994, 1999) lexical approach to processing predicts a processing advantage of possessives reading over a subject resumptive reading and an advantage of possessives reading over an object resumptive reading.

3.2 The experimental design and predictions

The auditory questionnaire is designed as a 'non-metalinguistic experiment'. Under the experimental design, participants are not to judge the acceptability and the prosody-disambiguated stimuli are to direct them to just one interpretation between the two readings, i.e., the ambiguity which is a possible source to bring about the alleged unacceptability.

According to native speaker intuitions from non-linguistic and linguistic postgraduate cohort at the University of York, the unacceptability of resumptive pronouns documented for the written modality will lessened if the pronoun is manipulated to be deaccented which resembles neutralization viewing from Praat; likewise, their possessive counterparts will be no longer ambiguous once phonetic

prominence (i.e., increased pitch, intensity and duration) is put on the pronoun which will be likely to be interpreted as a 'contrastive focus' indicating alternatives inconsistent with the hear's expectations in the (non)-linguistic context (Zimmermann, 2007). The phonetic-prominent pronoun will be limited to a possessive interpretation, that is to say, the resumptive ambiguity is filtered out by such prosodic manipulation.

The experimental design adopts a design used in focus perception literature which arguably originates from Rump and Collier (1996) wherein participants choose a question for the heard utterance.

The study adopted a 2*2*2 design. The manipulations are in (80):

(80) Coding of the experimental factors:

Factors and levels	Factor 1: String type	Factor 2: Construction type (i.e., reading)	Factor 3: Prosodic congruence with the context	Interactions: prosody*string Prosody*reading String*reading Prosody*string*reading
Level 1	Subject (S) +1	Resumptive relative (RC) +1	Match +1	NA
Level 2	Object (O) -1	Possessive -1	Mismatch -1	NA

All experimental items and fillers were of similar character numbers (range: 9-14, mode: 11 characters* 6 times, Mean: 10.38, SD= 1.65). (Inconsistent numbers are to ensure naturality when creating items, the replication in the full-scale will move to consistent character numbers). There were 16 pairs of critical items and 18 fillers of different constructions but of similar length (18=2+16, with the initial two trials fixed, to ensure the initial two when participants will be familiarizing themselves with the task are fillers). Trials were counterbalanced randomized for each of the two sets of stimuli. Participants were randomly assigned to one stimuli set and only saw one condition per

item.

3.3 The stimuli

The stimuli were recorded in the professional recording studio at the researcher's department. In a sound-proof cell next to the recording computer operated by the department's technical supervisor next door, a 25-year-old female Standard Mandarin native speaker wearing a wired microphone produced each stimulus after reading a structure-eliciting question on the script as the preceding context. The productions were recorded and clipped by the software [Audacity](). After the session, the recording was reported as mp3 files to be fluently compatible with the experimental platform. Examples of experimental materials are in (81) and (82):

(81)   a. Subject possessive (pronoun unaccented, // represents critical prosodic boundaries while such a boundary can also be placed to '/', which will be further confirmed in the semantic equivalence listening task in one of the full-scale tasks[27]):

   Matching context: Which-Classifier colleage?

   Ta_k houlai   hui-dao   zuguo//   de/   na-ge $tongshi_k$.

   3rd-sg   later   return-to   home-country   DE   Dem-Cl_{sg} tongshi.

   'The colleage that (she) returned to her home-country.'

   b. Possessor pronoun in contrastive focus and accented, represented by italicization and '~' in bold:

   Matching context: Whose colleage?

   ***Ta*~**   houlai   hui-dao   zuguo   de   na-ge   tongshi.

   3rd-sg   later   return-to   homecountry   DE   Dem-Cl_{sg} colleage.

   'Her colleage that returned to her home-country.'

(82) a. Object resumptive:

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[27] The critical boundary for subject resumption can as well be produced after *de,* similar to the flexibility of boundary location in gapped relatives.

Matching context: Which-Classifier student?

Yangshi baodao -guo ta$_i$ // de/ na-ge xuesheng$_i$.

Central-TV reported-Asp 3rd-person-sgl DE Demonstr-Cl$_{sg}$ student.

'The student that the Central TV channel reported on.'

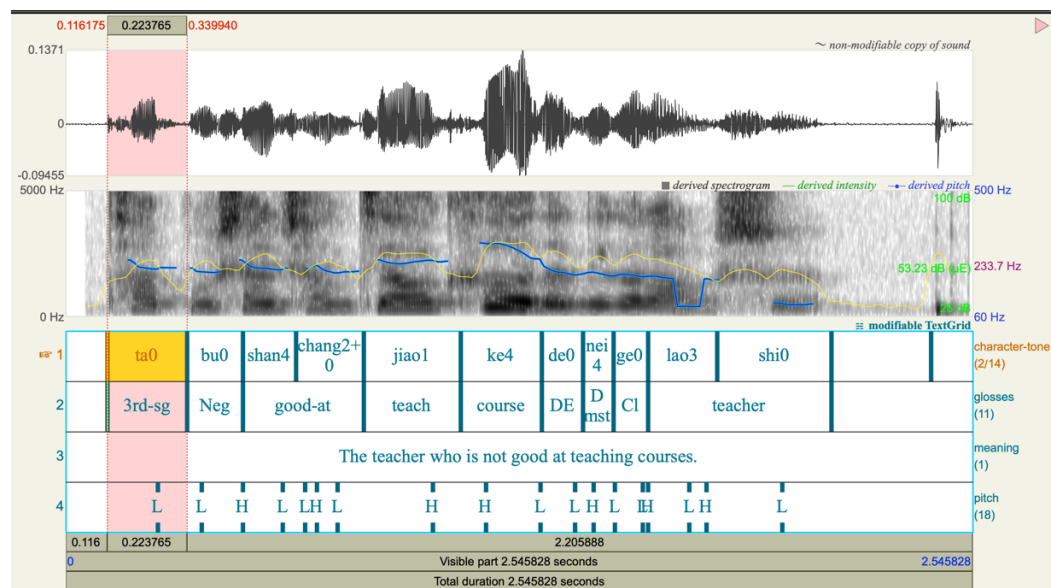b. ORP-string identical possessive with the possesor in contrastive focus with phonetic prominence:

Matching context: Whose student?

Yangshi baodao -guo // *ta ~* de na-ge xuesheng.

Central-TV reported-Asp 3rd-person-sgl DE Demonstr-Cl$_{sg}$ student.

'The Central TV channel reported that student of his/hers.'

The core attention in the phonological transcriptions should be paid to *the varying location* of disambiguating pauses; acoustic analyses of the pilot stimuli focus on the duration, pitch range (the mean of minimum and maximum F0s, following Yang et al (2019) for Mandarin) and maximum intensity of the segment most relevant (Grillo, 2016, 2019) for the four readings (interpretations), that is, the third-person-singular pronoun '*ta*' which is of *Tone 1* the flat tone with a mild rising.

(83) An example of subject resumptive (SRP) stimuli:

(84) An example of SRP-string identical phonetically prominent possessives:
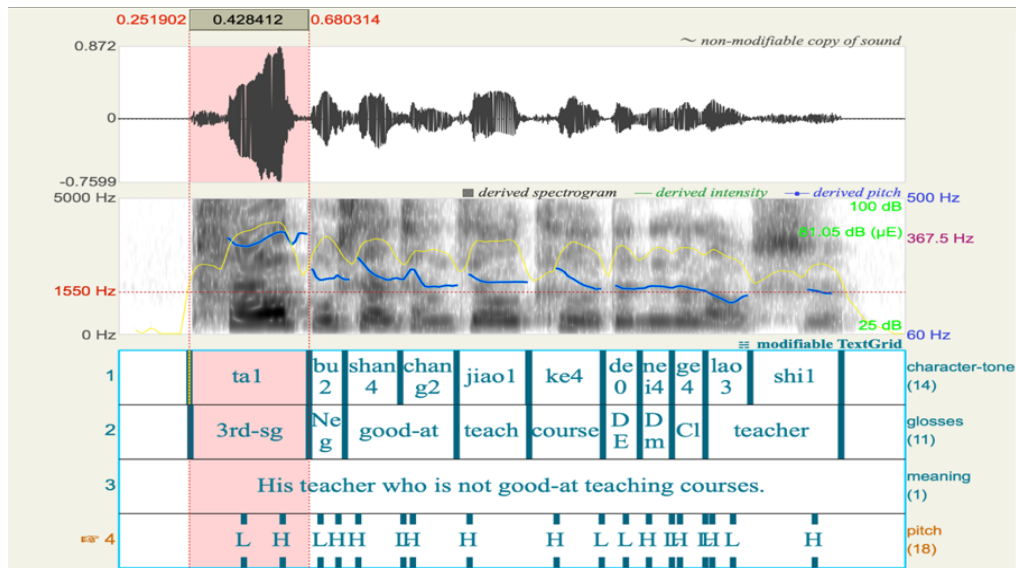
For (83) the subject resumptive relative, *de* seems to be grouped with the relativized clause; while sometimes some speakers maintain that *de* can also be grouped with DemonstrativeP, as in (84) the SRP-string identical phonetically prominent possessive.
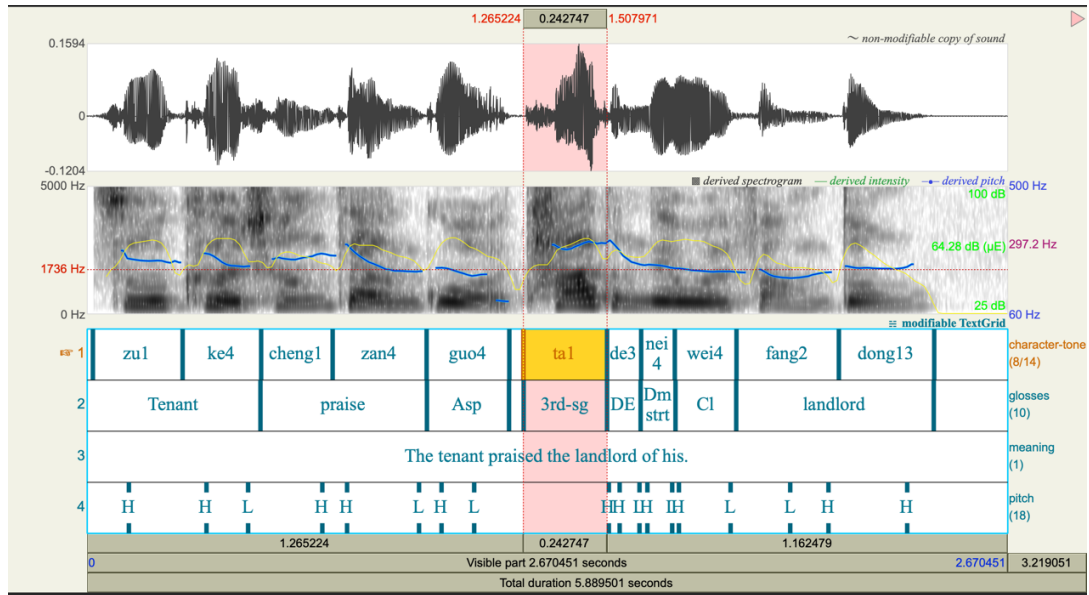
(85) An example of object resumptive (ORP) stimuli:
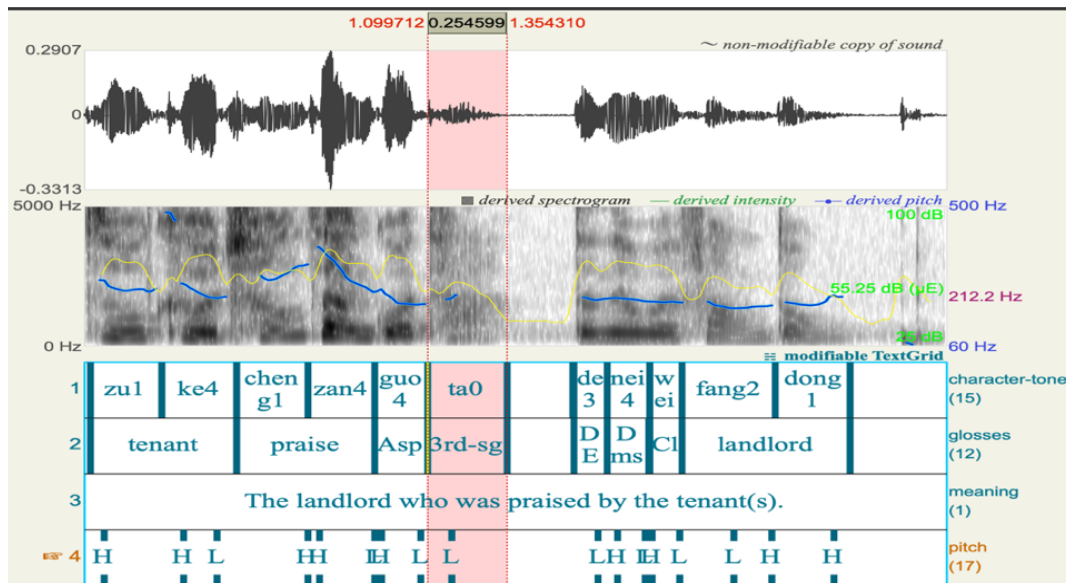
(86) An example of ORP-string identical phonetically prominent possessives:

In (85) the object resumptive relative, the disambiguating pause is placed *after* the relativized clause; in (86), the phonetically prominent possessives counterpart, the disambiguation happens after *guo* rather than after *ta* as in (85).

Measurements of the phonetic properties of *ta* is in (87) and (88). When *ta* is unfocused, it was pronounced with a neutral tone with a convergingly low pitch target (Xu, 2020), which is often shown too short to obtain a measurement on Praat. For this reason, measurements of the pitch range of *ta* was reduced to maximal F0.

(87) Acoustic measurements of *ta* for SRP strings for 16 pairs of sentence frames

	Subject resumptive reading (Mean (SD))	Focused possesor (Mean (SD))
Maximum pitch (F0/Hz)	244.46 (15.03)	379.36 (14.58)
Duration (time/second)	0.17 (0.04)	0.33 (0.04)
Maximum intensity (db)	64.35 (4.85)	79.48 (5.38)

(88) Acoustic measurements of *ta* for ORP strings for 16 pairs of sentence frames

	Object resumptive reading (Mean (SD))	Focused possessive taken by the verb (Mean (SD))

Maximum pitch (F0/Hz)	238.54 (53.09)	364.33 (24.52)
Duration (time/second)	0.27 (0.07)	0.27 (0.03)
Maximum intensity (db)	59.48 (4.98)	75.52 (7.35)

The results of the analyses of the acoustic properties of *ta* in the stimuli are in (89):

(89) P-value table of the Welch two-sample t-test (CI=95%):

	Subject-string p-value	Object-string p-value
Maximum pitch (F0/Hz)	5.553e-11	0.0001255
Duration (time/second)	1.033e-06	1
Maximum intensity (db)	3.953e-05	0.0002393

The results of the above measurements of stimuli show significant differences between focused and unfocused material across subject and object position, except the duration property of object strings.   This exception and be explained by (85) and (86): when *ta* serves as an object resumptive, it is de-accented or pronounced with a neutral tone and located at the end of the relativized clause; whereas when *ta* is a possesor taken by a verb as in (86), it must be closely grouped with *de*[28] to form a possessive phrase altogether.   Therefore, the insignificance of the p-value for object strings' difference in durations cannot change the conclusion that for both subject and object strings *ta* is not in acoustic prominence for a resumptive reading and *ta* can be focused when used as a possesor.

3.4 The experimental procedure

The experiment was built, conducted and recorded online on Gorilla. The questionnaire starts with the Consent and Information Form approved by the department's Ethics Committee and No example trial or any form of feedback were

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[28] As introduced in Chapter 2, *de* is ambiguous between a relativization marker and a possession marker (Si, 2017; Cheng and sybesma, 2015).

designed in the task.

Participants were recruited online and offline at Berrick Saul Building on campus. Participants joined the experiment by clicking on the *Gorilla* link. Participants first chose to tick 'agree' on the Consent and Information Form and then the task. None of them had been told about the general research area and the task instructions before reading the form. Participants were filtered by device to use a desktop computer and were advised to wear headphones or seat themselves in a quiet place to enhance attentiveness. Thirty-five (N=35) participants completed the task and all their data were taken into the statistical analysis.

After agreeing to the ethical consent approved by the department and reading general information about the project, participants completed sound check by checking the volume of their headphones or sound players when listening to an audio saying 'one…two…three'. All participants completed the task within 16 minutes. Each trial was made up of three displays. The first display comprised a rapid-passing fixation cross. In the second display, a contextual (here structure-eliciting) question corresponding to a possessive or resumptive relative reading was shown simultaneously with the automatic playing of the audio. The third display asked participants to choose from 'match' or 'mismatch' with the preceding contextual question.

3.5 Results and interpretations

All thirty-five participants' data (i.e., all data of the participants who completed the task) were included in the data analysis. The mean accuracy percentage across all critical trials is 72.1% (SD: 44.9%). Accuracy means by the eight conditions is in (90) where brackets contain *standard error* of the accuracy percentage.

(90) Bar-chart: mean accuracy percentage by conditions (standard errors are in brackets)

Mean accuracy percentage by conditions
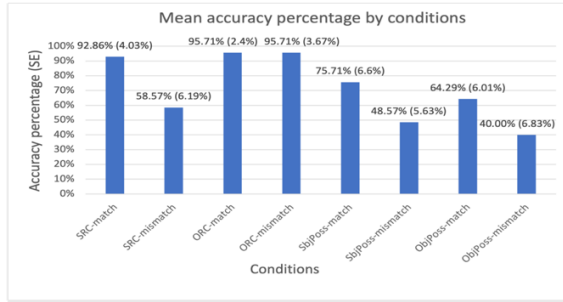
From a glance at (90), it can be observed that the accuracy of the subject resumptive match (SRC-match) condition is close to that of the object resumptive conditions, which suggests a subject resumptive interpretation can be reached with aid from prosody rather than what is claimed by the syntactic constraint account.

All participants' data were included. Their responses were manually set as numeric on *Microsoft-365 Excel* (correct response=1, incorrect=0). The file was transformed to a csv file before imported to *RStudio* on which the types of data points and variables were checked. The two levels of a factor were sum-coded (resumptive=1, possessive=-1; subject string=1 object string=-1; prosody's congruence/match with the context=1, incongruence=-1). Two models (a mixed model and a simple logistic regression) were fitted using *lme4* (Bates et al, 2009).

A *Generalized linear mixed model (GLMM)* using the *glmer* function *mm2<- glmer (response.accuracy ~ string*reading*prosody+ (1| trial:sbj)* where prosodic congruence, reading and string were fixed effects and subjects and trial items were random effects were fitted to the data. The subjects and items have an interaction where the variance attributable to items varies by subjects. Fixed effect estimates are in (91):

(91) GLMM fixed effects table ('*' and '.' represent levels of significance):

	Fixed effect estimate	Standard error	Z value	Pr (>|z|)
(Intercept)	1.328	0.1386	9.580	< 2e-16 ***
String	-0.2862	0.1386	-2.065	0.03895*

Reading	0.9825	0.1386	7.088	1.37e-12***
Prosody	0.5366	0.1386	3,871	0.000109***
String*reading	-0.5092	0.1386	-3.673	0.000239***
String*prosody	0.2726	0.1386	1.966	0.04927*
Reading*prosody	-0.01169	0.1386	-0.084	0.9328
String*reading*prosody	0.2523	0.1386	1.820	0.06874

(91) shows that the negative coeffeicient estimate β= -0.28624 indicates that the subject string type which was coded +1 is less prone to resumptive readings (p<0.05). Nevertheless, string type interacts with readings (p<0.001) wherein listeners are more prone to a resumptive reading when the string type is *object,* pro reported in theoretical literature. The string type also interacts with the prosodic congruence (p<0.05), suggesting subject strings rely more on the prosodic congruence with the context than object strings. The other two factors, the reading/construction type (resumptive=+1) and the prosodic congruence with the context (match=+1) are also significant (both p<0.001) with positive βs, suggesting that a resumptive reading is elicitable for both subject and object positions and resumptive prosodies facilitate accuracy to a greater extent than arguably their more frequent counterparts possessives; the statistics of the prosodic congruence factor suggest a facilitating effect of its match with the context, indicating comprenders' sensitivity to overt prosody. Meanwhile, there was no significant interaction between the construction type (reading) and the prosodic congruence, suggesting that the task design was successfully applicable to both constructions (presented with prosodic manipulations) and their contexts.

3.6 Discussions: the feature-sensitive A'-movement account of MC long-distance reflexives

The A-level (i.e., argument-position) locality of anaphors in Mandarin Chinese has attracted much research for posing a challenge to the Principle A (PA) of the Binding Theory (Chomsky, 1981) for exhibiting a property of pronouns described in the

Principle B (PB).   According to PA, an anaphor (reflexives and reciprocals) must find its reference in the local domain, i.e., in the minimal functional category usually delimited by a distinct subject.   In complementary distribution with PA, a pronoun must not refer locally according to PB.

The Mandarin Chinese challenge to the Principle A was previously exemplified in (2a), repeated in in the English-Chinese minimal pair in (92):

(92) a. John thinks that Sherlock likes himself.

   b. Yuehan$_k$ juede   Xialuoke$_k$ xihuan   ziji$_k$.

    John   think   Sherlock   like   self.

    John thinks that Sherlock likes himself.

In (92b), the MC mono-morphemic reflexive 'ziji (self)' has a 'subject-oriented' interpretation 'Yuehan (John)' while *ziji* here can also refer to 'Xialuoke (Sherlock)' in certain context or with another prosody.   Therefore, *ziji* can be a long-distance reflexive able to refer to the matrix subject, exhibiting a surprising behaviour of pronouns in an addition to being anaphors.   Cross-linguistically, *ziji* represents monomorphemic reflexives which only exist in a number of languages such as *zibun* in Japanese (Noguchi, 2018), *sig* in Icelandic (Sells, 1987) and *zich* in Dutch (Broekhuis, 2022), all of which appear to have logophoric (i.e, discourse) use of anaphors; in contrast to the African languages Tuburi and Ewe, e.g., In Ewe, there is a designated logophoric pronoun *ye* (Pearson, 2015).

Huang and Tang (H&T, 1987) argue that MC long-distance reflexives cannot be exempted from syntactic computations by sheer discourse-based accounts including perspective-centre-based account (Sells, 1987), syntactic (Pollard and Sag, 1992; Reuland and Reinhart, 1993) or semantic analysis of those reflexive-sensitive predicates (Kamp, 1982) or Gricean pragmatic approaches (Huang, 2000).

H&T reduce MC long-distance reflexivity to successive A'-movement of 'ziji (self)', as evidenced by (93):

(93)

Ta$_k$ zhidao suiran Lisi piping-le ziji$_k$, dajia haishi hen xihuan ta$_k$.

3rd-sg know although Lisi criticize-Asp self, we$_{generic-pl}$ still very like 3rd-sg.

'He$_k$ knows that although Lisi criticized self$_k$, we still like him$_k$.'

<div align="right">(Huang and Tang, 1987)</div>

In (93), 'ziji (self)' exhibit successive A'-movement to Spec of the matrix of the embedded clause before it further moves to Spec of the highest matrix, during which *ziji* crossed the MLC-predicted island the adjunct clause initiated by 'suiran (although)' due to carrying different interpretive features to the complementizer of the adjunct clause 'suiran (although)'.

Chapter 5 Conclusions

The dissertation starts with providing a link between classical notions of minimality or locality and the asymmetrical distribution of resumptive pronouns in the subject and object position in quantification and then relativization. Next, the dissertation reviews theoretical and psycholinguistic discussions on the categorical status of Mandarin Chinese resumptive pronouns *ta* and syntactic analyses of the object resumptive clitic *suo* as a pro-object pronominal clitic in two structures involving A'-binding, i.e., relativization and the long *bei*-passives.

To fill the gap that there lacks empirical evidence or cross-modality processing explanations for the reported resumption asymmetry in existing literature, the experimental study focuses on prosody-modulated comprehension of subject and object resumptive relative strings. Due to the disambiguation effect which biased comprehenders towards just one reading by means of the prosodic manipulations, there was designed to be one interpretation or one misinterpretation at each trial, following similar designs in the sentence and phonological processing literature (Ning and Shih, 2012; Roetteger et al, 2019; Rump and Collier, 1996). The prosodic manipulations were acoustic properties of the ambiguous pronoun *ta*, together with prosodic phrasing (groupings of phrases) of the sentence corresponding to the interpretation of the manipulated pronoun. The major finding was that the asymmetry of a resumptive interpretation between subject and object positions described in the literature (Keenan and Comrie, 1977; Chen and Wang, 2007; among others) was corroborated by the non-metalinguistic experiment in auditory modality. The results were consistent with what has been reported in the theoretical literature (Pan 2016, 2022) where the A'-binding domain account applied to Irish resumption (McCloskey, 2017) may as well be applied to Mandarin Chinese, the only difference observed in the auditory modality in the experiment was that the asymmetry was found to be not absolute. On one hand, the higher comprehension accuracy rates of the two prosodically modulated interpretations of the object strings than subject strings in both match and mismatch conditions of the

preceding structure-corresponding contextual question confirm the asymmetry and support the A'-binding account for the asymmetry; on the other, subject resumptive readings were still elicitable under ideal prosodic manipulations, suggesting the asymmetry may not be absolute due to that certain processing factors may also be at work. The processing factors were presented in Section 3.1 into two sources: Frazier's garden-path model (syntactic processing) and lexical accounts where different lexical meanings were differentiated by prosodic manipulations. These results were not predicted at all by the garden-path model which predicts a comprehension advantage of SRPs over the possesor misinterpretation and an advantage of object possessives, unlike their non-absolute consistency with the asymmetrical A'-binding account. On the other, this non-absoluteness lay in the elicitability of subject resumptive readings in the auditory modality, despite still lower accuracies than for object strings. Importantly, this non-absoluteness was explained by the lexical sentence processing approach tested by the phonetic manipulations of the ambiguous *de* together with corresponding groupings of phrases in the parse, which suggests the locality constraint at A'-level and non-syntactic processing factors were both at play and the locality constraint played a greater role than the processing factors. The results confirming the A'-binding domain account are also consistent with Ting (2003, among others) and Li and Ting's (2024) analysis of the classical Chinese remnant *suo* as a resumptive clitic which can only substitute ORPs but never SRPs in the formal register where the remnant occur.

As for more general implications, the findings about resumptive pronouns in Mandarin Chinese subject and object relativization lead to the conclusion that locality or minimality may be at work at for the referential scenarios of MC pronominal elements in both A'-positions and the apparent A-positions, which may share certain mechanism with A'-minimality such as in quantification reviewed in Chapter 1 and long-distance reflexive binding discussed in Section 3.6. In other words, this research may also imply certain conceptual properties of Chinese pronominals sharing between A-binding and A'-binding, calling on for future research.

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Appendix

Experimental items, structure-eliciting questions and predicted answers of the two lists

Item number. list number	Question translation	One of the two levels of the condition: stimuli translation	Predicted answer (i.e., with higher proportion): matched or mismatched with the question
1.1	'Which colleague did you refer to (just now)?'	SPoss: 'That colleague of him who returned to the home-country.'	Match
1.2		SRP: 'That colleague who returned to the home-country.'	Mismatch
2.1	'Which student did you refer to (just now)?'	OPoss: 'The central TV channel reported that student of him.'	Mismatch
2.2		ORP: 'That student whom the central TV channel reported.'	Match
3.1	'Whose teacher?'	SPoss: 'That teacher of him who is not good at teaching classes.'	Match
3.2		SRP:	Mismatch

		'That teacher who is not good at teaching classes.'	
4.1	'What happened?'	OPoss: 'The art executive praised that designer of him.'	Match
4.2		ORP: 'That designer whom the art executive praised.'	Mismatch
5.1	'Which teacher did you refer to (just now)?'	SPoss: 'That teacher of his who did not attend the meeting.'	Mismatch
5.2		SRP: 'That teacher who did not attend the meeting.'	Match
6.1	'What happened in the company?'	OPoss: 'The CEO promoted that employee of him.'	Match
6.2		ORC: 'That employee whom the CEO praised.'	Mismatch
7.1	'Who did the journalist welcome?'	ORC: 'That photographer whom the journal-ist welcomed.'	Mismatch
7.2		OPoss: 'The journalist welcomed that photographer of him.'	Match
8.1		SPoss:	Match

	'Whose classmate?'	'That classmate of him who likes to borrow but not return things.'	
8.2		SRP: 'That classmate who likes to borrow but not return things.'	Mismatch
9.1	'Which technician?'	OPoss: 'The project PI blamed that technician of him.'	Mismatch
9.2		ORP: 'That technician whom the project PI blamed.'	Match
10.1	'Which student?'	SRC: 'That student who fought with others.'	Match
10.2		SPoss: 'That student of him who fought with others.'	Mismatch
11.1	'Whose customer did the waitor allege against?'	ORC: 'That customer whom the waitress alleged against.'	Mismatch
11.2		OPoss: 'The waitor alleged against that customer of him.'	Match
12.1	'Whose student who was prisoned?'	SRP: 'That student who was prisoned.'	Mismatch
12.2		SPoss: 'That student of	Match

		him who was prisoned.'	
13.1	'Whose student who was absent from a class?'	SRP: 'That student who was absent from a class.'	Mismatch
13.2		SPoss: 'That student of him who was absent from a class.'	Match
14.1	'Which landlord?'	ORP: 'That landlord who was praised by the tenant'	Match
14.2		OPoss: 'The tenant praised that landlord of him.'	Mismatch
15.1	'Which child?'	SRP: 'The child who does not plan to get married.'	Match
15.2		SPoss: 'That child of her who does not plan to get married.'	Mismatch
16.1	'Which classmate?'	ORP: 'That classmate whom Xiaohong gave a treat.'	Match
16.2		OPoss: 'Xiaohong gave that classmate of her a treat.'	Mismatch