UNIVERSIDADE DE LISBOA

Faculdade de Letras



THE ACQUISITION OF PREPOSITIONAL RELATIVE CLAUSES IN EUROPEAN PORTUGUESE BY NATIVE CHINESE SPEAKERS

Ana de Barros Espírito Santo

Orientadores: Prof. Doutora Nélia Maria Pedro Alexandre

Prof. Doutora Sílvia Perpiñán Hinarejos

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Tese especialmente elaborada para obtenção do grau de Doutor em Linguística

2022

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Júri

Presidente:
Doutora Ana Maria Martins, Professora Catedrática e Diretora da Área de Ciências da Linguagem da Faculdade de Letras da Universidade de Lisboa

Vogais:

- Doutora Suzanne Flynn, *Professor*, *School of Humanities, Arts and Social Sciences, Department of Linguistics and Philosophy, Massachusetts Institute of Technology*
- Doutora Lisa L. Cheng, *Professor*, *Faculty of Humanities, Leiden University Centre for Linguistics*
- Doutora Ana Maria Barros de Brito, Professora Catedrática aposentada da Faculdade de Letras da Universidade do Porto
- Doutora Maria Madalena Brito Colaço Belo, Professora Associada da Faculdade de Letras da Universidade de Lisboa
- Doutora Nélia Maria Pedro Alexandre, Professora Auxiliar da Faculdade de Letras da Universidade de Lisboa (Orientadora)

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List of abbrevations

Abbreviation[1]	Extended form
Adv.	Advanced
APP	Antinaturality of Pied-Piping
ARC	Appositive Relative Clause
ASP	Aspectual marker
AUX	Auxiliar
BP	Brazilian Portuguese
Cl	Classifier
CNPC	Complex Noun Phrase Constraint
COMP	Complementizer
COP	Copular
DbP	Derivation by Phase
DEM	Demonstrative
DET	Determiner
DO	Direct Object
DOC	Double object construction
DP	Determiner Phrase
EP	European Portuguese
F	Feminine
FA	Full access (to UG)
FDH	Fundamental Difference Hypothesis
FFFH	Failed Functional Features Hypothesis
FRH	Feature Reassembly Hypothesis
FT/FAH	Full Transfer/ Full Access Hypothesis
GB	Government & Binding
GenSLA	Study of second language within the Generative Grammar
GG	Generative Grammar
HMC	Head Movement Constraint
HSR	Highest Subject Restriction
*i*F	interpretable features
I-language	Internalized Language

[1] I have adopted the abbreviations proposed by the *The Leipzig Glossing Rules* (2015) to the sentences glossed in this dissertation (except for Classifier, that I have abbreviated according to the form usually used in the literature). The remaining abreviations used in this text are created by me and are consistently followed throughout this document.

IH	Interpretability Hypothesis
ILG	Interlanguage Grammar
IMP	imperative
INDF	indefinite
Int.	Intermediate
IO	Indirect Object
L1	First/ Native Language
L2	Second language
L2er	Second language learner/ speaker
LAD	Language acquisition device
LF	Logical Form
LI	Lexical Item
M	Masculine
MC	Mandarin Chinese
MP	Minimalist Program
N.A.	Not Applicable
NPAH	Noun Phrase Acessibility Hierarchy
NUM	Numeral
O-V	Object-Verb
Obl	Oblique
Op	Null-operator
Θ-role	Theta role
P-Chop	Preposition-Chopping
P&P	Principles & Parameters
PF	Phonetic Form
PI	Preposition Incorporation
PiP	Pied-piping
PL	Plural
POSS	Possessive
Pred	Predicative
Prep	Prepositional
PRS	Present
PS	Preposition Stranding
PST	Past
PTCP	Participle
QP	Quantifier Phrase
RC	Relative Clause
RDH	Representational Deficit Hypothesis

REFL	Reflexive
REL	Relativizer
Rel Pr	Relative Pronoun
RP	Resumptive Pronoun
RRC	Restrictive Relative Clause
SBJ	Subject
SFP	Sentence Final Particle
SG	Singular
SHAC	Specifier-Head Agreement Constraint
SLA	Second Language Acquisition
Spec	Specifier
SPR-AJT	Self-Paced Reading Acceptability Judgement Task
SVO	Subject-Verb-Object
UG	Universal Grammar
*u*F	uninterpretable features
φ-features	Phi-features (gender and number)

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Abstract

The access of adult learners of a second language (L2) to Universal Grammar (UG) has been widely studied in generative L2 acquisition research. Following the Representational Deficit Hypothesis (RDH), certain features not available in the native language (L1) are not accessible in adult L2 acquisition (Hawkins, 2005; Tsimpli & Dimitrakopoulou, 2007, among others). On the contrary, according to the Feature Reassembly Hypothesis (FRH), adults can access UG to acquire configurations that are not present in their L1 nor in the explicit input (e.g. Lardiere, 2008; Slabakova, 2016). This dissertation aims at contributing to this debate through the study of the L2 acquisition of prepositional relative clauses (RCs) in European Portuguese (EP) by Mandarin Chinese (MC) native speakers.

EP displays *wh*-movement in prepositional RCs formed with standard Pied-Piping (PiP) and non-standard P-Chopping (P-Chop). Non-standard resumptive RCs do not involve movement (Alexandre, 2000). In MC, prepositional RCs involve a mandatory resumptive pronoun (RP), without movement. P-Chop is also attested in the L2 acquisition of prepositional RCs and *wh*-questions (Klein, 1993; Jourdain, 1996; Perpiñán, 2010), being analyzed as a developmental stage (Perpiñán, 2010, 2020) or evidence of a wild grammar (Klein, 1993).

In MC, prepositional RCs display a mandatory resumptive pronoun (Pan, 2016a, 2016b, a.o.), not involving movement (Wen, 2020).

The main goals of this dissertation are to understand if MC learners of EP L2: 1) transfer resumption from the L1 into the L2; 2) can acquire new functional features or reorganize (*reassemble*) L1 features to configure *wh*-movement in the L2, producing and accepting PiP and P-Chop RCs; 3) show a developmental path in the acquisition of prepositional RCs.

To achieve these goals, an oral production task and two self-paced reading acceptability judgement tasks (SPR-AJTs) were used. One SPR-AJT targets relativization strategies and the other focuses on the learner's implicit knowledge of *wh*-movement, both contrasting argument and adjunct prepositional RCs. Intermediate (n=36) and advanced (n=36) native MC learners of EP L2, and native EP speakers (N=30) participated in this study.

Results show that: 1) learners do not transfer resumption from their L1; 2) both groups of learners produce and accept preferentially PiP RCs; 3) intermediate learners

have larger percentages of production of P-Chop with adjuncts than advanced learners; 4) in island configurations, argument RCs are rated worse than adjunct RCs; and 5) RPs do not rescue islands for any group.

Overall, these results support the FRH, indicating that L2ers are able to acquire the features that trigger *wh*-movement, producing PiP and P-Chop. The results also corroborate that P-Chop exists as a developmental stage (Perpiñán, 2010, 2020), with distinct properties from P-Chop in native EP, arguing against previous research that treats P-Chop as evidence of a wild grammar (e.g., Klein, 1993). Finally, the results with syntactic islands challenge the idea that RPs improve these structures in both native and non-native grammars. The convergence between EP natives and Chinese speakers rejecting argument RCs more assertively than adjunct RC also indicates that adult Chinese learners are sensitive to the same grammatical constraints and processing principles of native speakers, and that L2 learners are able to reassemble the *wh*-features accordingly.

Key-words: EP L2 Acquisition, Resumptive Relative Clauses, P-Chopping/ Null Prep., Syntactic Islands, Mandarin Chinese

Resumo

O acesso de aprendentes adultos de uma segunda língua (L2) à Gramática Universal (GU) tem sido muito estudado no âmbito da gramática generativa. De acordo com a Hipótese de Défice Representacional (RDH, em inglês) (Hawkins, 2005; Tsimpli & Dimitrakopoulou, 2007, e.o.), determinados elementos não adquiridos na língua nativa (L1) não estão acessíveis na aquisição de uma L2 na idade adulta. Pelo contrário, a Hipótese de Reconfiguração de Traços (FRH, em inglês) (Lardiere, 2005, 2008, 2009) defende que os falantes adultos de uma L2 podem aceder à GU para adquirir elementos novos, não disponibilizados na sua L1. A presente dissertação pretende contribuir para este debate através do estudo da aquisição de orações relativas preposicionadas em português europeu (PE) L2 por falantes nativos de chinês mandarim (CM).

Em PE, as frases relativas preposicionadas envolvem movimento-*wh* quando são formadas através das estratégias de arrastamento da preposição (PiP) (*standard*) e cortadora (não *standard*). Podem ainda ser formadas, não convencionalmente, com um pronome resumptivo (PR), não implicando movimento (Alexandre, 2000). A estratégia cortadora é igualmente descrita na aquisição de L2 de relativas e interrogativas preposicionadas (Klein, 1993; Jourdain, 1996; Perpiñán, 2010), sendo analisada como uma fase de desenvolvimento (Perpiñán, 2010, 2020) ou uma gramática selvagem (Klein, 1993). Em CM, as frases relativas preposicionadas são formadas com um elemento resumptivo obrigatório (Pan, 2016a, 2016b), não envolvendo movimento (Wen, 2020).

Nesta dissertação, pretende-se compreender se os falantes nativos de CM, aprendentes de PE L2: 1) transferem a estratégia resumptiva da sua L1 para a L2; 2) adquirem novos traços ou reconfiguram traços existentes na L1 para adquirir o movimento-*wh* na L2, produzindo e aceitando frases relativas com PiP e cortadoras; 3) mostram um percurso de desenvolvimento na aquisição de frases relativas preposicionadas.

Para responder a estas questões, foram aplicadas uma tarefa de produção oral e duas tarefas de julgamento de aceitabilidade com leitura automonitorizada (SPR-AJT, em inglês). Uma das tarefas SPR-AJT visa as estratégias de relativização e a outra testa o conhecimento implícito de movimento-*wh*. Ambas as experiências SPR-AJT contrastam relativas preposicionadas argumentais e adjuntas. Quanto aos participantes neste estudo, eles distribuem-se por falantes nativos de CM, aprendentes intermédios (*n*= 36) e avançados (*n*= 36) de PE e falantes nativos de PE (*n*= 30), o grupo de controlo.

Os resultados mostram que: 1) os aprendentes não transferem a estratégia resumptiva da sua L1 para a L2; 2) os dois grupos de aprendentes produzem e aceitam preferencialmente PiP; 3) os falantes intermédios apresentam percentagens mais altas de produção da estratégia cortadora com adjuntos do que com argumentos; 4) as frases relativas argumentais formadas com extrações de ilhas são pior classificadas por todos os grupos do que as adjuntas; 5) os PRs não melhoram as extrações de ilhas para nenhum grupo.

Estes resultados corroboram a FRH, indicando que os aprendentes de uma L2 podem adquirir os traços que desencadeiam o movimento-*wh*. Os resultados também indicam que a estratégia cortadora (P-Chop) surge como uma fase de desenvolvimento na L2 (Perpiñán, 2010, 2020), tendo propriedades distintas da estratégia cortadora no PE L1, contra a proposta de gramática selvagem (Klein, 1993). Os resultados com as ilhas sintáticas desafiam os estudos que indicam que os PRs melhoram a aceitabilidade destas construções, na gramática nativa e não nativa. Finalmente, a convergência dos falantes nativos e não nativos na rejeição mais expressiva de frases relativas argumentais do que adjuntas, nas ilhas sintáticas, indica que os aprendentes são sensíveis a restrições gramaticais e princípios de processamento idênticos aos dos falantes nativos, e que os aprendentes acedem à UG para reconfigurar adequadamente os traços que definem o movimento-*wh* na L2.

Palavras-chave:
Aquisição de PE L2, Relativas Resumptivas, Relativas Cortadoras, Extrações de ilhas sintáticas, Chinês Mandarim.

Resumo (versão longa)

Esta dissertação segue uma abordagem generativista no estudo da aquisição de uma segunda língua (L2) por falantes adultos, procurando contribuir para o debate sobre a possibilidade de os falantes adultos acederem à Gramática Universal (GU) no processo de aquisição de uma L2. Assim, alguns autores defendem que a aquisição de L2 é condicionada apenas pela língua materna (L1) dos falantes (por exemplo, Hawkins & Chan, 1997; Hawkins, 2000, 2005; Hawkins & Hattori, 2006; Tsimpli & Dimitrakopoulou, 2007), ao passo que outros assumem que este tipo de falantes pode aceder à GU na idade adulta sem limitações enquanto adquirem uma L2 (Lardiere, 2000, 2005, 2008; Slabakova, 2016, entre outros).

O presente trabalho contribui para esta discussão, considerando duas grandes hipóteses na aquisição de uma L2: a Hipótese de Défice Representacional (RDH, em inglês) (Hawkins & Chan, 1997; Hawkins, 2005; Hawkins & Hattori, 2006, entre outros) e a Hipótese de Reconfiguração de Traços (FRH, em inglês) (Lardiere, 2000, 2005, 2007, 2009, e.o.). Estas hipóteses fazem predições diferentes quanto à disponibilidade, na idade adulta, de determinados traços linguísticos na GU. De acordo com a RDH, os traços funcionais/ não interpretáveis que não forem adquiridos na língua materna não podem ser adquiridos durante a aquisição de uma L2. Na FRH, pelo contrário, defende-se que os falantes/ aprendentes podem transferir diretamente traços da L1 para a L2 (‘mapeamento’), mas também que os falantes podem reorganizar traços que estejam presentes na sua L1 em novas configurações na L2 (‘reconfiguração’) e ainda adquirir traços novos (interpretáveis ou não interpretáveis). A presente dissertação questiona a possibilidade de haver traços funcionais disponíveis na aquisição de L2 na idade adulta, através do estudo da aquisição de frases relativas preposicionadas em português europeu (PE) L2 por falantes nativos de chinês mandarim (CM).

Em PE, as frases relativas preposicionadas envolvem movimento-*wh* quando são formadas com recurso à estratégia de arrastamento da preposição ou *Pied-Piping* (PiP), movendo a preposição obrigatoriamente com o relativizador ((1)a), mas também na estratégia cortadora, não *standard*, que implica a omissão de uma preposição obrigatória ((1)b). Há ainda uma estratégia de relativização que implica a presença de um elemento resumptivo no lugar da extração do constituinte-*wh* ((1)c). As relativas resumptivas são analisadas como uma cadeia que não implica movimento (Alexandre, 2000).

(1)

[Relativa com Pied-Piping]

a. Foi um debate$_i$ [[$_{OBL}$ **a que**] valeu a pena assistir t_i]].

[Relativa Cortadora]

b. Foi um debate$_i$ [[$_{OBL}$ Ø **que**] valeu a pena assistir t_i]].

[Relativa Resumptiva]

c. Foi um debate$_i$ [[$_{OBL}$ **que**] valeu a pena assistir **a ele**$_i$]].

A omissão da preposição (estratégia cortadora) foi também identificada na aquisição de L2 de frases relativas e interrogativas e tem sido analisada como uma instância de uma gramática selvagem (Klein, 1993) ou como uma etapa de desenvolvimento na aquisição de L2 (Perpiñán, 2010, 2020). Aqui defende-se que a preposição não é selecionada do léxico pelos falantes de uma L2, sendo esta etapa superada pelos falantes mais avançados.

Em CM, não há movimento-*wh* explícito, sendo as relativas preposicionadas realizadas com um pronome resumptivo obrigatório (2). No entanto, diferentes estudos sugerem a existência de movimento de operador, nomeadamente na relativização de adjuntos (3) (Ning, 1993; Li, 2002; Aoun & Li, 2003):

(2) *wo* *dui* *ta* *hen* *buocuo de* *na-wei* *pengyou*
1SG para 3SG muito não-mau REL DEM-Cl amigo
'o amigo para quem eu sou muito querido'

(Pan, 2016a, p. 287)

(3) **zhe* *jiu* *shi [[[[ruguo* *ta* *t_i* *shengqi]* *ni*
DEM exatamente ser se 3SG zangado 2SG
hui *bu* *gaoxing]* *de]* yuanyin$_i$]
ir não feliz DE razão
'Esta é a razão (x) que tu não vais ficar feliz se ele se zangar (por causa de) x.'

(Aoun & Li, 2003, p. 177)

As frases relativas são uma instância de movimento-*wh*, apesar de este tipo de movimento sintático existir noutras estruturas, como em interrogativas, estruturas clivadas e topicalizações (Chomsky, 1977). Observando que o movimento-*wh* obedece a

várias restrições sintáticas, Chomsky (1986a) formulou a Condição da Subjacência, que as enquadra. Concretamente, há um conjunto de domínios sintáticos, designados de "ilhas" (Ross, 1967), que não permitem a extração de elementos-*wh* do seu interior. Ou seja, uma frase relativa torna-se agramatical se o elemento-*wh* for extraído de uma ilha sintática. Em PE, os pronomes resumptivos tornam uma frase deste tipo aceitável. Os exemplos (4)a e (4)b ilustram a formação de uma frase relativa com elementos extraídos de uma ilha de sujeito, sem e com pronome resumptivo, respetivamente, em PE.

(4) a. **Os livros$_i$ de que$_i$ [falar ~~os livros~~$_i$] se tornou difícil] estão aqui.*

b. *Os livros$_i$ que [falar **deles$_i$**] se tornou difícil] estão aqui.*

(Alexandre, 2000, p. 77)

No final do século XX, muitos investigadores estudaram as restrições ao movimento-*wh,* procurando perceber se falantes nativos de uma língua sem movimento-*wh* explícito poderiam adquirir uma L2 com movimento-*wh* (Bley-Vroman, 1990; Bley-Vroman et al., 1988; Johnson & Newport, 1991; Martohardjono, 1993; White & Juffs, 1998, e.o.). Se os falantes de uma língua sem movimento-*wh* reconhecerem as violações à Subjacência, testadas com ilhas sintáticas, tal comprova que os aprendentes acedem à GU, pois as ilhas e as restrições sintáticas que as regulam não estão disponíveis no *input*.

Mais recentemente, a literatura tem questionado a validade de ilhas sintáticas para diagnosticar o acesso de falantes de uma L2 à GU (Belikova & White, 2009; Perpiñán, 2020), uma vez que outros fatores parecem explicar a agramaticalidade das extrações de ilhas, tais como processos cognitivos, dificuldades no processamento ou anomalias semânticas (e.g. Hofmeister & Sag, 2010; Perpiñán, 2020). O poder dos elementos resumptivos para salvar ilhas sintáticas (ilustrado em (4)b) tem sido questionado em geral (Heestand et al. 2011; Polinsky et al., 2013; Morgan & Wagers, 2018) e também na gramática dos falantes não nativos (Perpiñán, 2020).

Estas observações, desenvolvidas ao longo da dissertação, levaram-nos a colocar as seguintes questões gerais de investigação:

1) Os falantes nativos de CM que adquirem PE L2 mapeiam os traços que configuram a estratégia resumptiva da L1 na aquisição das frases relativas preposicionadas na L2?

2) Os falantes adultos de PE L2 conseguem adquirir os traços que não estão disponíveis na sua L1 ou reconfigurar os traços de movimento presentes noutras estruturas para adquirir os traços que configuram o movimento-*wh* em PE, produzindo e aceitando frases relativas preposicionadas com PiP e com a estratégia cortadora?

3) Assumindo que o mapeamento precede a reconfiguração de traços e que quanto mais traços uma dada estrutura partilhar, na L1 e na L2, mais fácil será a sua aquisição, é possível identificar um percurso de desenvolvimento na aquisição de frases relativas preposicionadas, tendo em conta as estratégias existentes em PE?

4) Os aprendentes chineses de PE L2 mostram conhecimento implícito dos traços que regulam o movimento-*wh*, nomeadamente, reconhecendo a agramaticalidade de extrações de ilhas sintáticas?

Para investigar estas questões, foi desenvolvido um desenho experimental com três tarefas. Foi aplicada uma tarefa de produção oral, elicitando frases relativas preposicionadas (com 8 itens experimentais e 8 itens de controlo). Foram ainda aplicadas duas tarefas online de julgamento de aceitabilidade com leitura automonitorizada. A primeira tem como objetivo avaliar os níveis de aceitação das diferentes estratégias de relativização, incluindo 24 frases relativas preposicionadas e 16 frases relativas de controlo. A segunda tarefa tem como objetivo avaliar o conhecimento implícito do movimento-*wh* por parte dos falantes, nomeadamente através dos juízos de gramaticalidade atribuídos a frases relativas formadas com elementos extraídos de ilhas sintáticas. Nas duas tarefas, contrastaram-se relativas preposicionadas argumentais e adjuntas. Este estudo envolveu um grupo de falantes nativos de CM aprendentes de PE L2 de nível intermédio (n=36) e um grupo de nível avançado (n=36). Para além destes, 30 falantes nativos de PE formaram o grupo de controlo (n= 30), num total de 102 participantes (N =102). Os dados foram recolhidos em reuniões presenciais e/ou virtuais.

Os resultados mostram que os aprendentes não produzem nem aceitam frases resumptivas em PE L2 (apesar de não as rejeitarem tão assertivamente como os falantes nativos), aceitando e produzindo preferencialmente frases relativas com a estratégia *standard* de PiP, sendo as taxas de aceitabilidade/ produção desta estratégia mais elevadas com os falantes do nível avançado. Os resultados também mostram que os falantes de nível intermédio apresentam percentagens de aceitação e de produção de frases relativas cortadoras mais elevadas na relativização de adjuntos do que os falantes avançados. Na tarefa que envolveu ilhas sintáticas, as frases relativas argumentais receberam avaliações

mais baixas do que as adjuntas por parte de todos os grupos. Além disso, as frases relativas com um elemento resumptivo não foram consideradas melhores do que as frases relativas cortadoras e com PiP, nem pelos aprendentes nem pelos falantes nativos.

Estes resultados corroboram a FRH, indicando que os aprendentes de uma L2 podem reestruturar as suas gramáticas não nativas adquirindo os traços que desencadeiam o movimento-*wh*. Os resultados também corroboram a ideia de que a omissão da preposição é uma etapa que se verifica na aquisição das frases relativas numa L2 (Perpiñán, 2010, 2020), e que as relativas cortadoras, enquanto fenómeno da aquisição, têm características diferentes das cortadoras em PE. Estes dados contrariam a ideia de que a omissão da preposição é uma instância de uma gramática selvagem (Klein, 1993). Além disso, os resultados desafiam a ideia de que os pronomes resumptivos melhoram a aceitabilidade e o processamento de extrações de ilhas em tempo real, tanto para nativos como não nativos. Finalmente, o facto de tanto os falantes nativos como os não nativos terem rejeitado as frases relativas argumentais mais expressivamente do que as frases relativas adjuntas nas extrações das ilhas sintáticas indica que os falantes chineses aprendentes de PE são sensíveis às mesmas restrições sintáticas e princípios de processamento dos falantes nativos, mesmo não estando estes elementos presentes no *input*, o que constitui um argumento adicional a favor do acesso à GU na aquisição de uma L2.

Palavras-chave:
Aquisição de PE L2, Relativas Resumptivas, Relativas Cortadoras, Extrações de ilhas sintáticas, Chinês Mandarim.

Introduction

The current dissertation adopts a Generative Grammar (GG) approach to second language acquisition (GenSLA) and aims at contributing to enlighten the debate on the access of adult learners of a second language (L2) to Universal Grammar (UG). This topic has deserved a lot of attention in GenSLA field. Some researchers claim that adults can access UG to acquire aspects that are not present in their native language (L1) nor in the explicit input (e.g. Lardiere, 2008; Slabakova, 2016), while others argue that in adult L2 acquisition certain options not available in the L1 cannot be acquired (e.g., Hawkins & Chan, 1997; Tsimpli & Dimitrakopoulou, 2007).

This dissertation contributes to this debate, considering two main L2 acquisition hypotheses: the Representational Deficit Hypothesis (RDH) (Hawkins & Chan, 1997; Hawkins, 2005; Hawkins & Hattori, 2006, among others) and the Feature Reassembly Hypothesis (FRH) (Lardiere, 2000, 2005, 2007, 2009, among others). These make opposite claims regarding the availability of certain linguistic features in UG in adulthood: the RDH argues that functional/ uninterpretable features not acquired in the L1 cannot be acquired in the L2, while the FRH states that all features are available, even if these are not present in the L1, and that the L2 speaker/learner may acquire new features, as well as transfer (map) or organize (reassemble) the features of their L1 into the L2. This study examines the availability of functional features in adult L2 acquisition through the study of prepositional relative clauses (RCs) in the L2 European Portuguese (EP) of Mandarin Chinese (MC) native speakers.

EP displays overt *wh*-movement in prepositional RCs formed with the pied-piping (PiP) strategy (moving along the mandatory preposition with the relative pronoun), but also with the non-standard P-Chopping (P-Chop) strategy (deleting the mandatory preposition). With the resumptive strategy, RCs are analyzed as a binding chain without movement (Alexandre, 2000). These strategies are illustrated in (1)a-c, respectively.

(1) a. *Foi* *um* *debate*$_i$ *[[*$_{OBL}$ ***a*** ***que****]* *valeu a pena* *assistir* t_i*]]*.
be-PST.3SG DET.INDF.M.SG debate to REL be.worth-PST.3SG watch

b. *Foi* *um* *debate*$_i$ [[OBL Ø ***que***]
be-PST.3SG DET.INDF.M.SG debate REL
valeu a pena assistir t_i]].
be.worth-PST.3Sg watch

c. *Foi* *um* *debate*$_i$ *[[*$_{OBL}$ ***que****]*
be-PST.3SG DET.INDF.M.SG debate REL
valeu a pena *assistir* ***a*** ***ele***$_i$*]]*.
be.worth PST.3SG watch to 3SG

All: 'It was a debate that was worth watching.'

P-Chop has also been attested in the L2 acquisition of RCs and *wh*-questions (Klein, 1993; Jourdain, 1996; Perpiñán, 2010), and it has given rise to different proposals, such as Klein's (1993) analysis of this phenomenon as evidence for a wild L2 grammar. On a different approach, P-Chop in the L2 has also been considered a developmental stage in L2 acquisition (Perpiñán, 2010).

Chinese does not have overt *wh*-movement (prepositional RCs require a mandatory resumptive pronoun, as in (2)), but operator movement has been argued to be involved in the relativization of adjuncts, which show sensitivity to subjacency violations, as illustrated in (3) (Ning, 1993; Li, 2002; Aoun & Li, 2003):

(2) *wo* *dui* *ta* *hen* *buocuo de* *na-wei* *pengyou*
1SG to 3SG very not.bad REL DEM-Cl friend
'the friend to whom I am very kind'

(Pan, 2016a, p. 287)

(3) **zhe* *jiu* *shi* *[[[[ruguo* *ta* t_i *shengqi]* *ni* *hui*
DEM exactly be if 3SG angry 2SG will
bu *gaoxing]* *de]* yuanyin$_i$]
not happy DE reason
'This is the reason (x) that you will not be happy if he gets angry (because of) x.'

(Aoun & Li, 2003, p. 177)

These contrasts, which will be explored throughout this work, were one of the motivations for this dissertation. How do Chinese native speakers deal with these differences in their acquisition of EP L2?

RCs are an instance of *wh*-movement, but this kind of syntactic movement is also present in other structures, such as *wh*-questions, cleft sentences and topicalizations (Chomsky, 1977). Nevertheless, there are certain restrictions to *wh*-movement, and this was observed, among others, by Chomsky (1986a), who formulated the subjacency condition, establishing that certain constraints regulate *wh*-movement. In particular, a number of syntactic constructions (such as islands) were identified as domains from where *wh*-expressions cannot be extracted. An RC formed with movement becomes ungrammatical if the *wh*-pronoun is extracted from a syntactic island, as exemplified in (4)a and (4)b (*wh*-island and complex NP island, respectively):

(4) a. *This is the patient [who [Mary told me [when [she will visit ~~who~~]]]]

b. *This is the patient [who [Mary heard [the news [that the doctor had sent ~~who~~ to hospital]]]]

(adapted from Hawkins, 2005, p. 127)

Within the discussion about the access of adult L2 speakers to UG, subjacency constraints that regulate *wh*-movement have been widely studied (Bley-Vroman, 1990; Bley-Vroman et al., 1988; Johnson & Newport, 1991; Martohardjono, 1993; White & Juffs, 1998, a.o.). Different studies examined the acquisition of *wh*-movement in L2s displaying *wh*-movement by speakers of languages that do not display overt *wh*-movement (Bley-Vroman, 1990; Bley-Vroman et al., 1988; Johnson & Newport, 1991; Martohardjono, 1993; White & Juffs, 1998, a.o.). The underlying rationale is that if native speakers of a language without *wh*-movement recognize the violations to subjacency, tested with island configurations, this constitutes evidence that they are accessing UG, as islands and the constraints that regulate them are not present in the direct L2 input nor in their L1.

Recently, however, researchers have contested the validity of using island configurations to diagnose the access of L2 learners to UG (e.g. Belikova & White, 2009; Perpiñán, 2020), since different studies show that the unacceptability of island configurations is not purely syntactic, but also motivated by cognitive processes, such as

processing difficulties or semantic anomalies (e.g. Hofmeister & Sag, 2010; Perpiñán, 2020). A further open question in the field is the power of resumptive pronouns to ameliorate island extractions (Heestand et al., 2011; Polinsky et al., 2013; Morgan & Wagers, 2018), and even more so in interlanguage grammars (Perpiñán, 2020). The current dissertation tackles the knowledge of *wh*-movement of Chinese native speakers in EP L2, by analyzing different types of island extractions, with and without resumptive pronouns.

In order to assess the previous theoretical assumptions, an experimental study was carried out, involving 72 MC speakers in the experimental group and 30 EP speakers in the control group. The experimental design included one oral production task and two self-paced reading acceptability judgement tasks (SPR-AJTs). The oral production task elicits prepositional RCs through a guided task, including 8 prepositional RCs and a total of 34 items. The first SPR-AJT targets the relativization strategies, including 24 prepositional RCs and 100 items in total. The second SPR-AJT looks at island configurations, including 24 argument and adjunct prepositional RCs formed with extractions from islands, in a total of 100 items as well.

Considering this, the main goals of this dissertation are to understand if: 1) resumption is transferred from the L1 into the L2 in the acquisition of prepositional RCs; 2) L2 speakers (L2ers) can acquire syntactic features not available in their L1 or reassemble the existent ones into new configurations, producing PiP and P-Chop RCs with *wh*-movement; 3) L2ers show a developmental path in the process of acquisition of prepositional RCs; 4) L2ers show implicit knowledge of *wh*-movement.

The results of the experimental study will enable us to reach conclusions on the ability of the L2ers to acquire the features that determine prepositional RCs in EP, but they will also contribute to clarify aspects of the target grammar, namely regarding the non-standard relativization strategies in EP. Besides, the study about island configurations (including those that involve resumptive pronouns) will contribute to the research on island configurations in real-time processing, in both native and non-native grammars.

The dissertation is organized as follows: The first chapter starts with a brief introduction to the linguistic framework that the current dissertation adopts, including an overview of the most significant changes that Generative Grammar (GG) has undergone, from the Principle and Parameters (P&P) Model (Chomsky, 1981, 1986b) until the Minimalist Program (MP) (Chomsky, 1995). Then, the main generative studies developed

during the 1990's on L2 acquisition are synthetized, focusing on the debate on the availability of UG in L2 acquisition, but also on the role played by transfer from the L1. The two L2 acquisition hypotheses considered in the current dissertation, the RDH and the FRH, are presented with further detail, given that they make different predictions for the research questions that drive the present work. The first chapter also displays the general research questions guiding this dissertation.

The second chapter makes an introduction to the main issues that have been debated in the literature regarding RCs and synthetizes the key syntactic analyses of RCs developed within the GG framework. The Head External Analysis (HEA), the Head Raising Analysis (HRA), and the Matching Analysis (MA) are presented, and the main arguments that are usually used for or against them are discussed. Afterward, the main characteristics of RCs in EP and in Chinese are described, without getting yet into detail into prepositional RCs.

Chapter 3 deepens the analysis of prepositional RCs in EP. Since the present dissertation considers two hypotheses of L2 acquisition that take features as the main unit of transfer, a proposal on the features that configure prepositional RCs in the target language is presented. As mentioned, prepositional RCs in EP may be produced with three strategies. PiP is standard, whereas P-Chop and Resumption are considered non-standard, i.e., are not included in prescriptive grammars of Portuguese. Each one of these strategies has a dedicated section that includes its description and a proposal for its syntactic derivation, including the features that configure the relative CP in each case.

Prepositional RCs in MC are the focus of Chapter 4. It starts by discussing the existence of the category "preposition" in MC, since this is not consensual among the experts. The main characteristics of Prepositional Phrases (PPs) in MC are presented, as well as the cases where the preposition can be omitted. A section is dedicated to the distinction of prepositional resumptive RCs from prepositional gap RCs in MC, since the former (resumptive) are the ones that are considered more relevant in the current dissertation. Chinese grammatical resumption is then described, considering other languages that, like Chinese, display grammatical resumption. The question of the (lack of) existence of *wh*-movement in Chinese resumptive RCs is discussed, considering contributions from different scholars. Finally, several analyses for resumptive RCs in Chinese are considered. The chapter ends with the presentation of the arguments that determined the choice of the analysis followed in this dissertation.

Chapter 5 reviews the contributions from other researchers about the L2 acquisition of RCs, regardless of the syntactic function of the relativized object, including the studies that preceded and succeeded the advent of the Noun Phrase Accessibility Hierarchy (Keenan & Comrie, 1977). It then addresses the studies that looked specifically at the acquisition of prepositional RCs in other languages, taking into account the different strategies described in the literature to relativize the object of the preposition, namely PiP, Resumption and P-Chop, but also Preposition Stranding (PS). PS is not available in EP, but it is the most productive strategy in English and Scandinavian languages, and a lot of research that focused on the L2 acquisition of English considered PS.

The literature which focuses on the question of whether native speakers of a language not displaying overt *wh*-movement (like Chinese) may acquire *wh*-movement in an L2 is also reviewed in Chapter 5, followed by a brief review of the studies on the acquisition of RCs by Chinese native speakers in other L2s. Finally, this chapter ends with a mention of the L1 acquisition of RCs, in EP and other languages, given that L1 acquisition is unquestionably guided by UG, and the comparison between L1 and L2 acquisition of RCs may enlighten the debate.

In Chapter 6, the research questions guiding this project, as well as the methodology adopted in the experimental design are described. Chapter 7 presents the results obtained in the three experimental tasks and Chapter 8 discusses the main findings, which are synthetized in the Conclusion.

Chapter 1

Hypotheses on Second Language Acquisition

In the current chapter, I introduce the theorical framework that this dissertation refers to, including some of the issues debated on L2 acquisition field, and the general research questions that guide this project. This chapter is organized as follows: in the first section, I present a brief overview on the GG framework, considering the P&P Model and the changes introduced with the MP. A brief clarification of the main questions that GG asks in L2 acquisition, contrasting with L1 acquisition, is done on section 2. In section 3, I present different perspectives on the availability of UG in L2 acquisition, and the different approaches discussing the role played by the transfer of properties from the native language. Sections 4 and 5 tackle the two L2 acquisition hypotheses that I consider in the current dissertation: the RDH and the FRH, respectively. The chapter finishes with a sketch of the general research questions guiding this dissertation.

1. Linguistic Theory

The specific role played by the human mind in the development of language was first hypothesized by Chomsky (1957), in opposition to a behaviorist approach who attributed the development of language to external circumstances (Skinner, 1957). Against an empiric tradition that looked at language as the product of teaching and the environment, Chomsky proposed a rationalist approach, laying the groundwork for the GG research program on linguistics.

According to GG, the main properties of language are determined by mental structures and principles that guide the language acquisition process and linguistic development. These mental structures are specifically human and genetically determined, rooted in the biological organization of the human species.

Chomsky named the set of specifically linguistic principles and mental structures the "Language Acquisition Device" (LAD) (Chomsky, 1966). In the GG framework, the content of the LAD is UG, a complex linguistic system that all humans share, no matter the language they speak. To use Gallego's (2011) formulation, UG constitutes an "initial state S_0 of such abstract capacity common to the species that yields relatively steady states S_S, particular grammars, if the child is exposed to the relevant experience." (Gallego, 2011, p. 2).

Assuming that the language is "unique to the human species in its essentials and a common part of our shared biological endowment" (Chomsky, 1987, p. 2), the GG research program focuses on four classical research questions: 1) what is the system of knowledge of a speaker of a given language? 2) how does this system of knowledge arise in the mind/ brain? That is, what kind of knowledge does a child has *a priori* that explains the development of a given language on the children's mind? 3) how is the system of knowledge put to use into speech? 4) what are the physical mechanisms that serve as the material basis for this system of knowledge and for the use of this knowledge? (see Chomsky, 1987, p. 3)

The last question falls into the domain of neurology and it is the most difficult to answer within the field of linguistics/ psychology. As so, the current dissertation does not ambition answering to it.

The first three questions address different issues that are of utmost relevance in the linguistic field: the first raises a noteworthy problem that has received a lot of attention in the philosophical grammar of the 17th and of the 18th centuries and attempts to define what is the grammar that is inside the mind of a speaker that allows her to speak a given natural language. In other words, it refers to the study of the internalized grammar, or the speakers' linguistic competence. The third question refers to the issues related with the performance of the speakers, and it can be addressed as an issue of perception or production. That is, it attempts to investigate how the competence is used when the speaker's linguistic knowledge interacts with other social and psychological variables that do not depend on the linguistic knowledge.

However, the second question, about language acquisition, has deserved special attention under the GG framework. This issue is also of the utmost relevance for the present dissertation, which builds on the GG research program to study the acquisition of prepositional RCs in EP L2. Nevertheless, instead of looking at native language acquisition, the current project is devoted to the acquisition of a non-native language by adult speakers. The acquisition process is described considering the linguistic formalisms proposed for L1s. Nonetheless, L2[1] acquisition raises a different set of questions than

[1] The definitions of L2 and L3 are not consensual. In the literature, different criteria have been identified to distinguish L2 from L3 (Hammarberg, 2001; Bardel & Falk, 2007; Falk & Bardel, 2010, among others). If we consider order of acquisition, English should be the L2 (since it is the first non-native language of practically all participants in the current dissertation), EP being the L3. It is not intention of the current dissertation to assume a position regarding what should be the criteria to classify a non-native language as an L2 or as an L3; however, it is important to clarify that the expression "L2" is here used in a broad sense, to refer to one of the main non-native languages that the speakers have acquired outside the family context.

those proposed for native languages. Before turning to them, the main theoretical developments of the GG research program are presented below, since these will impact the way L2 acquisition is perceived.

1.1. Plato's problem and the emergence of the Generative Grammar

According to Chomsky (1986b, 1988), L1 acquisition represents a special case of what is referred as Plato's problem: how are children able to know as much as they do about language, given the poverty of the input to which they are exposed during the acquisition process? Indeed, children do not have explicit information about what is possible and what is not possible in their L1s. They lack negative evidence, and the input they receive is degenerate and underdetermined. According to Chomsky, if the primary data cannot alone explain the complex system of knowledge that any child acquires (as long as she is exposed to linguistic input and does not have any type of developmental impairment), then it is necessary to assume that there is a set of complex linguistic principles that guides and constrains the development of language. The argument of the "poverty of the stimulus" was one of the key arguments presented by Chomsky for the existence of an innate linguistic system, the UG.

1.2. Principles & Parameters Model

The assumption of an innate linguistic system common to all individuals, regardless of their native language, raised another challenge for linguistic theory: how to account for the differences between all languages of the world if the language acquisition device is the same in all individuals? The model of P&P developed in the late 70's assumed great relevance within the GG framework, until the shift to the MP, since it accounted for linguistic variation under a theoretical model that also predicted language universals.

In the model of P&P, introduced by Chomsky in *Lectures on Government and Binding* (1981) and elaborated in *Knowledge of Language* (1986b), the tension between linguistic universals and language particularities was approached within the principles and parameters dichotomy. This model distinguishes principles, linguistic universals or structural features common to all languages, from parameters, which can be set to a given value under exposure of the language speaker to a particular linguistic environment. In other words, UG imposes principles of well-formation, but it does not establish a specific way for them to be satisfied. Each language satisfies those principles according to its

parameter settings. So, variation among languages may exist, but it is restricted to 'the logical space stated by a universal principle,' as noted by Fábregas et al. (2015, p. 5). With this dichotomy, Chomsky accounted for the universality of the language faculty (encoded in universal principles) and, at the same time, the variation among languages (encoded in parameters), reconciling the descriptive and explanatory concerns.

The problem of determining the character of the faculty of language, during the *Government & Binding* (GB) phase, was approached top down. GB is an implementation of the P&P approach, which divides grammar into distinct subcomponents with a powerful transformational component. The question that guided the research was "how much must be attributed to UG to account for language acquisition?" (Gallego, 2011, p. 12).

At the time, UG was conceived as having a rich and modular structure, with different subsystems, such as Binding, Case, Control and Government, whose principles were associated with underspecified parameters, fixed through linguistic experience. The classical metaphor describing this approach is the one of switch setting, attributed to J. Higginbotham: parameters are like switches whose position is set by experience (Higginbotham, 1982, p. 154).

The P&P approach originated several studies that looked at language-specific phenomena as a means to achieve a better understanding of UG.

The evolution from the P&P model to the MP, in the 90's, led to a revision of the traditional notion of 'parameter.' One of the theoretical issues was the verification that the number of parameters necessary to account for the variation among languages jeopardized the notion of UG and the language acquisition process (Fábregas et al., 2015). In effect, the idea of universality supposes that there are uniform and universal aspects common to all natural languages. Parameters appear to resolve the tension between linguistic universal principles and specific language properties. However, if there are too many parameters, the idea of universality loses its strength.

In addition, the research showed data that did not confirm the relations of hierarchized parameters nor the clustering effects of parameters. For instance, the first studies related to the Null Subject Parameter did not find evidence of the clustering of properties related with the Null Subject Parameter in the English interlanguages (Hilles, 1986; Liceras, 1988, 1989; Phinney, 1987; White, 1985).

1.3. The Minimalist Program

The MP reduces the formal complexity of older models. MP aims at showing "that the basic principles of language [can be] formulated in terms of notions drawn from the domain of (virtual) conceptual necessity" (Chomsky, 1995, p. 171). This goal impacted the architecture attributed to UG, simplifying it. If previously the GG had a "top down" approach, asking "How much must be attributed to UG to account for language acquisition?" (Chomsky, 2007, p. 4), the MP approach is "bottom up": "how little can be attributed to UG while still accounting for the variety of I-languages [internalized languages] attained, relying on third factor principles[2]? The two approaches should, of course, converge, and should interact in the course of pursuing a common goal." (Chomsky, 2007, p. 4).

In the MP, the four levels of representation assumed in previous syntactic generative theories[3] are reduced to two interface levels, Phonological Form (PF) and Logical Form (LF). PF is the level of representation that interfaces with the Articulatory-Perceptual (A-P) system and LF interfaces with the Conceptual-Intentional (C-I) system.

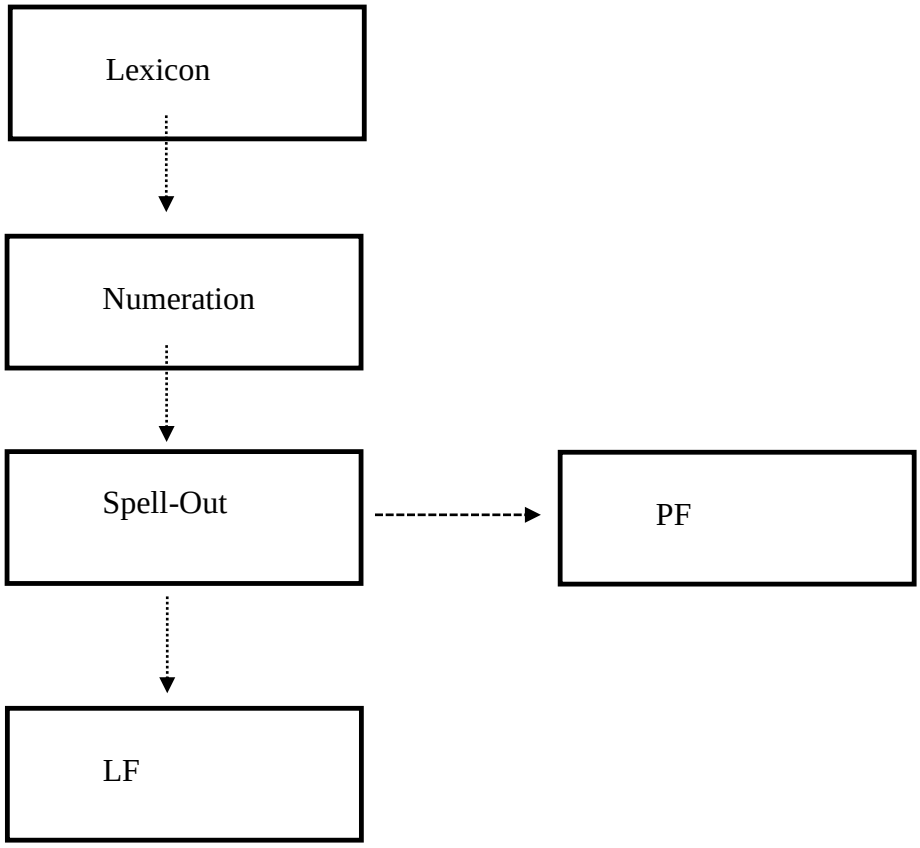
The syntactic operations start with a set of lexical items (LIs), which enter the numeration. At the end of the derivation, the numeration must be empty. At a given point in the derivation, a certain structure is spelled-out. Spell-out takes place when the part of the derivation that builds the syntactic structure is complete. At this point, the structure goes into two directions. On the one hand, it is subject to phonological rules at the PF-component, where it ends up as PF, the representation that interfaces with the system ruling articulation and perception (A-P). On the other hand, the syntactic structure ends up as LF, the interface of the grammar with the cognitive system (C-I), responsible for the interpretation and meaning of the structure.

The derivation (or computation) consists of a set of basic operations, such as Select, Merge, Agree, Move and Transfer that operate on LIs. Figure 1 illustrates a Minimalist model of grammar.

[2] Third factor principles are principles that are not language specific, that is, they are used in the acquisition of linguistic knowledge but also by other cognitive domains.
[3] The four levels of representation assumed in previous syntactic theories were D-Structure, S-Structure, Phonetic Form and Logical Form.

Figure 1

Model of Grammar according to the MP (Chomsky, 1995)



(Adapted from Al-Horais, 2012, p. 13).

The lexicon consists of LIs (words and morphemes) that are physical realizations of features. The features that are typically associated with LIs can be phonological (eg. [+/- sonorant], [+/- voice]), semantic (eg., [+/-count], [+/-specific]) and formal ([Case: x]; [number: x], etc.).

A distinction is made between interpretable features (*i*F), which are located in the lexicon, and uninterpretable features (*u*F), which occupy a subset of the lexicon, the functional lexicon.

Interpretable features (*i*F) contribute to the meaning of the sentence. *i*F are, for instance, the features [masculine], [3rd person], and [singular] of a pronoun. They remain in the derivation and reach the syntax-semantics interface (LF), where they are interpreted.

Uninterpretable features (*u*F) do not make a semantic contribution to a category but are responsible for triggering the operations of Agree and Move. For instance, the features that codify *wh*-movement, subject agreement, overt subject, nominative subject, verb in VP, among others, are uninterpretable.

The derivation only converges at the interface levels if all features and elements that pass across the interface receive an interpretation (Full Interpretation). Uninterpretable features must be deleted before the interfaces, otherwise the derivation crashes (Chomsky, 1995, pp. 219-220).

The Borer-Chomsky conjecture[4] (Baker, 2008, p. 156) clarifies the locus of variation among languages:

> "All parameters of variation are attributable to differences in the features of particular items (e.g., the functional heads) in the lexicon."

In other words, functional heads and their features are considered the locus of variation among grammars. Given this assumption, the study of language acquisition is conceived as the study of the acquisition of features (Travis, 2008).

In more recent versions of the MP, Chomsky (2010) argues that variation belongs to the morphophonological component, to the process of externalizing internal computation (Chomsky, 2007). The idea that variation is related to externalization (i.e., transfer to the morphophonological component, or spell-out) can be interpreted differently. In the present dissertation, we adopt Gallego's (2011) view, compatible with the Borer-Chomsky conjecture above presented and with the idea that variation is a matter of lexicon setting. Under this perspective, the lexicon is set by means of a "feature-selection-and-assembling" process that UG carries out to "provide atomic elements, LIs, each a structured array of properties (features) to which Merge and other operations apply to form expressions" (Chomsky, 2007, p. 6). If LIs are simple bundles of features, languages differentiate themselves by "valuation of parameters and selection from the store of features made available by UG, and a listing of combinations of these features in LIs" (Chomsky, 2007, pp. 6-7).

Thus, there are two sources for variation: the way in which UG features are assembled (variation before syntax) and the way in which the outputs of syntactic computation (LIs) are provided with morphophonological features (vocabulary items)

[4] This conjecture was first suggested in Borer (1984). Chomsky (1995) then adopted it, incorporating it into his MP.

(variation after the syntax) (Gallego, 2011). The present dissertation addresses these two sources of variation, by considering the features involved in the derivation of RCs, provided by UG, for Portuguese and Chinese, and by looking at how these features are associated with LIs. More, the RDH and the FRH, the two L2 acquisition hypotheses here considered (cf. sections 4 and 5), make different assumptions regarding the ability of L2 learners to account for linguistic variation before syntax, as it is described in the respective section.

The following section presents a state of the art of the main hypotheses on L2 acquisition, paying more attention to the two hypotheses that frame the present dissertation, the RDH and the FRH.

2. Second language acquisition

The issue of the "poverty of the stimulus" (see, this chapter, section 1.1.), initially presented for native language acquisition, is also considered when the acquisition of an L2 takes place. How is it that L2ers acquire and develop a linguistic system that is more complex than the direct linguistic input they receive? Furthermore, the role of transfer from the L1 or even from different L2s also needs to be considered.

The research on L2 acquisition field asks different questions than the research on L1 acquisition. L2ers present a higher degree of variability in their performance, even in end state grammars, more expressive than what is observed in L1 acquisition. One of the challenges is to explain if this high degree of variability in the performance of L2 speakers is compatible with the intervention of UG in L2 acquisition. For this reason, the study of second language within a generative framework (GenSLA) has questioned if UG remains accessible in adulthood and with all its features available for the acquisition of a non-native language. If so, how to explain the variability present in L2 grammars?

Another fact that distinguishes L2 from L1 acquisition research is that L2ers do not develop the L2 linguistic system from scratch, since they are native speakers of a given natural language and have already mastered its grammar. The role that the native language plays during this process (also referred to as L1 transfer, or cross-linguistic influence) has also received a lot of attention in GenSLA (e.g., Eubank, 1993, 1994, 1996; Lardiere, 2008; Schwartz & Sprouse, 1996; Shimanskaya & Slabakova, 2014; Vainikka & Young-Scholten, 1996b).

Ultimately, researchers aim at characterizing the mental grammar of L2 speakers looking at the aspects that may distinguish it from L1s. To do so in a GG perspective, specific language structures are studied and the behavior of L2ers regarding these structures provides clues to characterize the "interlanguage grammar" (ILG), the term here used to refer to the grammar of the L2 learner, in the sense that is different from the L1 and from the L2 and may be described in its own terms (Selinker, 1969, 1972).

The term 'interlanguage' (Selinker, 1969, 1972) refers to the grammatical system present in the learner's language, when the learner attempts to convey meaning in the target language. Selinker (1972, p. 214) claims for "the existence of a separate linguistic system based on observable output which results from a learner's attempted production of a Target Language norm." Although the expression "interlanguage grammar" was developed within Psycholinguistics, it has gained relevance in the field of L2 Acquisition and GenSLA, since it entails the idea that the learner's language does not present random errors, but systematical, that is, that ILGs are rule-governed. Adjémian (1976) argued explicitly for their treatment as "natural languages"[5]. If ILGs are constrained by the same rules as native languages, then, the role played by UG in their development may be investigated.

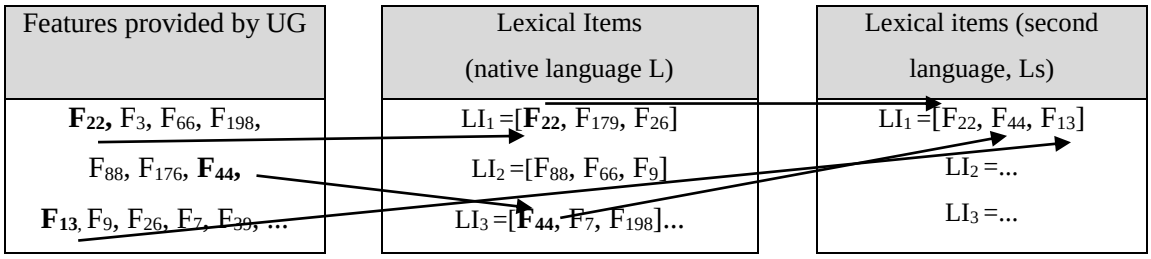
Considering the language architecture framework adopted in the current dissertation (see previous section), the process of L2 acquisition consists in feature's reorganization/ acquisition or deletion. UG makes a set of features available. These features are assembled in different LIs, which constitute bundles of features. Nevertheless, natural languages do not bundle features alike and do not recruit the same features from UG. Thus, when a speaker from a L1 starts learning an L2, she needs to reassemble features from her L1 into different bundles in the L2.

This process is illustrated in Figure 2, which constitutes a representation of the learning task that L2ers face, considering the MP. The representation is from Shimanskaya (2015, p. 5), considering Gallego's proposal for natural languages (Gallego, 2011, p. 548).

[5] "Underlying the IL hypothesis is the unwritten assumption that ILs are linguistic systems in the same way the Natural Languages are. (By "natural" language I mean any human language shared by a community of speakers and developed over time by a general process of evolution.) That is, ILs are natural languages." (Adjémian, 1976, p. 298).

Figure 2

Assembling Lexical Items from Features in L2 Acquisition



(adapted from Shimanskaya, 2015, p. 5)

Imagine that a speaker is acquiring a given lexical item LI_1 in her L2 (Ls, in fig. 2). This LI is composed by features 22, 44 and 13 (LI_1=F_{22}, F_{44}, F_{13}). Features 22 and 44 are available in two different LIs in the native language, meaning that the speaker needs to reassemble them into a single LI in the L2. Feature 13 is not encoded in any LI of the native language L1, so the speaker needs to add it from UG inventory. If UG is fully available[6], the acquisition process is well-succeeded. If, on the contrary, speakers cannot recruit certain features from UG after a given age, as proposed by Hawkins (e.g., 1997), the acquisition process is not successful.

One of the goals of this dissertation is to present evidence that argue for or against the ability of adult L2ers to access UG, since this is a debate that has persisted, despite the theoretical changes that the generative research framework has faced.

Two second language hypotheses are here considered. The first is the RDH (Tsimpli & Roussou, 1991; Hawkins & Chan, 1997; Hawkins & Lizka, 2003; Tsimpli, 2003; Hawkins, 2005; Hawkins & Hattori, 2006, Tsimpli & Dimitrakopoulou, 2007). The second hypothesis that will be taken into account is the FRH, developed mostly by Lardiere (1998, 2000, 2005, 2007, 2008, 2009), but with the contributions from Hwang & Lardiere (2013) and Cho & Slabakova (2014). The RDH (see current chapter, section 4) and the FRH (see current chapter, section 5) have in common the assumption that L1 transfer occurs at the initial stage of acquisition. These hypotheses also share the theoretical background and that frames them and that also structures the present project, which is the model of language architecture developed by the MP.

The remainder of this chapter is organized as follows: first, an overview of GenSLA studies developed during the 90's is presented, considering the different

[6] See Lardiere's Feature Reassembly Hypothesis, described later in the current chapter (section 5).

perspectives that were assumed regarding the availability of UG in L2 acquisition. Second, the role of transfer from the L1 is discussed, taking into account the main proposals that have been suggested in the literature. A section is devoted to each of the two hypotheses (the RDH and the FRH) considered in the present dissertation, since they make different predictions regarding the research questions that guide the present work. Finally, the general research questions that frame this dissertation are introduced, followed by the most relevant aspects addressed in this chapter, summarized in the conclusion.

3. Access to Universal Grammar and role of transfer from the native language

3.1. Access to Universal Grammar

GenSLA studies have evolved along with the theoretical changes in GG. During the last two decades of the 20th century, the L2 acquisition hypotheses were mostly concerned with the (lack of) access to UG in adulthood. In a nutshell, the discussion was centered on access to UG in the early stages of development of an L2 grammar, following the model of P&P. This is tantamount to saying that researchers looked for evidence that ILGs were constrained by UG principles and that parameters could be reset in the acquisition of an L2. The debate was between the hypotheses that claimed no (direct) access to UG and those that claimed direct access (see White, 2003, for a comprehensive review).

The 'no access' perspectives claim that UG does not constrain the development of the ILG and that the linguistic innate mechanisms available in L1 are no longer accessible in the L2. However, given that UG properties are at least available through the L1, the designation 'no access' is considered inaccurate[7] (e.g. White, 2003, p. 16), and this view is also referred to as 'partial' access[8]. Within this view, researchers stated that UG is only accessible through the L1 (e.g, Bley-Vroman, 1990, proposing the Fundamental Difference Hypothesis), and that L2 grammars show no evidence of being

[7]"Indeed, the assumption that UG is at least partially implicated via the L1 suggests that the term *no access* is a misnomer; hence, this view is sometimes also referred to as *partial access*" (White, 2003, p. 16).

[8] The use of the terms 'no access' and 'partial access' is not equivalent for all researchers. White (2003) suggests the approach mentioned above (equating the expressions 'no access' and 'partial access', for the reasons exposed), but, e.g., Meisel differentiates 'no access' from 'partial access' (Meisel, 2011, p. 93). The term 'partial access' assumes that a subset of UG principles is still available to the learners and that L2 grammars should conform at least partially to those principles. For Meisel, 'no access' implies the inexistence of L2 grammars as transitional grammars; instead, these are cognitive systems that mimic "mental representations and processes from native grammars" (Meisel, 2011, p. 93).

constrained by UG (e.g., Clahsen & Muysken, 1986) or that L2 learners could not go beyond the principles and parameters values present in their L1 (e.g., Schachter, 1989).

Different proposals within the access to UG perspective assume that UG is not accessible only through the L1 and actually constrains the learner's ILG; at the same time, it is possible that ILGs present different parameter settings than the ones established in the L1. Some approaches, known as 'direct access' hypotheses, argued that learners define the parameters of the L2 regardless of the L1, 'directly' from UG (e.g., Flynn, 1987). Alternatively, other researchers assumed that the L1 and UG are both relevant in L2 acquisition, in what were called 'indirect access' perspectives. Nevertheless, the expressions direct/ indirect access do not characterize these approaches accurately: for instance, the assumption that both the L1 and UG play a role in acquisition does not presuppose that learners are restricted to the UG principles and parameters of their L1, so, direct access to UG is also possible (Thomas, 1991, 1993). For this reason, these 'direct access' and 'indirect access' were replaced by the terms 'full access' and 'partial access', which may become unclear if we consider that 'no access' perspectives can be also treated as 'partial access'. For economy reasons, the debate on the use of these designations is not developed further (see White, 2003, for a review). The relevant aspect to bear in mind is that researchers disagree on the relevance of UG and of the L1 during the ILG development.

And how can (lack of) access to UG be proven? Several works were developed under the rationale of the "poverty-of-the-stimulus", used in the research on L1 acquisition (section 1.1. of the current chapter). This line of thought attempts to explain the mismatch between the input that learners receive and the linguistic system that they develop, which shows the knowledge of constructions and grammatical restrictions that are not explicitly presented in the linguist input. Different studies showed that L2ers master internal linguistic rules that are not present in the input, are not explicitly taught and cannot have been transferred from the native language[9], suggesting the interference of UG on the acquisition process.

[9] For instance, White (2003) provides examples of L2 research on three different topics: the Overt Pronoun Constraint (e.g. Pérez-Leroux & Glass, 1997, 1999 and Kanno, 1997, 1998), Process and Result Nominals in L2 French (Dekydtspotter et. al., 1997) and the Case-particle deletion (ECP) (Kanno, 1996). In all cases the L2ers have shown knowledge of unconscious and subtle properties of the target grammar that could not have been absorbed from the input.

3.2. L1 Transfer

L2 acquisition research has not ignored the fact that L2 speakers, by definition, have already developed a complete grammatical system that constitutes their native language. The degree to which an L1 interferes in the development of an L2 has received a lot of attention on the L2 acquisition (SLA) field. The role played by the L1 in L2 acquisition has different designations in the literature, such as "transfer", "cross-linguistic influence", "interference" (Shimanskaya, 2015), and goes back to Lado's Contrastive Analysis hypothesis[10] (Lado, 1957). For the sake of economy, the history of the development of L1 transfer in SLA is not going to be exhaustively described, but it is important to be aware that scholars are divided between 'no transfer', 'selective/partial transfer' or 'full transfer' approaches.

The 'no transfer' hypotheses rejected any influence of the L1 on the L2, considering the initial state of L2 acquisition to be identical with the initial state of L1 acquisition. Examples of 'no transfer' hypotheses are the Initial Hypothesis of Syntax (Platzack, 1996) and Full Access (without transfer) (Epstein et al., 1998; Epstein et al., 1996). However, the complete deletion of L1 mental representations during the L2's learning process is hard to maintain. So, it is safe to say that nowadays these hypotheses are set aside, given that the interference of the L1 in the L2 acquisition process is accepted at some extent by most researchers (Eubank, 1993, 1994, 1996; Lardiere, 2008; Schwartz & Sprouse, 1996; Shimanskaya & Slabakova, 2014; Vainikka & Young-Scholten, 1996a, among many others).

In the 'selective/partial transfer' group are the Minimal Trees Hypothesis (Vainikka & Young-Scholten, 1994, 1996a, 1996b) and the Valueless Features Hypothesis (Eubank, 1993/1994, 1994, 1996). Vainikka and Young-Scholten (1994, 1996a), for example, argued that L2 learners transferred only lexical categories (and parameter values associated with them, such as headedness). Functional categories, on the other hand, did not transfer, but were gradually acquired, as the clausal structure was built bottom-up, first through an underspecified functional projection FP, which was later replaced by the more specified AgrP, and then CP[11]. Unlike Vainikka & Young-Scholten,

[10] According to Lado's hypothesis, the differences between the native and the second language are at the root of all L2 difficulties. If the native language provides the correct habit, it is directly transferred into the L2. However, if the L2 is different from the L1, the learner needs to be taught how to change her behavior and needs to learn a new grammatical pattern.

[11] As noted by Lardiere (2007), Vainikka & Young-Scholten followed a structure building model that was inspired by the studies on L1 acquisition – that is, they were focused on characterizing the initial phrase

Eubank (1993/4, ff.) assumed that both lexical and functional categories transfer from the L1, but feature strength does not; features at the initial state were considered to be valueless or inert. Under Eubank's view, features are transferred underspecified from the L1 and are specified later, given that UG is fully available.

Arguing that the L1 is fully transferred into the interlanguage is the FT/FAH hypothesis from Schwartz & Sprouse (1994, 1996). In the FT/FAH view, the entire L1 grammar constitutes the initial state for L2 acquisition, hence the parametric values are initially set to the values of the L1. The prediction is that ILGs have the same properties as the grammars of natural languages, but do not necessarily converge with the target grammars. When the L1 settings cannot accommodate the L2 input, the speaker can access UG to define new parameter settings, feature values or functional categories. Like Lado's Contrastive Analysis Hypothesis, FT/FAH's departure point to analyze the ILG is the L1 grammar and the differences that it has regarding the L2.

The present dissertation analyzes the acquisition of prepositional RCs considering the RDH (Hawkins, 2005; Hawkins & Chan, 1997; Hawkins & Hattori, 2006; Hawkins & Lizka, 2003) and the FRH (Choi & Lardiere, 2006; Hwang & Lardiere, 2013; Lardiere, 2000, 2005, 2007, 2008, 2009), two SLA acquisition hypotheses that are in line with the Minimalist paradigm and its view of language architecture.

These two hypotheses are described in greater detail in the following sections.

4. Representational Deficit Hypothesis

The RDH (Hawkins, 2001; Hawkins & Lizka, 2003; Hawkins, 2005; Hawkins & Hattori, 2006) builds on the Failed Functional Features Hypothesis (FFFH) (Hawkins & Chan, 1997) and on the Interpretability Hypothesis (IH) (Tsimpli & Roussou, 1991; Tsimpli, 2003; Tsimpli & Dimitrakopoulou, 2007), making an explicit claim about the *locus* of the impairment in L2 acquisition. Following Hawkins (2005) and Hawkins and Hattori (2006), this hypothesis proposes that *u*F not selected by the native language are not available in L2 adult acquisition, being subject to a critical period.

Different studies conducted at the end of the 20th century (such as Haznedar & Schwartz, 1997; Lardiere, 2000; Prévost & White, 2000, among many others) attempted to prove that the poverty-of-the-stimulus rationale holds in SLA and that the ILG has

structure available for an L2er and on figuring out how the development of the phrase structure proceeds. The internal grammar was conceived in terms of functional nodes that were added to build a structure.

computational mechanisms constrained by UG and similar to those of natural language grammars. However, the variability found in ILGs, less expressive in L1s, remains unexplained, and the proponents of the RDH question why advanced learners produce errors that native speakers do not. Instead of attributing the variation to difficulties in the mapping between levels of representation (as proposed, e.g., by the FRH, cf. below), proponents of the RDH claim that variation depends on the inventory features, limited to those available in the native language after the critical period for language acquisition. This is tantamount to saying that adult L2ers cannot acquire certain features if these are not selected by their L1.

Furthermore, the advocates of RDH propose that successful performance does not necessarily mean that a given feature has been acquired. In other words, the RDH assumes that features may be missing from the ILG, even if performance is native-like. An opposite assumption is made, e.g., by FRH supporters, who admit that native-like representations may be available in the ILG despite the variability in performance.

An emblematic study of "missing feature despite appearances", in Hawkins' words (2005, p. 125), focused on the "apparent acquisition" of obligatory *wh*-movement (Hawkins & Chan, 1997). This work is particularly relevant for the present dissertation, because it studies the acquisition of RCs by Chinese native speakers acquiring English L2, like the present work, but in a different L2. For this reason, this study is described with greater detail in Chapter 5, section 3.2. For the moment, it is enough to say that the results obtained led the researchers to assume that Chinese learners did not acquire the functional features setting *wh*-movement in English L2, even if advanced-speakers displayed an apparent-target performance of these properties.

This hypothesis is reinforced and refined in a subsequent study on the acquisition of *wh*-movement in interrogatives by Japanese-speaking learners of English (Hawkins, 2005; Hawkins & Hattori, 2006) since, like Chinese, Japanese is a *wh-in-situ* language. With this work, the researchers aimed at providing additional evidence that *u*F cannot be acquired after the critical period for language acquisition. The previous study made by Hawkins & Chan (1997) lead Hawkins & Hattori to predict that Japanese learners could not acquire the *u*F that trigger *wh*-movement in adulthood.

A considerable number of the studies on the L2 acquisition of *wh*-movement by speakers of an L1 without *wh*-movement were conducted in the last two decades of the 20th century, with variable results. Some of them (e.g., Martohardjono, 1993; Li, 1998; White & Juffs, 1998) concluded that L2ers could acquire *wh*-movement, accessing *u*F

after the critical period. However, Hawkins (2005) and Hawkins & Hattori (2006) claim that the evidence presented by such studies do not necessarily indicate that *u*F are accessible in adult L2 acquisition. Instead, the results may be apparent and "derived from the generative power of the computation and accessible features of language faculty" (Hawkins, 2005, p. 129).

For instance, Hawkins & Hattori (2006) interpret the evidence presented in the works of Yusa (1999), Ohba (2003), Miyamoto & Iijima (2003) and Ojima (2005), in favor of the acquisition of *wh*-movement by Japanese learners, as being only apparent. To prove their point, they test the sensitivity of advanced Japanese learners of English to superiority and Subjacency in multiple *wh*-questions. They conclude that, despite the apparent convergence with the native English grammar in the feature that drives *wh*-movement, the participants are substantially different from natives in their judgements of locality constraints with multiple *wh*-questions. With this study, the authors reinforce their claims: there is a critical period for the acquisition of certain features and the results that show target-like performances should be considered with caution, since they over-represent the internal grammar.

It should be clear that, in this hypothesis, the access of adult learners to UG is not denied. The statement is that many resources of the language faculty, such as the computational devices, their associated operating principles, interpretable syntactic features and *u*F already selected during the acquisition of L1(s) are available in SLA. However, optional *u*F not selected in the L1 are not available after the critical period (Hawkins & Hattori, 2006). L2ers may acquire new features or new categories as long as they involve interpretable features that do not determine parametric differences. This proposal follows the groundwork launched by Tsimpli's (2003) and Tsimpli & Dimitrakopoulou's (2007) "Interpretability Hypothesis", whose designation is self-explanatory, given that only interpretable features remain active after the critical period.

Similar proposals have been made for the acquisition of phonemic contrasts by Brown (2000) and Larson-Hall (2004) (cited in Hawkins & Hattori, 2006), who claim that when a given contrastive feature is not selected in the primary grammar(s), the contrast will not be perceived in the L2, suggesting a critical period for the acquisition of phonological features.

Hawkins & Hattori (2006) speculate on the reasons that determine specifically the lack of availability of *u*F in adulthood. Hypothetically, semantic computations, syntactic computations and the principles that rule them do not require linguistic input in order to

develop (Chomsky, 1998). However, *u*F belong to the group of properties that are selected in response to the linguistic input, together with interpretable syntactic and semantic features necessary for the assembly of LIs, but also with phonetic/phonological features that combine to yield pronounceable words. So, if all these properties are selected in response to linguistic experience, why are only *u*F subject to a critical period?

The authors conjecture that it may be a matter of 'functional usefulness' (Hawkins & Hattori, 2006, p. 271). Interpretable features are useful to build new open class LIs, since there is evidence that adult learners can acquire new words, but languages also add new items to their inventory. On the contrary, *u*F are limited to a small number of closed class items that belong to functional categories, and their utility is to 'establish stable dependencies between items in syntactic dependencies' (Hawkins & Hattori, 2006, p. 271). Thus, according to the researchers, the possibility of having *u*F available, without restrictions, during adulthood, could represent a functional disadvantage, given that the speakers would have doubts about the value of a given feature even in their native language. Instead, it is possibly more economical if the options stop being available after feature selection is accomplished according to the L1 input.

This perspective suggests that the availability of *u*F in adulthood would originate some sort of instability, with speakers constantly doubting their assumptions regarding their L1(s), which, I believe, is not totally justified. The availability of *u*F in L2 acquisition does not imply that the speaker needs to reset the features already defined in her native language. Instead, it gives the L2er a bigger range of possibilities to make decisions regarding the language she is acquiring, according to the input.

Another explanation advanced by Hawkins & Hattori for the unavailability of *u*F in adulthood, which is conjectural and "highly speculative" (Hawkins & Hattori, 2006, p. 272), relates to eventual constraints imposed by the neuroanatomy of the brain tissue. This explanation is based on the supposition that the brain saves energy, disconnecting components that are not required for cognitive functioning after a given period of time. If this is true, "uninterpretable syntactic features could be a plausible target for such disconnection." (Hawkins & Hattori, 2006, p. 272).

Despite this, the RDH predicts that older L2ers with enough experience of the target language converge in grammars very similar to natives. When the L1 and L2 grammars recruit distinct *u*F, other areas of UG are accessed to represent the same phenomenon. Thus, the learners may apparently have acquired a given structure, but,

instead, are using alternative representational options made available by UG to get closer to the L1.

Moreover, the RDH proposals, such as the IH, anticipate L1 transfer effects at every stage of development, and syntactic development is expected even in the cases where *u*F are involved, since the developing grammar will make use of *i*F, which are independently available (Tsimpli & Dimitrakopoulou, 2007, pp. 224-225).

Finally, the proponents for the RDH state that the L2 performance can over-represent the internal grammar, following Myles (2004). In other words, taking the phenomenon under analysis in the present dissertation as an example, the fact that RCs in EP L2 are correctly produced by a native speaker of Chinese does not necessarily indicate that she has acquired the *u*F that triggers *wh*-movement in EP, as she may be recruiting other mechanisms offered by UG to achieve such a result.

This assumption raises an issue regarding the analysis of experimental data. Production data are allegedly based on appearances and do not necessarily reflect the acquisition of the *u*F necessary for such utterances. Hence, production data are not enough to confirm or infirm any hypothesis. It is necessary to collect different types of data in order to characterize the mental representations of the ILGs.

5. Feature Reassembly Hypothesis

The FRH (Lardiere, 1998a, 1998b, 2000, 2007)[12] follows a minimalist approach to language acquisition assuming that, in principle, all features (regardless of their interpretability) can be acquired if the input provides morphological contrastive evidence for its acquisition. It builds on the FT/FAH proposed by Schwartz & Sprouse (1996), by claiming that the initial state for L2 acquisition is the primary grammar ('Full Transfer'). However, the process that occurs as a consequence of 'Full Access' is elaborated, developed and refined.

A noteworthy aspect of Lardiere's works (e.g., Lardiere, 2005, 2007, 2008, 2009) is the clear claim to take features as the unit of analysis in SLA research, abandoning the more binary approaches that consider parameter resetting, since these cannot account for language variation, which is the "hallmark of language development" (Lardiere, 2005, p. 178). Indeed, her understanding is that the variation observed in ILGs cannot be described

[12] See also Cho & Lardiere, 2006; Cho & Slabakova, 2014; Hwang & Lardiere, 2013; Lardiere, 2000, 2005, 2008, 2009, among others.

as a matter of parameter selection. Lardiere recalls that the process of parameter resetting is binary (a parameter receives a positive or negative value), so it represents a one-time event in the interlanguage of a speaker – it is immediate and irrevocable. According to her, such simplistic metaphors of "switch-setting" or "selection", which compare the parameter with a light switch that can be turned on and off, are insufficient to account for L2 data. Instead, within the developments introduced by the MP, parametric variation may be reduced to the morphological properties of functional categories that drive syntactic variation. Thus, Lardiere openly challenges and rejects the parameter-resetting paradigm and proposes a finer-grained approach to language acquisition.

Parameters were first conceived as a finite set of options that constrain the possibility of variation among the languages of the world (Chomsky, 1981). This was quite promising to L2 acquisition, given that the acquisition of one parameter may signify the acquisition of all related parameters (cf. section 1.2, above). However, the system of parameters showed itself to be inconsistent. First, parameters were connected to invariable universal principles in the UG. For instance, the head-directionality parameter was related to the principle that heads have to select complements in a particular order; bounding nodes were associated with the idea that *wh*-extractions are subject to locality constraints. Nevertheless, over time, the literature presented all sorts of parameters: directional/configurational, binary/non-binary, related to morphological processes or not, realized as affixes (or not), with or without pronounced constituents (Lardiere, 2009, p. 177).

Furthermore, two languages may set the same value for a given parameter but show distinct contexts for its realization and assemble formal features differently[13].

For the above reasons, Lardiere strongly argues for the need to replace the parametric approach with a finer grained analysis (inspired, e.g., by Kayne, 2005, but without considering Kayne's preference for studies in L2 acquisition of closely related languages[14]). Despite rejecting the binary parameter setting, Lardiere elaborates on a

[13] To better illustrate it, Lardiere (2009) provides, among others, the example of a native speaker of Somali learning English as L2 dealing with past markers. In English, the past feature is visible in TP (in the verbal forms), but, in Somali, it is visible in the DP. Hence, this is a case where two languages have the same parameter valued positively – they both sign the past. When learning English, a Somali speaker does not need to reset the value of the relevant parameter that marks the past. Instead, she needs to learn the optional and obligatory contexts where this parameter may occur, which still constitutes a hard task that is not accounted by a model of parameter resetting.

[14] Lardiere (2009) puts aside claims such as the ones made by Kayne (2005), according to which the comparative approach should focus on more closely related languages. Kayne's reasoning is that work in less closely related languages, such as English and Japanese, could be less informative, whereas microparametric syntactic variation could be easily controlled with the observation of closely related

contrastive approach (that goes back to Lado's Contrastive Analysis Hypothesis, 1957), in the sense that the learner's L1 knowledge constitutes the point of departure for L2 acquisition.

According to her, the starting point of SLA research should be the description of LIs and functional categories in terms of their features, conceived as the "primitive descriptive atoms of language". As Lardiere puts it: "the basic unit of currency for describing differences between languages has been effectively 'exploded': i.e. reduced to the level of individual abstract features, in order to gain better empirical coverage of the data." (Lardiere, 2009, p. 180). The selection of features from the universal inventory, the way in which features assemble in LIs and their role in the computational operations are at the top of Lardiere's concerns when approaching SLA:

> ...acquiring an L2 grammar is not just a matter of learners determining whether features are still available for selection from a universal inventory and are, in fact, selected. In particular, we need to consider how they are assembled or bundled together into lexical items (or functional categories), and then we must further consider the particular language-specific conditions under which they are realized (Lardiere, 2007, p. 235).

Lardiere's approach conceives the L2 acquisition process differently from RDH. The RDH (e.g., Hawkins & Chan, 1997[15]) is focused on the selection and lack of availability of the features that determine linguistic variation (*u*F) during adulthood, identifying the *locus* of impairment before the transition to the PF/LF components. On the contrary, beyond the feature selection/availability, the FRH looks at how features combine into LIs and functional categories and at the contexts in which they occur. The difficulties do not result from feature unavailability or impairment but arise in the process of associating features with LIs.

Significantly, according to Lardiere, any feature contrast that can be detected is ultimately acquirable or, in other words, L2 acquisition only occurs if contrasts can be recognized. The basis for detectability is the observation of the contrast, which will be associated with some difference in meaning or grammatical function and which will lead

languages or dialects. Works such as the one developed in this dissertation, which takes two very different languages to contrast them, should not be prioritized, in Kayne's view. Despite this, Lardiere recalls that L2 learners of less closely related languages still need to deal with these difficulties and overcome them (Lardiere, 2009, p. 188). Exclusively microparametric approaches would ignore these realities.

[15] See also Hawkins, 2005; Hawkins & Hattori, 2006; Hawkins & Lizka, 2003 (see section 4 of the current chapter).

the L2er to construct "some sort of representation" for it (Lardiere, 2009, p. 214). If features are perceived as the reflex of fundamental cognitive categories (as in Harley & Ritter, 2002, p. 482), they "are probably the best candidates available for laying any claim to a biologically grounded, human natural language universality." (Lardiere, 2009, p. 218). As such, difficulties in L2 acquisition cannot be attributed to the unavailability of a given set of features, as the proponents of RDH claim for *u*F, but to the difficulties that arise from assembling features available in the L1 into different bundles, according to the input provided by the L2.

For the proponents of the FRH, the learner's task goes beyond the simple switch setting of a parameter. It consists in the observation of the properties and placement of particular LIs in the linguistic input and in discerning the specific configurations that the features present in the L2. It is described as a difficult and meticulous process, a 'formidable' learning task that is 'painstakingly' undertaken (Lardiere, 2005, 2009).

From the L2er's point of view, the learning task presents three main challenges (Lardiere, 2009, p. 175): the first is to verify if the selected features are associated with the same functional categories in the L1 and in the L2; the second is that the learners need to figure out how the selected features combine in LIs and what other features may be involved; the third is that L2ers need to pay attention to the obligatory/ optional realization of morphologic markers. The first two challenges are actually faced during the two stages of development considered in this hypothesis: mapping and assembly. Mapping may be described as L1 transfer, and assembly occurs during ILG development (Shimanskaya, 2015).

Moreover, mapping occurs initially, when the L2er looks for correspondences between the L1 and the L2. This process of looking for "morpholexical correspondences" in the L2 to those in their L1, occurs "on the basis of semantic meaning or grammatical function (the phonetic matrices will obviously differ)" (Lardiere, 2009, p. 191). Possibly, the L2ers can match already assembled LIs of the L2 with its closest morpholexical equivalent in the L1, but their underlying features are "independently recruitable as building blocks for the assembly and possible reconfiguration of new lexical items" (Lardiere, 2009, p. 213). Given that the mapping process consists in identifying the similarities between the functional meanings of the LIs from the target L2 and the L1, it may be one-to-one, many-to-one, one-to-many or many-to-many (Cho & Slabakova, 2014). It occurs in the early stages of acquisition, but its transfer effects "linger", that is, they persist throughout the ILG development.

Once the initial mapping is established and there are no more correspondences available, the second stage of acquisition takes place. The FRH predicts that L2ers may *acquire* new features not available in the L2, *abandon* distinctive features relevant in the L1 but not necessary in the L2, and *assemble* features which exist in the L1 into new LIs or into new bundles. *Feature assembly* or *reassembly*, as it is indistinctly referred over Lardiere's works, represents the great challenge for the L2er:

> "the greater difficulty for the second language acquirer lies in assembling just the right combination of features into the right lexical items for each language, and in determining the appropriate conditioning environments for their expression. (...) especially in cases where such features (interpretable or uninterpretable) do exist in the L1 but are configured differently and/or are expressed under different contextual conditions, including pragmatically governed ones." (Lardiere, 2009, p. 215).

During this process, the L2ers are expected to develop a "morphological competence", that is, "the knowledge of which forms go with each features" (Lardiere, 2005, p. 179), in order to accomplish the (re)assembly of the formal feature matrices of functional categories and map them onto their new morphological exponents.

The RDHs' proponents (cf. section 4) claim that the *u*F bundled in functional categories are not acquirable in adulthood and that L2 speakers recruit other mechanisms provided by UG to develop their ILGs. The FRH, contrary to the RDH, predicts that functional categories are fully acquirable. How does this proceed? The features that integrate functional categories are connected to LIs, that is, to the sound-meaning pairs that learners perceive from the input. Functional categories are assembled considering the features that are extracted from such sound-meaning pairs. Thus, the acquisition of functional categories consists in appropriately reconfiguring or reassembling formal and/or semantic feature bundles in the L2 grammar and determining the specific conditions under which their properties may or must be morphophonologically expressed (Lardiere, 2007, p. 236).

In a nutshell, the FRH predicts that all features are acquirable as long as they can be contrasted in the L1 and in the L2. Nevertheless, mapping requires less effort than reassembly (Slabakova, 2009b, p. 320). Indeed, when a mismatch between the features of the L1 and the L2 occurs, the learning task is harder for the learner, compared to the situations where no reassembly but simple mapping of L1 and L2 morphemes is required.

As observed by Slabakova (2009), (re)assembly is arduous and time-consuming "because it involves a complex and frequently confusing learning task that may or may not be supported with abundant evidence in the input" (Slabakova, 2009b, p. 314).

Recalling the topic of present dissertation, the difficulties of Chinese learners arise in the identification of the features that characterize the relative CP in Portuguese (a functional category) and in the ability to reassemble the features of the Chinese relative CP according to the Portuguese input. The learnability problem that Chinese speakers face when they are in the process of acquiring RCs in Portuguese — without specifying yet what are the features involved — consists in identifying the contrasts between the two languages, map the aspects that they have in common, reassemble the features of the relative CP in the L1 according to the L2, adding new features and/or deleting others.

Slabakova (2009b) observed that reassembly is harder than mapping. However, are all (re)assembly tasks uniform and equally hard? The clarification of what constitutes (re)assembly has been a concern in some of the recent papers testing the FRH (e.g., Cho & Slabakova, 2014; Hwang & Lardiere, 2013). It starts by being described as a process that presents "considerable difficulty" in Choi & Lardiere (2006, p. 240). However, this description is imprecise and allows for multiple interpretations (Shimanskaya, 2015). As such, the researchers have made an effort to characterize it more concretely, despite its abstract nature.

One example of this effort is the research developed by Hwang & Lardiere (2013), suggesting that the order of acquisition depends on the complexity of the conditions under which a feature is expressed and on the degree to which the features differ from those in the L1. More complex combinations of features that are further apart from the L1 will be acquired later. In particular, Hwang & Lardiere (2013) propose a feature-hierarchy specifically for the linguistic structure that they are analyzing, i.e., quantified Korean noun-phrases, claiming that the most deeply embedded featural configurations are the last to be acquired.

Another study attempting to clarify if the effort involved in all reassembly tasks is equivalent is the study from Cho & Slabakova (2014). The authors propose a scale of degrees of difficulty in L2 acquisition (a 'cline of difficulty'), considering overtness/covertness and direct/indirect expression of features (see Cho & Slabakova, 2014, for a detailed discussion).

In a nutshell, the FRH presents a fine-grained approach to L2 acquisition that takes features as units of transfer, fitting perfectly into the latest developments of the MP.

Different researchers have presented different proposals to characterize the acquisition process, such as Hwang & Lardiere (2013), or Cho & Slabakova (2014), but the debate on the specificities of the acquisition process is still open.

Not considering here the technical details proposed in the most recent developments of the FRH (Hwang & Lardiere, 2013; Cho & Slabakova, 2014), it is possible to predict that mapping is a less complex task than reassembly. Learning situations where a mismatch between L1 and L2 grammatical features requires reassembly are harder for the learner, compared to situations where no reassembly is required (Slabakova, 2009b).

One of the limitations of Lardiere's proposal is the "imprecise definition of acquisitional difficulty" (e.g., Shimanskaya, 2015, p. 32). This issue has been addressed, for example, by Hwang & Lardiere (2013) and Cho & Slabakova (2014), who have presented different approaches to characterize the (re)assembly process.

Another shortcoming of Lardiere's proposal concerns the lack of predictive power regarding on-line language processing (Shimanskaya, 2015, p. 32). Putting it differently, the FRH allows the researcher to make predictions about the mental representations that the L2ers have of their ILG, but it does not anticipate what happens when LIs are processed. As Shimanskaya puts it, when the required features are (re)assembled in L2 bundles, some questions remain unanswered, namely regarding L1 processing routines of speakers acquiring an L2 (do L1 processing routines change with successful completion of the reassembly process?), or the contribution of on-line computing towards target-like L2 use (Shimanskaya, 2015, p. 32). The present dissertation includes two on-line experimental tasks, whose analysis may enlighten our understanding of the role of L1 transfer in on-line language processing.

Finally, in Lardiere's words (Lardiere, 2009, p. 219), there is nothing "terribly original" in comparing the organization of features in the L1 and in the L2, or in proposing that the starting point to acquire the L2 are L1 feature configurations. However, as she recalls, quoting Slabakova (2002, p. 186) "much more precise research questions can be formulated" if L1 transfer is considered and if the properties that differ in the L1 and in the L2 are taken into account.

This is precisely what is intended in the present dissertation, starting with the description and analysis of the features that configure the relative CP in prepositional contexts in EP and Chinese, in Chapters 3 and 4, respectively, to better establish the learner's task, that will be detailed in Chapter 6.

6. General research questions

This dissertation attempts to contribute to the study of ILGs, assessing and analyzing the differences between native and non-native grammars. The general research questions that guide it concern the unlimited access of adult non-native speakers to UG, when acquiring an L2:

1) Is it that non-native speakers cannot recruit uninterpretable functional features after a certain age, not being able to access specific properties provided by UG? In other words, are non-native linguistic representations constrained only by the functional features that the L1 provides?
2) Or, on the contrary, are all features from UG available in adult L2 acquisition, being L2ers able to delete unnecessary L1 features, add features required by the L2 but not available in the L1, or reassemble L1 features in different items in the L2, as defended by Lardiere (e.g., 2000, 2005, 2008, 2009)?

This general purpose is achieved with the study of two different but related phenomena. On the one hand, I intend to study non-native speakers' mental representations of prepositional RCs, considering the three different relativization strategies available in European Portuguese. Although RCs are a widely studied topic in theoretical linguistics and language acquisition, and even if some preliminary research has been developed on the L1 acquisition of these structures, to my knowledge, the acquisition of RCs in L2 European Portuguese has not been addressed yet. Additionally, it is my intention to contribute to the study of prepositional RCs in European Portuguese, namely analyzing the syntactic structures underlying the different relativization strategies, but also the reasons that make some strategies more productive in given contexts.

The second phenomenon to which this dissertation is devoted regards *wh*-movement. This is a widely studied topic in L2 acquisition, namely through the analysis of L2ers' sensitivity to Subjacency, as a diagnostic to the acquisition of *wh*-movement. This topic has already produced a lot of processing and syntactic research, but, as far as I know, most of these studies did not directly tackle the issue of P-Chopping and resumptive pronouns in SLA when looking at extractions from islands. This is also addressed in the present dissertation.

Given that the RDH and the FRH require a thorough analysis of the features involved in the acquisition process, it is of utmost importance to understand what are the features that configure prepositional RCs in European Portuguese, the L2 being acquired,

and in Chinese, the native language of the participants of this study. Chapters 3 and 4 describe prepositional RCs in European Portuguese and Mandarin Chinese, respectively. Before tackling the specific characteristics of prepositional RCs, in the next chapter, I present an overview of the main issues regarding the syntax of RCs cross linguistically, followed by a generic characterization of RCs in European Portuguese and Mandarin Chinese.

Chapter 2

Relative Clauses

In the current chapter, I introduce RCs. Given their complexity, I discuss some questions related to RCs in general before tackling prepositional RCs, the linguistic structure that I am analyzing with greater detail in this dissertation.

In the first part of this chapter, I present and debate the main proposals for the analysis of the syntax of restrictive RCs under a generative framework.

Afterward, I look at the main characteristics of RCs in EP and MC. Given the differences between the two languages, each section is structured differently.

In section 3, on EP, I start by framing EP RCs within the other Romance languages. Then, I look at the differences between SBJ/DO RCs and prepositional RCs. Considering the diversity of *wh*-operators available in EP, I include a brief description of each *wh*-operator. Finally, I present the main syntactic analyses adopted for EP RCs.

In section 4, about Chinese, I start by defending the existence of RCs, briefly presenting the arguments that support this decision. I also underscore the absence of relative pronouns (Rel Prs) in Chinese RCs and the distribution of grammatical resumptive pronouns (RPs) in Chinese RCs. I briefly address the RC's position in the sentence since it determines its restrictive or non-restrictive interpretation. Like in the section on EP, I present a synthesis of the main syntactic analyses claimed for RCs in Chinese so far.

To conclude, I present the arguments that lead me to adopt the Head External Analysis (HEA) in EP. I reserve the description of the particularities of prepositional RCs in EP and Chinese to chapters 3 and 4, respectively.

1. Relative Clauses

RCs are complex structures from a syntactic, semantic, and typological point of view. The literature presents several definitions of 'RC' (e.g., Bianchi, 2002; Comrie & Kuteva, 2005), where the three defining properties identified by De Vries (2002) are, in most cases, explicitly or implicitly alluded. First, RCs are embedded clauses. Second, RCs diverge from other subordinated structures because they relate to the surrounding syntactic material through a pivot element (a nominal element, DP). Third, the semantic Θ-role and the syntactic function of the pivot element within the RC are independent of

the pivot's roles within the matrix clause. In other words, the nominal element (DP), which the RC modifies, has a separate syntactic function and Θ-role within the matrix and in the RC, as example (1) shows:

(1) *I heard a teacher that explained the differences between clauses and phrases*.

In (1), the DP *a teacher* is the head[1] of the sentence *a teacher that explained the differences between clauses and phrases*. It is also the internal argument of the verb 'hear' in the matrix sentence (*I heard a teacher that explained the differences between clauses and phrases*), with the syntactic function of direct object (DO) and with the thematic relation of [theme]. However, within the RC, the DP *a teacher* is an external argument of the verb *explain*, with the syntactic function of subject (SBJ) and the thematic relation of [agent].

Moreover, as Alexiadou et al. (2000, p. 2) noted, RCs belong to a subclass of subordinate clauses that share two properties. On the one hand, RCs are not selected by a lexical predicate, which means that they are not a complement. On the other hand, *wh*-movement in RCs is 'non-standard,' differing from *wh*-movement in other structures.

RCs are an instance of A-bar movement (A'-movement). In a RC, a phrase moves from its base position to a non-argument position. Like other A'-movement constructions, RCs may involve an unbounded or long-distance dependency. They form a chain that relates a tail (usually, a gap) to a head (sometimes called the filler). These elements appear separated in the sentence, but they need to be interpreted as a unit. For instance, in sentence (2), the filler (*the debate*) only receives a complete semantic interpretation (represented by the index *i*) when the hearer reaches the gap position (indicated by the underscore).

(2) *The debate*$_i$ *that the politician mentioned* $__i$ *was a success.*

Examples of unbounded dependencies that involve A'-movement are *wh*-interrogatives, clefts, or topicalizations. Nevertheless, these constructions are not equal and involve different levels of complexity. RCs are among the most complex structures

[1] In the present dissertation, the element modified by the relative clause is referred to as the "head" or "antecedent".

since the relativized element (*debate*, in (2)) interacts with two lexical verbs, the matrix verb (*be a success*) and the relative sentence verb (*mention*), and it establishes different thematic relations with these two verbs, as illustrated above for (1).

Typologically, RCs present many possibilities (Comrie, 1981; Keenan & Comrie, 1977) since different languages set distinct values for the several parameters that define them (De Vries, 2002, pp. 17–20).

Semantically, RCs diverge in the 'type of modification.' The semantic relation that the 'head' and the clause itself establish can be one of three types: restrictive, appositive, or maximalizing. Hence, the literature distinguishes restrictive RCs (RRCs), appositive RCs (ARCs), and maximalizing RCs. The designation 'restrictive RC' is self-explanatory, and it refers to clauses that 'restrict' the denotation of the head. ARCs provide additional information on the head, modifying the whole noun phrase. Maximalizing RCs do not modify the head; instead, the head is interpreted within the RC where it provides a 'degree' variable, and an operation of maximalization applies at the clausal level (Bianchi, 2002, p. 197). Maximalizing RCs have a definite or universal interpretation (Grosu & Landman, 1998; Jacobson, 1995). Sentences (3)a to (3)c illustrate the difference between the three types of RCs.

(3) (a). *(I saw) the soldiers that lost the war.* [RRC]

(b). *(I saw) the soldiers, who lost the war*. [ARC]

(c). (*They are not quite) the warriors that their parents were*. [maximalizing]

(De Vries, 2002, p. 18)

In this project, I am interested in restrictive RCs[2]. Said differently, I am only looking at RCs restricting the set of potential referents for the head "by giving a proposition that must be true of the actual referents of the over-all construction" (Comrie, 1981, p. 143). Regarding the 'presence of head' parameter, I am only considering headed RCs[3]. More specifically, I am looking at prepositional RCs, a subgroup of restrictive RCs.

[2] Appositive and maximalizing RCs raise different research questions and hypotheses that are not addressed in the present dissertation.

[3] Free RCs will not be considered, since such structures involve different relativization operations that raise other questions and hypotheses, which are out of the scope of the present dissertation.

Keenan & Comrie (1977) proposed the Noun Phrase Accessibility Hierarchy (henceforth NPAH), which consists of a relativization hierarchy for restrictive RCs, considering the relativization of noun phrases in about 50 different languages. The criteria adopted to establish this hierarchy were: 1) the frequency of RC types in the languages of the world and 2) the extent to which languages present pronoun retention, or, in other words, the extent to which the languages present an RP in the original position in the embedded sentence[4]. Accordingly, the authors state that certain syntactic positions are more accessible to relativize than others in a crescendo of complexity. Their hierarchy is reproduced below, in (4), where ">" indicates "is more accessible than."

(4) Noun Phrase Accessibility Hierarchy

Subject (SBJ) > Direct Object (DO)> Indirect Object (IO) > Oblique (OBL)> Genitive (Gen)> Object of Comparison (OComp)

(Adapted from Keenan & Comrie, 1977, p. 66)

Following this hierarchy, the subgroup of prepositional RCs (which falls under IO and Oblique) is more complex than SBJ and DO RCs.

While studying the acquisition of prepositional RCs in L2 EP by Chinese native speakers, the parameters that allow us to distinguish them in the two languages are of the utmost importance. One of the most striking differences respects the linear order of the head and the RC. This parameter, referred to in the literature as the 'head direction' parameter (e.g., Flynn & Espinal, 1985), can be marked as 'head-initial' or 'head-final.' When RCs appear after the modified noun, their head, they are called 'postnominal' or 'head-initial.' RCs appearing before the modified noun are 'prenominal' or 'head-final.'

In EP, RCs are head-initial (5). In contrast, in Chinese, they are head-final (6) (the head is highlighted in bold, and the RC is underlined).

(5)	***O***	***rapaz***	*que*	*estava*	*no*	*cinema*
	DET.M.SG	boy	REL	be-PST.3SG	at-DET.M.SG	cinema
	é	*médico.*				
	be-Prs.3SG	doctor.				

'The boy who/that was at the cinema is a doctor.'

[4] The presence of a resumptive pronoun in the extraction site of the relative clause may be referred as 'pronoun retention' and resumptive pronouns are also referred to as "pronominal reflexes" or "copy pronouns".

(6) *xihuan Xiao Lin de* ***zhe ge ren*** *hen shuai*
like Xiao Lin DE DEM Cl person very handsome
'The person that likes Xiao Lin is very handsome.'

(Xu, 2014, p. 440)

EP and Chinese also differ in what concerns the presence of Rel Prs. EP has six *wh*-elements – *que* 'that', *quem* 'who', *o qual* 'which', *quanto* 'how much', *cujo* 'whose', and *onde* 'where.' Relative pronouns in EP have φ-features of agreement (gender and number) and Case, with or without morphophonological expression (e.g., Alexandre, 2000; Brito, 1988/1991; Veloso, 2013). Chinese does not have Rel Prs.

De Vries (2002) notes that the presence/ absence of a Complementizer (COMP) is a relevant parameter to describe RCs cross-linguistically. In Chinese, RCs are introduced by a COMP. According to the literature, a COMP differs from a Rel Pr in three aspects (see Rinke & Aßmann, 2017, among others): (1) COMPs do not inflect for number and/or Case, whereas pronouns do; (2) COMPs cannot be selected by prepositions, whereas pronouns can; (3) COMPs are not sensitive to animacy, whereas pronouns are. However, the validity of these criteria is not consensual[5]. Following Brito (1988/1991), EP RCs entail a COMP in the SBJ and DO positions. Alexandre (2000) also argued for the existence of a COMP in resumptive RCs in EP. Nevertheless, some authors argue that EP RCs are always introduced by a relative determiner (e.g., Veloso, 2013; Rinke & Aßmann, 2017). For the moment, I leave the question about the existence of a COMP in EP RCs open (signed with '?'), since it will be later detailed on the current chapter (section 3.2.1.).

In Chinese, the relative element occurring in COMP is the particle *DE* (的) that links a modifier to the head noun that it modifies. This particle does not undergo any morphological change, and the modifier can be either an adjective, a noun, a possessive, or a RC (see chapter 4 of the present dissertation). In EP, assuming that there is a COMP, it has the same morphophonological form as the *wh*-element *que*, introducing SBJ and DO RCs (Brito,1988, p. 264).

[5] Rinke & Aßmann (2017) claim that these criteria are not always verified. They present examples of complementizers that inflect and of pronouns that do not always inflect. Besides, they argue that some alleged complementizers seem to be sensitive to the animacy of the head. Cf. section 3.2.1. of the present chapter and Rinke & Aßmann (2017) for a detailed discussion on the subject.

Finally, De Vries (2002) noted that the presence of an RP is a relevant parameter to establish a distinction between RCs among the world's languages. As further developed, standard Chinese has mandatory RPs in Prep RCs. EP has no standard RPs, but they occur in non-standard RCs in all syntactic positions (Alexandre, 2000; Arim, Ramilo, & Freitas, 2004; Duarte, 2013; Peres & Móia, 1995, among others).

From what is said above, and recalling De Vries' (2002) parameters, in standard EP and standard Chinese, RRCs differ in what concerns: 1) the head direction; 2) presence/absence of Rel Pr; 3) presence/absence of RP; 4) syntactic positions where the COMP occurs. Table 1 summarizes these differences.

Table 1

Main differences between EP and MC regarding restrictive RCs

Parameter	European Portuguese	Mandarin Chinese
Head direction	Head initial/ postnominal	Head final/prenominal
Presence of Rel Pr	[+] IO, Prep, Gen [?] SBJ, DO	[-]
Presence of RP	[-] (standard); [+] (non-standard)	[+] (IO, Prep, standard)
COMP	[?] (SBJ, DO RCs; Resumptive RCs)	[+]

In the following section, I discuss the main approaches available in the generative literature to account for the derivation of RCs. These frame the options I make regarding prepositional RCs in EP and Chinese.

2. The Syntax of Restrictive Relative Clauses

Headed RCs have been extensively studied in the literature since the early 60s. One of the issues raised by RCs is known as the "connectivity problem". It debates the existence of a pivot that is both a constituent in the matrix sentence and obeys the selection requirements of the predicate of the RC (see previous section).

Clear evidence of a relationship between the relative head and the gap is visible in languages with morphological evidence of Case, where the "antecedent" or "head" of the RC exhibits the Case required by the predicate of the matrix sentence. In example (7),

from Polish, the head (*tego pana*) holds the accusative Case required by the matrix verb (*Widziałem*) (Borsley, 1997).

(7)	*Widziałem*	***tego***	***pana***	*ktory*	*zbił*	*ci*
	saw-1SG	the-ACC	man-ACC	who-NOM	broke	your
	szybe					
	glass					

'I saw the man who broke your glass.'

The head also satisfies the selectional requirements of the predicate internal to the RC. This property is particularly notorious in idiom relativization (Vergnaud, 1974).

While most analyses consider that RCs belong to the CP category[6], another question frequently explored in the literature is how the RC syntactically relates to the modified phrase (referred to as the "modification problem"[7]).

Given the enormous amount of work done on this matter, it is not my intention to present a thorough revision of all proposals since such theoretical detail is out of the scope of the present dissertation[8]. Instead, in this section, I will briefly present three of the analyses available in the generative literature that I refer to throughout the dissertation.

I will first address the "head external" analysis (HEA), standard until the mid-nineties. It is uncertain who first presented it, but Quine (1960) and Chomsky (1977), among others, adopted the HEA.

Second, I will present the "head-raising" analysis (HRA). It goes back to Schachter (1973), Vergnaud (1974), and it was recovered by Kayne (1994) and revised by Bianchi (1999).

Finally, I will look at the "matching," "adjunct," or "operator-movement" analysis (here referred to as matching analysis, MA). Chomsky (1965); Lees (1960, 1961); Salzmann (2006); Sauerland (1998, 2003), among others, adopted the MA.

The main difference between the three analyses lies in the treatment of the relativized element, which may be considered external to the RCs (HEA and MA) or

[6] However, there are other proposals in the literature. Sag (1997) claims that the relative clause is a projection of the verb; Afarli (1994) argues that Norwegian RCs are TPs, and Doherty (1993) proposes that English *that*-less relatives are IPs.
[7] See Bianchi, 2002 (section 2).
[8] Bianchi (2002, parts I and II) presents a thorough revision of the most relevant proposals to analyze the 'connectivity problem' and the 'modification problem'. De Vries (2002, Appendix III) presents an exhaustive list of syntactic analyses of RCs made previously to his publication.

internal to the RC (HRA and MA). As detailed below, this has implications for the description of reconstruction effects. The three analyses were proposed to describe RRC in Portuguese and Chinese.

2.1. The Head External Analysis

In the classical HEA, the RCs are CPs right-adjoined to the constituent they modify, such as the NP in a restrictive relative. An external determiner selects the head noun, and, as such, the head does not originate inside the RC. An empty operator or a relative pronoun A'-moves from inside the RC to the C-domain, where it stays co-indexed with the external noun. The relation between the head-NP and the operator is established via predication, semantically interpreted as "intersective modification" (Salzmann, 2006). The representation is in (8)[9].

(8) *the [book]*$_{i}$ *[*$_{CP}$ *[Op*$_{i}$*/which*$_{i}$*]*$_{1}$ *John likes*$_{}_{1}$]

For EP, e.g., Brito (1988), Alexandre (2000), and Rinke & Aßmann (2017) adopt the HEA in different versions.

In this analysis, the external determiner has scope over the head NP and the RC. In other words, the NP is external, not being directly represented inside the RC. It is important to remember that the HEA assumes an external NP since this assumption has consequences in discussing reconstruction effects.

Furthermore, Bianchi (2000, pp. 53-60) has shown that the right-adjunction analysis does not account for correlative clauses (in Hindi, Latin, Sanskrit, and Old English), nor for the phenomenon of Case attraction of the Rel Pr in Latin, Ancient Greek, Old English, and Old High German, or for the phenomenon of inverse attraction, in Latin and Old High German.

[9] I adopt Salzmann's (2006) notation, and I make a distinction between movement dependencies (marked with numbers) and coreference relations (marked with letters). Like Salzmann, I have chosen to mark the trace position with an underscore, since this is particularly useful when resumptive pronouns are considered, to make the difference between the gap and the resumptive pronoun.

2.2. The Head Raising Analysis

The HRA, first proposed by Brame (1968), Schachter (1973), and Vergnaud (1974), was recovered by Afarli (1994), Kayne (1994), Bianchi (1999, 2000), Bhatt (2002), and Aoun & Li (2003), among many others.

In this analysis, an external DP selects the relative CP. The head NP originates inside the relative CP, and it is A'-moved to a position adjacent to the external determiner, within the RC, functioning as an operator.

After the Antisymmetry approach to phrase structure developed by Kayne (1994), the researchers revisited this hypothesis. Indeed, according to the HEA, the RC is merged to the right of the NP. However, this is not an option under the Antisymmetry theory, which rules out any right-adjunction structures in natural language grammars.

In Kayne's proposal (1994), *wh*-relatives and *that*-relatives do not present the same derivation. In *that* relatives, the relativizer is base-generated, and only the head NP moves to Spec, CP ((9)a). Regarding *wh*-relatives, the head NP is generated as the complement of the Rel Pr. Both the Rel Pr and the NP move to Spec, CP, and then the NP moves to Spec, DP, for linearization reasons (see (9)b).

(9) (a). *the* $[_{CP}\ [_{NP}\ book]_1$ *that John likes*$_1]$

(b). *the* $[_{CP}\ [_{DP}\ [book]_2\ [_{D'}\ which\ _2]]_1$ *John likes*$_1]$

Kayne's analysis received some criticism. For instance, it implied an NP where a DP projection is expected, in *that* relatives (e.g., Borsley, 1997). Furthermore, in this analysis, the head NP and the RC form a constituent, excluding the external determiner. However, coordination and extraposition show that the RC forms a separate constituent from the head NP plus the external determiner, both in *that* and *wh*-RCs (Salzmann, 2006, p. 7), as illustrated in (10) and (11):

(10) *the picture [which/that Bill liked] and [which/that Mary hated]*

(11) *I met a girl* $_1$ *yesterday* [*who/that I used to date in high school*]$_1$

Bianchi (1999, 2000) adapted Kayne's analysis, answering some of the criticisms previously mentioned. To account for the NP movement in *that* relatives, Bianchi proposes that an empty relative D^o is introducing the relative head NP. After reaching the

position of Spec, CP, the empty D incorporates into the external D to be licensed. The licensing occurs through "abstract incorporation." The complex head is unified and spelled out as one determiner (12).

(12) $[_{DP}\ D_{REL}$ + *the* $[_{CP}\ [_{DP}$ t *picture*$]_i\ [_{CP}$ *that Bill liked* $t_i]]]$

(Bianchi, 2000, p. 125)

As for the lack of motivation for raising NP head, Bianchi suggests that the external Dº holds a strong categorial feature [+N] that cannot be satisfied by its complement CP. Then, this feature triggers the overt raising of NP to Spec, CP in (12)[10].

To address the constituency problem, Bianchi (2000, pp. 130-131) proposes that in *wh*-relatives, the head noun does not move to Spec of the Rel Pr, but she assumes a Split-CP inspired by Rizzi (1997). The relative DP first moves to a lower Spec of a functional head in the left periphery. From there, the head NP moves to Spec, CP, maintaining a local configuration and establishing an agreement relation with the external D. With this analysis (13), the RC is a separate constituent.

(13) $[_{DP}$ the $[_{CP}\ [_{NP}$ picture$]$ [C° $[_{XP}\ [_{DP}$ which $t_{NP}]_i$ [X° $[_{IP}$ Bill liked $t_i]]]]]]$

(Bianchi, 2000, p. 130)

The coordination is possible assuming across-the-board extraction of the NP from Spec, XP (14):

(14) the $[\text{picture}]_2$ [[which $___2$] Bill liked] and [[which $___2$] Mary hated]

(Bianchi, 2000, p. 132)

For coordination of two that-relatives, Bianchi follow Kayne's (1994) version of null operator analysis of Across-The-Board gaps proposed by Munn (1992). The external D takes two conjunct CPs as its complement; the Spec of the first conjunct contains the head of the relative, the second contains a null operator (15):

[10] For a comprehensive view of Bianchi's proposal, see Bianchi, 1999; Bianchi, 2000, 2002.

(15) $[_{DP}$ the $[_{\&P}$ $[_{CP1}$ $[_{DP}$ picture$]_{1/i}$ [that Bill liked $__{}_1$]] $[_{\&P}$ and $[_{CP2}$ $Op_{2/i}$ [that Mary hated $__{}_2$]]]]]

(Bianchi, 2000, p. 133)

Reinforcing the HRA is empirical evidence highlighting how the external head is closely related to the copy position[11]. The HRA establishes the link between these two elements easily via movement. The tightness of the relation established between the definite determiner and the RC is visible in examples like (16) (reproduced from Schmitt, 2000, p. 310). Vergnaud and Schachter used examples like these to show a close relation between the definite determiner and the RC rather than between the determiner and the head noun.

(16) (a). *John made headway.*
(b). **John made **the** headway.*
(c). *John made the headway Bill made.*

The idiom "headway" can only take a definite determiner if the RC is present ((16)c). Otherwise, it is ungrammatical. More examples illustrate this property of RCs to appear in positions where simple definite determiners are ruled out[12], reinforcing that the analyses of RCs should mirror the relation between the external D and the RC.

The fact that the HRA can account for reconstruction effects is a solid argument in its favor. Section 2.4. addresses reconstruction effects with greater detail.

The HRA was proposed to account for RCs in Brazilian Portuguese (e.g., Kato & Nunes, 2009) and MC (Pan, 2016).

[11] Salzmann (2006) recalls that the HRA can account for internally headed RCs without requiring a different analysis for these structures (as it happens with the HEA, for instance); but also notes that the HRA can account for the pivot function of the head noun appropriately, although, in Salzmann's opinion, this is not decisive, because like the other analyses, the HRA still requires the intervention of some special device. Besides, he notes that HRA can describe definiteness effects, namely with RCs based on the existential *there* construction. In these constructions, the external heads cannot appear in the position of the trace, which is correctly predicted by the HRA, because the external determiner does not originate inside it. But, as Salzmann notes, this is also predicted by the HEA (see (i) and (ii)).

(i) Every book that there was _ on the table.
(ii) *There was every book on the table.

[12] Schmitt (2000, pp. 311-312) illustrates how type expressions, measure phrases, resultatives and possessives with "with" behave alike.

2.3. The Matching/ Adjunct/ Operator Movement Analysis

The Matching Analysis (MA) goes back to Lees (1960, 1961) and Chomsky (1965) and has been revisited by Munn (1994), Sauerland (1998, 2003), Cresti (2000), Citko (2001), and Salzmann (2006), among others. It shares characteristics with the two analyses previously described. It is an adjunction analysis with an external head, like the HEA. Simultaneously, the head is represented inside the RC, as in the HRA. According to the MA, there are two instances of the head noun: the external and the internal. The internal head is generated as a complement of the relative operator (that may be zero) in an argument position. The internal NP is deleted in PF under identity (matching) with the external head. Sentence (17), adapted from Salzmann (2006, p. 10), exemplifies the MA:

(17) *the* [***book***]$_{i}$ [$_{CP}$ [$_{DP}$*Op/which book* $_{i}$]$_{1}$ *John likes* __$_{1}$]

Significantly, in the MA, the external head and internal head do not integrate a movement chain, as argued in the HRA. The relativization occurs by ellipsis, and this is the aspect that distinguishes the two analyses.

2.4. Pros and Cons

The three analyses previously mentioned have weaknesses and strengths. The HRA is perhaps the predominant analysis nowadays, not only because the HEA (the traditional analysis of RCs until the mid-nineties) violates the Antisymmetry framework, but also because the HRA accounts for a significant part of reconstruction effects in a principled way.

Reconstruction effects are widely analyzed and referred to in the literature. They describe the situation under which a displaced constituent is interpreted in its base position (the original argument position) before the occurrence of movement.

Reconstruction effects relate to the binding condition (Chomsky, 1981, 1986), which establishes the binding possibilities of certain elements, and consists of three principles:

(18) (A): an anaphor is bound in its governing category
(B): a pronominal is free in its governing category
(C): an R-expression is free

(Chomsky, 1981, p. 188)

Syntactic operations such as *wh*-movement originate a structural modification of the sentence. The movement inverts the original base position of the antecedent and the anaphoric expression, changing the c-command relation of these elements. However, binding principles are not systematically violated, giving rise to reconstruction effects.

Idiom interpretation, variable binding and scope assignment illustrate the phenomenon of reconstruction effects. These data are relevant to justify the analysis of RCs; nevertheless, their discussion is out of the scope of the present dissertation (see, e.g., Schachter, 1973; Sauerland, 1998; Bianchi, 1999; Bhatt, 2002; Aoun & Li, 2003; Salzmann, 2006, for more data). For this reason, I will present them without deepening the issues that they involve (for the debate, see, e.g., Salzmann, 2006, pp. 44-51).

Sentence (19) exemplifies reconstruction for idiom interpretation (adapted from Salzmann, 2006, p. 21; idioms in bold).

(19) (a). *the **careful track** that she is **keeping** _ of her expenses*

(b). *I was offended by the **lip service** that was **paid** to civil liberties at the trial*

To correctly interpret the idiom, the head of the RC (*careful track*, in (a)., and *lip service*, in (b).) must get its interpretation within the RC to form a unit with the verb. So, the head must reconstruct in its base position.

Similarly, variable binding reading is only possible if the head noun is interpreted in the scope of the quantifier phrase, as illustrated in (20) (examples from Salzmann, 2006, p. 22).

(20) (a). *The picture of **his**$_i$ girlfriend that **every man**$_i$ likes _ best.*

(b). *The picture of **his**$_i$ mother that **every soldier**$_i$ kept _ wrapped in a sock was not much use to him.*

Another example is the binding of anaphors, like exemplified in (21):

(21) *The interest in **each other**$_i$ that **John and Mary**$_i$ showed _ was fleeting.*

(Schachter, 1973, p. 33)

According to Principle A in (18), an anaphora, such as *each other*, must be locally bound by its governing category, i.e., its antecedent. However, in (21) the anaphora is not c-commanded by its antecedent, *John and Mary*, but is still interpreted in its original argument position, illustrating reconstruction effects.

Also arguing for the relevance of reconstruction effects in the analysis of RCs is the reconstruction of the scope of a quantifier. Distributive readings are available when a quantifier is reconstructed into the scope of a universal quantifier (examples in (22) reproduced from Salzmann, 2006, p. 22).

(22) (a). *the* ***two patients*** *that* ***every doctor*** *will examine _ tomorrow.*
(b). *the* ***band*** *which* ***every student*** *likes _ best.*

In (22)a, the universal quantified phrase *every doctor/every student* has scope over *two patients/band.* The distributive reading is available, i.e., every doctor examines two different patients, or every student likes a different band. The distributive reading is also available in the counterpart of these sentences that do not involve movement ("every doctor will examine two patients tomorrow" or "every student likes a band best").

Despite the reversed c-command relation created with the relativization, the reading of the sentence does not change. This shows that the existential quantifier is interpreted in its original argument position, which is occupied by the copy, illustrating the reconstruction of the scope of a universal quantifier.

The HRA and the MA account for the presence of reconstruction effects in RCs straightforwardly. Both analyses consider that there is an internal head to the RC.

Nevertheless, under the HEA, reconstruction effects need to be mediated by a relative operator since there isn't any representation of the head inside the RC. After the introduction of the Copy Theory of Movement, under Minimalism (Chomsky, 1995), reconstruction effects are "modeled as the interpretation of the lower link of a movement chain," which makes the mediation of reconstruction through an operator impossible and leaves this question unresolved by the HEA (Salzmann, 2006, p. 11).

Despite this, the debate around the HRA is far from consensual, even after Bianchi's revision. The HRA faces several criticisms that should not be ignored. For instance, Rinke & Aßmann (2017, p. 16) claim that one of the derivations proposed by

Bianchi[13] presupposes that the nominal modified by the RC has a different structure than other DPs, since it assumes that the outer D takes an AgrD as a complement not including an NP. This is at odds with the Portuguese data, given that determiners (the head of DPs) subcategorize for an NP in Portuguese.[14]

Another issue exclusive to the HRA concerns the Case of the raised NP. In the HRA, the NP originates inside the RC. However, Case is transmitted by the external D and not inside the RC, as would be expected. Languages that have morphological manifestations of Case, such as Polish, illustrate this property (see (23) repeated here from (7)).

(23)	*Widziałem*	***tego***	***pana***	*ktory*	*zbił*	*ci*
	saw-1SG	the-ACC	man-ACC	REL-NOM	broke	your
	szybe					
	glass					

'I saw the man who broke your glass.'

Bianchi (2000, pp. 129-130) assumes that being Case marked is a property of the Dº position, which makes this unproblematic, under her view: the external Dº holds the ACC Case assigned by the matrix verb, and the relative Dº has the nominative Case that it receives within the RC. After syntax, in the morphophonological component, N receives the same Case of the Dº that governs it, being spelled out in the accusative form.

While Bianchi's explanation is convincing, it still needs to stipulate that the Case is assigned after syntax. On the contrary, Case assignment is not problematic for the HEA nor the MA. The external head bears the Case attributed by the matrix verb, and the Rel Pr takes the Case assigned within the RC.

Besides, regarding reconstruction effects, considering Belletti & Rizzi (1998) and Lebeaux's (2009) contributions, Principle A can apply at any moment in the derivation,

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[13] The authors refer to the following proposal from Bianchi (1999, p. 79):

(i) $[_{DP}$ Agr_D+the $[_{AgP}$ boy $[$ t_{Agr} $[_{CP}$ $[_{DP}$ who $t_{NP}]]_i$ $[_{IP}$ I met t_j $]]]]]$

In this proposal, Bianchi states that "CP is selected by Agr_D. The NP "head" is then extracted from the complement position of the relative D° in order to enter the checking domain of the external Agr_D". This analysis is an alternative consistent with the checking theory of the Minimalism and it is perfectly cyclic. However, Bianchi also notes that this derivation is less economic than the alternative without the external head Agr_D, precisely because of its existence.

[14] In Kato & Nunes' (2009) version of raising, the external DP selects for a CP, which is also at odds with the possibilities of EP.

at LF at the latest. If that is the case, structures like the one presented in (20) and (21) do not constitute an argument favoring the HRA (see, e.g., Rinke & Aßmann, 2017, p. 16). Nevertheless, this does not invalidate that the interpretation of idioms (19) and reconstruction of quantifier scope (22) still receives a straightforward explanation with the HRA.

Another aspect that seems problematic for the HRA are Principle C effects (see (18), above). Relative clauses behave differently from other *wh*-constructions in this respect (Safir, 1999; Citko, 2001; Sauerland, 2003). Contrary to other *wh*-movement constructions, RCs do not seem to show Principle-C effects with R-expressions in the head of the RC. Principle C states that a referential expression is free; an R-expression embedded in a relativized structure should not co-refer with another element in the RC. In sentence (24), however, the fact that the R-expression *Bill* is bound by the co-indexed pronoun *he* under reconstruction would render the sentence ungrammatical. Nevertheless, this is not the case since sentences in (24) are acceptable:

(24) (a). *The [picture of Bill$_i$] that he$_i$ likes _*

(Salzmann, 2006, p. 28)

(b). *Quello* *è* *l'* *[amico di* *Gianni$_i$]*
DEM be-PRS.3SG DET.M.SG friend of Gianni
a cui *lui$_i$* *ha offerto* *un* job
to REL 3SG offer-PST.3SG DET.INDF.M.SG *lavoro* t
'This is the friend of Gianni to whom he offered a job.'

(Bianchi, 1999, p. 112)

The absence of Principle C effects does not seem to be equivalent in all contexts. For instance, in Italian, Bianchi noted that although Principle C effects are absent with a strong pronoun, these are detectable with an empty *pro*-subject/ clitic object:

(25) *Quello è l' [amico di Gianni$_i$]
DEM be-PRS.3SG DET.M.SG friend of Gianni
a cui pro$_i$ *ha offerto un lavoro* t
to REL offer-PST.3SG DET.INDF.M.SG job
'This is the friend of Gianni to whom (he) offered a job.'

The reason for the contrast illustrated in (24) and (25) remains to be explained, and its discussion is out of the scope of the current dissertation (see Bianchi, 1999, 2004 and Salzmann, 2006). However, this does not invalidate that the lack of Principle C effects is problematic for the HRA, because it eventually implies that there is no representation of the head internal to the RC. From the previous discussion, it is possible to conclude that the HRA accounts for reconstruction effects but does not apply to all the range of reconstruction effects.

The above discussion illustrated some fragilities of the HRA. The Matching Analysis attempts to solve some of the problems of the HRA. In particular, to account for the lack of Principle C effects with referential heads, some researchers propose that, instead of a fully identical NP, a pronominal element plays the role of the internal head (e.g., Sauerland, 1998, 2003). This mechanism ('vehicle change') captures the co-reference between the R-expression and the pronominal SBJ inside the RC. The element reconstructed inside the RC is not the referential expression but the pronominal substitute, obeying Principle B. No Principle C effects arise[15].

However, idiom interpretation is not straightforward under the MA since the external and internal head are only related by matching. Thus, the problem of how the idiomatic interpretation of the external head is triggered persists.

The MA is also less solid than the HRA in explaining the tight relation between the outer definite determiner and the RC, as earlier exemplified in (16), here repeated in (26).

(26) (a). *John made headway.*
(b). **John made **the** headway.*
(c). *John made the headway Bill made.*

[15] Salzmann (2006, p. 56) notes that the HEA predicts the lack of Principle C effects, given that this implies that there is no relative clause internal representation of the referential element. However, as the author highlighted, reconstruction effects are common in other contexts, limiting the HEA to these particular cases (by saying this, Salzmann assumes that reconstruction effects cannot be post syntactic).

The discussion above illustrates how the three proposals face empirical and theoretical challenges. Table 2 synthetizes the issues mentioned in the previous discussion, identifying the properties that each analysis accounts for (☑). The values indicated for reconstruction effects consider that the principles in (18) do not necessarily apply in syntax, following Belletti & Rizzi (1998) and Lebeaux's (2009).

To surpass these issues, there are researchers that adopt different derivations for different types of RCs. For instance, Sauerland (1998), Bhatt (2002), and Aoun & Li (2003) assume that the MA and the HRA are both available even within the same language. That is the assumption of Aoun & Li (2003) for Chinese. However, it is more economical to posit one single analysis that accounts for all the possibilities.

Table 2

Different analyses and syntactic and semantic properties of RCs

		HEA	**HRA**	**MA**
NP MOVEMENT		N.A.	Bianchi (D^o) (see example (12))	N.A.
CONSTITUENCY (see examples (10)(11))		☑	Bianchi (split CP / CP complement) (see examples (13)-(15))	N.A.
RECONSTRUCTION EFFECTS*	Idiom interpretation (see example (19))	☑	☑	☑
	Variable binding (see example (20))	☑	☑	☑
	Binding of anaphora (see example (21))	☑	☑	☑
	Scope of quantifier (see example (22))	☑	☑	☑
CASE ASSIGNMENT (see examples (23))		☑	Bianchi (2000) (Case assignment post-syntactic)	☑
PRINCIPLE C EFFECTS (see examples (24))		☑	☒	☑
RELATION BETWEEN D AND RC (see examples (26))		☑	☑	☒

3. Relative Clauses in European Portuguese

Relative clauses in EP were the topic of different studies, starting with the seminal work of Ana Maria Brito (1988/1991). In the last three decades, other works deserve our attention. Móia's (1992) Master thesis on free RCs, Alexandre's (2000) Master thesis on resumptive RCs, Cardoso's (2010) Ph.D. dissertation on variation and change in RCs, Veloso's chapter on RCs on the Grammar of Portuguese (2013), and Santos' (2014) Master thesis on RCs produced with the preposition chopping strategy. More recently, Rinke & Aßmann (2017) and Aßmann & Rinke (2017) enriched the debate on the derivation of RCs by looking at conventional and non-conventional strategies of relativization in EP. The research on L1 acquisition (Vasconcelos, 1991; Fontes, 2009; Valente, 2008) also contributed to the study and the description of these structures. Finally, we should not overlook the research that, not focusing exclusively on RCs, shed new light on the existence of widespread structures not considered in the prescriptive grammars, such as Peres & Móia (1995, pp. 273–374) and Arim, Ramilo & Freitas (2004), among others. Inspired by the literature mentioned, I will briefly describe and characterize RCs in EP before tackling prepositional RCs, the focus of the present dissertation.

3.1. European Portuguese and Romance languages

As mentioned in section 1 of the present chapter, RCs in EP are head-initial, for the 'head direction parameter'.

In EP, like in other Romance languages (e.g., Spanish, French, or Italian), the particle *que* (*that*) that introduces SBJ and DO RCs has the same form as the particle *que* introducing complement clauses[16]. Likewise, in EP (27) and other Romance languages (e.g., Spanish, (28); Italian (29), and French (30)), the relativizer needs to have morphophonological realization. The omission of the relativizer in SBJ and DO RCs (see (27)b-(30)b) renders the sentence ungrammatical.

[16] The equivalent forms are *que* in Spanish, *qui/que* in French and *che* in Italian.

(27) (a). *O* *homem* [$_{CP}$ **(que)* *escreveu* *este*
DET.M.SG man REL write-PST.3SG DEM.M.SG
artigo] *é* *meu* *amigo.*
paper be-Prs.3SG 1SG.POSS friend.
'The man who wrote this paper is my friend.'

(b). *O* *homem* [$_{CP}$ **(que)* *eu* *vi* *ontem]*
DET.M.SG man REL 1SG see-PST.1SG yesterday
é *meu* *amigo.*
be-Prs.3SG 1SG.POSS friend
'The man that I saw yesterday is my friend.'

[Spanish]

(28) (a). *El* *profesor* [$_{CP}$ **(que)* *habla]* *es*
DET.M.SG teacher REL speak-PST.3SG be-PST.3SG
poeta.
poet
'The teacher that speaks is a poet'.

(b). *El* *profesor* [$_{CP}$ **(que)* *visitamos]* *es*
DET.M.SG teacher REL visit-PST.3SG be-PST.3SG
poeta.
poet
'The teacher that we visit is a poet'.

[Italian]

(29) (a).*L'uomo* [$_{CP}$ **(che)* *ti* *vuole]*
DET.M.SG -man REL 2SG-DAT want
è *là.*
be-PST.3SG there
'The man that wants you is there'.

(b). *L'uomo* [$_{CP}$ **(che) vedi*] *è*
DET.M.SG-man REL see-PST.2SG be-PST.3SG
suo zio.
3SG.POSS uncle
'The man that you see is his uncle'.

[French]

(30) (a). *La fille* [$_{CP}$ **(qui) a des cheveux*
DET.F.SG girl REL have-PST.3SG partitive hair
blonds] *est ma soeur.*
blond be-PST.3SG 1SG.POSS sister
'The girl that has blond hair is my sister'.

(b). *La maison* [$_{CP}$ **(que) l'homme a*
DET.F.SG house REL DET.M.SG-man AUX-have
vendu] *a un jardin magnifique.*
sell-PTCP have-PST.3SG one garden fantastic
'The house that the man sold has a fantastic garden'.

Unlike Portuguese and other Romance languages, English allows the so-called 'zero-relatives,' (except with Subject RCs) omitting the relativizer (31).

(31) *The house* [$_{CP}$ *(that) the man sold*] *has a great garden.*

Besides, unlike English, an overt *wh*-element introducing a RC must be headed by a preposition in Portuguese (32), like in other Romance languages (Spanish (33), Italian (34) and French (35)). Otherwise, the sentence is ungrammatical:

(32) (a). **O homem quem veio*
DET.M.SG man REL come-PST.3SG

(b). *O homem**com** quem veio*
DET.M.SG man with REL come-PST.3SG
'The man with whom s(he) came'

[Spanish]

(33) (a). **El* *libro* *el cual* *Juan* *leyó.*
DET.M.SG book which-M.SG Juan read-PST.3SG

(b). *El* *libro* *con* *el cual* *Juan* *estudió.*
DET.M.SG book with which-M.SG Juan study-PST.3SG
'The book with which Juan studied'

[Italian]

(34) (a). **L'uomo* *il quale* *veniva.*
DET.M.SG-man REL-M.SG come-PST.3SG

(b). *L'uomo* *con* *il quale* *veniva.*
DET.M.SG-man with REL-M.SG come-PST.3SG
'The man with whom s(he) came'

[French]

(35) (a). **L'homme* *lequel* *venait.*
DET.M.SG-man REL come-PST.3SG

(b). *L'homme* *avec lequel* *venait.*
DET.M.SG-man with REL come-PST.3SG
'The man with whom s(he) came'

(Examples for Spanish, Italian and French adapted from Fontes, 2009).

By contrast, in English, there are no restrictions to the relativizers used in SBJ/DO RCs, and these can be headed by any relativizer:

(36) *The man* who / that *came.*

(37) *The house* which / that the Real Estate agent *sold.*

In this subsection, I have synthesized the general characteristics that RCs in EP share with other Romance languages, distinguishing them from, e.g., English. In the following

paragraphs, I am interested in providing an overview of the *wh*-operators available in EP. The diversity of *wh*-operators in EP is one element that distinguishes EP, the L2, from Chinese, the L1 of the participants in my study. Chinese only displays a COMP, as described in section 1 and detailed in Chapter 4.

3.2. *Wh*-operators in EP

Under the grammatical tradition, *wh*-operators in RCs are called Rel Prs, adverbs, or adjectives[17]. However, the different *wh*-operators available in EP restrictive RCs do not have the same distribution. In the following paragraphs, I look at the syntactic and semantic properties of Rel Prs with greater detail. These are the elements that introduce prepositional RCs and that L2ers have to acquire to interpret and produce these structures.

3.2.1. *Que* 'that'

The relativizer by default is *que*, since it can occur in restrictive SBJ (38), DO (39) and prepositional RCs (40) (examples (38) and (40) from Veloso, 2013, p. 2082):

(38) *Os meninos que têm natação podem*
DET.M.SG kids REL have-PRS.3PL swimming can-PRS.3PL
sair mais cedo.
leave earlier
'The kids that have swimming lessons can leave earlier.'

(39) *Os documentos que encontrei no*
DET.M.PL documents REL find-PST.1.SG in-DET.M.SG
escritório tinham caducado.
office have-PST.3.PL expired
'The documents that I have found at the office had expired'

[17] Some of these also occur in *wh*-questions or exclamations. In RCs, *wh*-questions or exclamations, *wh*-operators occupy a non-argument position at the beginning of the sentence, with scope over the remaining sentence (Brito & Duarte, 2003)

(40) *O* *país* *em* *que* *eu* *vivi* *mais*
DET.M.SG country in REL 1SG live-PST.1SG more
tempo foi *o* *Japão.*
time be-PST.3SG DET.M.SG Japan
'The country where I lived for a longer period was Japan.'

In SBJ and DO RCs, *que* is the only relativizer available, as the ungrammaticality of (41)-(42) shows, and it occurs with [+human] (38) and [-human] (39) heads.

(41) **Os* *meninos* ***os quais/quem*** *têm*
DET.M.SG kids REL.M.PL/REL have-PRS.3PL
natação *podem* *sair* *mais cedo.*
swimming-lessons can-PRS.3PL leave earlier

(42) **Comprei* *uns* *chocolates* ***os quais*** *estavam*
Buy-PST.1SG DET.Indf.M.PL chocolats REL.M.PL be-PST.3PL
estragados.
damaged

In prepositional RCs, *que* occurs preferentially when the head is [-human] (see (43)-(46)).

(43) *? Encontrei* *o* ***rapaz*** *a* *que*
Find-PST.1SG DET.M.SG boy to REL
falaste *ontem.*
Speak-PST.2SG yesterday
'I found the boy to whom you spoke yesterday.'

(44) *? Encontrei* *o* ***rapaz*** *com* *que*
Find-PST.1SG DET.M.SG boy with REL
ela *saiu* *ontem.*
She leave-PST.3SG yesterday.
'I found the boy with whom she left yesterday.'

(45) *Não está aqui o* ***cão*** *a que*
Not be-PRS.3SG here DET.M.SG dog to REL
costumavas fazer festas.
Use-PST.2SG cuddle
'The dog that you used to cuddle is not here.'

(46) *Os* ***tecidos*** *de que estes vestidos*
DET.M.PL fabric of REL these dresses
foram feitos foram caros.
Be-PST.3PL made be-PST.3PL expensive
'The fabric of which these dresses were made was expensive.'

(Brito, 1988, p. 246).

Considering these differences in the distribution, Brito (1988/1991) claims that the relativizer *que* in SBJ and DO RCs is a Complementizer (COMP), a uniform marker of subordination. The relativizer *que* occurring in other syntactic positions in restrictive RCs is a Rel Pr. The complementary distribution between COMP and Rel Pr is visible in different languages. For instance, French, Italian, and English do not license the relative COMP preceded by prepositions[18]. In the same contexts, 'true' Rel Prs are acceptable: PREP+ *o qual/quem* (EP), PREP+ *el cual/quien* (Spanish), PREP+ *lequel/qui* (French), PREP+ *il quale/cui* (Italian), PREP+ *whom/which* (English).

The distinction between COMP and relative *wh*-pronoun goes back to Klima (1964), Kayne (1975), and Radford (1980). These scholars claim that Rel Prs differ from COMP regarding the sensitivity to animacy features (present in Rel Prs, but absent in complementizers), the presence/absence of morphological evidence of agreement φ-features (present in Rel Prs but absent in complementizers), and the possibility of being subcategorized by a preposition (Rel Prs can be selected by a preposition, while complementizers cannot). Following Brito's distinction, in EP, the uniform marker of subordination *que* in SBJ and DO RCs distinguishes itself from the invariable relativizers *quem*, *onde*, and *que*, and from the variable relativizers *o(a)(s) qual(is)*, *quanto(a)(s)* and *cujo(a)(s)* (Brito, 1988/1991).

[18] Kayne (1976), for French, and Cinque (1978, 1982), for Italian (ap. Brito, 1988), show that in those languages the sequences composed by preposition + complementizer are ungrammatical: *PREP+que (Spanish); *PREP+que (French); *PREP+che (Italian); *PREP+that (English).

In Brito's analysis, in SBJ and DO RCs, the COMP *que* is base-generated in Cº. A null operator establishes the operator-variable relation. The null operator is base-generated in argument position and then rises to Spec, CP. At LF, the silent operator is coindexed with the COMP *que.* The chain antecedent-variable is established, and the interpretation of the sentence is achieved. By contrast, in prepositional RCs, the Rel Pr is an operator that moves upwards to the C-domain.

Despite the above, the dichotomy between relative COMPs and relative *wh*-pronouns is still under discussion. For instance, Rinke & Aßmann (2017) argue that the criteria traditionally used to distinguish Rel Prs from COMPs are not always valid. Under their view, the sensitivity to animacy cannot lead to unanimous results regarding the category of *que*. Complementizers indeed seem insensitive to animacy distinctions. However, it is also true that Rel Prs are not systematically sensitive to the animacy of the head, as illustrated in (47), where the Rel Pr occurs with a [+human] head.

(47) *O* *idiota* ***a que/ a quem*** *emprestei* *esse* *livro*
DET.M.SG idiot to REL borrow DEM.M.SG book
nunca *mais* *mo* *devolveu.*
never more 1SG.ACC-Cl return
'The idiot to whom I borrowed the book never returned it back.'
(Veloso, 2013, p. 2083)

The authors also argue that COMPs can display overt agreement (for instance, in the Italian variety *Marebbano*, as noted by Poletto & Sanfelice, 2018). On the contrary, Rel Prs can be invariable (e.g., *quale*, from Old Neapolitan, and *quem*, from Portuguese) (see Rinke & Aßmann, 2017, pp. 4-5). It is relevant to keep in mind such a discussion because it results in different analyses of RCs, as is later detailed.

Regardless of a dichotomy between COMP and Rel Pr, one fact that seems consensual is that the relativizer *que* is underspecified. Indeed, even if *que* is not the most frequent relativizer in prepositional RCs with human heads (see earlier, (43)-(46)), it is also true that most native speakers accept sentences where the relativized head bears different interpretable φ-features (masculine, feminine, singular or plural), which argues in favor of its plasticity/under specification:

(48) (a). *Encontrei* ***o(s)*** ***rapaz(es)*** *com* *que*
Find-1SG.PST DET.M.SG/PL boy(s) with REL
ela *saiu* *ontem.*
she leave-3SG.PST yesterday
'I found the boy(s) with whom she left yesterday'.

(b). *Encontrei* ***a(s)*** ***rapariga(s)*** *com* *que*
Find-1SG.PST DET.F.SG/Pl girl(s) with REL
ela *saiu* *ontem.*
she leave-3SG.PST yesterday
'I found the girl(s) with whom she left yesterday'.

(adapted from Brito, 1988, p. 271)

Que is also underspecified regarding the semantic features that codify locative ((49)a), time ((49)b) or manner ((49)c):

(49) (a). *A* *cidade* ***em*** ***que*** *ele* *vive*
DET.F.SG city in REL he live-PRS.1SG
é *linda.*
be-PRS.3SG beautiful
'The city where he lives is beautiful.'

(b). *Na* *semana* ***em*** ***que*** *o* *Miguel*
In-DET.F.SG week in REL DET.M.SG Miguel
veio, *o* *tempo* *estava* *bom.*
be-PST.3SG DET.M.SG weather be-PST.3SG nice
'In the week that Miguel came, the weather was nice.'

(c). *O* *amor* ***com*** ***que*** *a* *avó*
DET.M.SG love with REL DET.F.SG grandmother
te *criou* *não* *tem* *preço!*
you raise-PST.3SG not has price
'The love with which your grandmother raised you is priceless.'

Considering the above, Brito characterizes the form *que* as a morphophonologically uniform nominal element that does not show φ-features of agreement (gender and number)[19].

The underspecification of *que* in what concerns its semantic features also called Ambar's (1992) attention. She claimed that *que* is not specified for semantic [referential] features, since the noun after *que* specifies these features (Ambar, 1992, pp. 189-190). This analysis is consistent with the idea that *que* behaves as a determiner. Moreover, *que* differentiates itself from the remaining specified *wh*-elements, at least for one of the referential features.

The idea that the relative *que* is a determiner was pursued by Kato & Nunes (2009) for Brazilian Portuguese and Rinke & Aßmann (2017) for EP.

Kato & Nunes (2009) claim that the relativizer of SBJ and DO RCs is the same determiner in prepositional RCs in Brazilian Portuguese. This proposal is at odds with the distinction between COMP and Rel Pr proposed by Brito (1988/1991) for EP. The authors underscore the homophony between the relativizer, the declarative COMP ((50)a), and the interrogative *wh*-determiner ((50)b). According to them, the constructions where demonstratives are used as Rel Prs of sorts, triggering the overt movement of the complement NP (see (51)a and (51)b), also highlight the similarity between *que* and demonstratives.

(50) (a). *Ele* *disse* ***que*** *ela* *saiu.*
3M.SG say-PST.3SG COMP 3F.SG leave-PST.3SG
"He said that she left."

(b). ***Que*** *quadro* *ele* *viu?*
which picture 3M.SG see-PST.3SG
'Which picture did he see?'

(Kato & Nunes, 2009, p. 97)

[19] Rinke & Aßmann (2017, p. 4) note that this is not unexpected and that pronouns do not have to necessarily show number and Case agreement in all situations, given that numerals, as well as exclamative and interrogative determiners do not always show agreement morphology. Besides, this is expected if Agreement is understood as an abstract syntactic operation that may or may not be visible.

(51) (a). *Ele* *sempre cita* *um* *livro,*
3M.SG always cite-PRS.3SG DET.M.INDF.SG book
livro ***este*** *que* *na verdade* *não* *existe.*
book DEM.M.SG REL in-the truth not exist-PRS.3SG

(b). **Ele* *sempre* *cita* *um* *livro,*
3M.SG always cite-PRS.3SG DET.M.INDF.SG book
este ***livro*** *que* *na verdade* *não* *existe.*
DEM.M.SG book REL in-the-truth not exist-PRS.3SG

'He always cites a book, which in fact does not exist.'

(Kato & Nunes, 2009, p. 98)

Recall that *quem* cannot occur in SBJ and DO RCs, suggesting an inherent oblique mark of this relativizer. For Kato & Nunes (2009), given that *quem* is grammatical in SBJ/ OBJ interrogative clauses, it is hardly arguable that *quem* is morphologically oblique only in RCs. Instead, they suggest that prepositional RCs create the context where *quem* can be obtained, as they analyze it as a "lexical item which is (optionally) obtained in the morphological component when it is surrounded by traces of [+human] elements" (Kato & Nunes, 2009, p. 102). Under this view, the contrast between the interrogative and the relative *quem* could be subsumed under a *que*-to-*qui* configuration (see Kato & Nunes, 2009, for a detailed discussion).

This analysis, however, has some fragilities, in my opinion. First, it is unclear how it could be extended to the variable Rel Pr *o(a) qual/ os(as) quais*, which is also ungrammatical in SBJ and DO RCs. If the traces of human elements are responsible for triggering *quem,* in Kato & Nunes' (2009) analysis, what would be the traces that trigger the occurrence of *o qual*? *O qual* is compatible both with [+human] and [-human] features, and it does not seem likely that it can be analyzed in terms of a *que*-to-*qui* configuration, as Kato & Nunes propose for *quem*. Besides, native EP speakers prefer *que* to semantically marked relativizers when adopting non-standard relativization strategies (such as P-Chopping and resumption) (see Chapter 3).

Rinke and Aßmann (2017) extend to EP the analyses proposed for other languages. As previously referred, the authors doubt that the lack of sensitivity to the

animacy of the head can be considered a solid argument to distinguish COMPs and Rel Prs (see (47)). Besides, they claim that the relativizer and the interrogative *que*, on the one hand, and the declarative COMP *que*, on the other hand, belonged to different categories in the diachrony, having different linguistic sources (Rinke & Aßmann, 2017, p. 8, for a detailed discussion). Looking at the similarities between the relative and the interrogative *que*, the authors maintain that both the relative and the interrogative *que* move to the left periphery. The interrogative *que* checks a [+wh] (Rizzi 1990; 1996), [+interrogative] or [+focus] feature. The relative *que* moves to check a [+topic] feature (Rinke & Aßmann, 2017, p. 8). The declarative *que* is not included in this analysis, since the authors consider that it has a distinct nature.

Finally, Rinke & Aßmann (2017) underscore the proximity between *que* and demonstratives, namely in the cases where demonstratives behave as "Rel Prs of sorts" (51), as noted by Kato & Nunes (2009). Besides, Rel Prs and demonstratives cannot co-occur in restrictive RCs. Furthermore, if a noun phrase contains a demonstrative, the RC must be interpreted appositively (see (52), adapted from Rinke & Aßmann, 2017, p. 10). The fact that the two forms cannot co-occur may indicate that they occupy the same position.

(52) Context: In 2012, 200 candidates applied for the job

**A*	*comissão convidou*			*estes*	*candidatos*
DET-F.SG	comittee invite-PST.3SG			DEM.M.PL	candidates
que	*eram*	*de*	*Portugal*	*para*	*um*
REL	be-PST.3PL	from	Portugal	for	DET.INDF.M.SG
workshop.					
workshop					

'The commission invited these candidates which were from Portugal for a workshop.'

The RC cannot have a restrictive interpretation, given that the universe of candidates is already delimited by the demonstrative. In this case, the restrictive interpretation is not licensed.

However, we should note that a RC may have a restrictive interpretation even if the head contains a demonstrative, as the example in (53) illustrates.

(53) *Este* *canalizador* *que* *eu* *contratei* *ontem*
DEM.M.SG plumber REL 1SG hire-PST.1SG yesterday
é *melhor* *do* *que* *o*
be-PRS.3SG better than DET.M.SG
da *semana* *passada.*
from.DET.F.SG week last
'This plumber that I have hired yesterday is better than the one from last week.'

Considering the above, Rinke & Aßmann claim that the relative *que* belongs to the category D. However, as the authors highlight, unlike demonstrative ((54)a) and interrogative determiners ((54)b), *que* cannot combine with the head noun ((54)c).

(54) (a). *Li* ***este*** ***livro***
Read-PST.1SG DEM.M.SG book
'I have read this book.'

(b). ***Que*** ***livro*** *leste?*
What book read-PST.2SG
'What book have you read?'

(c). **O* *livro* ***que*** ***livro*** *li.*
DET.M.SG book REL book read-PST.1SG
('The book that book I have read.')

(Rinke & Aßmann, 2017, p. 12)

According to Rinke & Aßmann, sentence (c) is ungrammatical because *que* appears as an intransitive determiner. Likewise, demonstratives and interrogatives may have intransitive use "when they occur in isolation" (Rinke & Aßmann, 2017, p. 12). In these cases, *que* cannot co-occur with the DP because it has pronominal properties. The intransitive determiner *que* is licensed when it may be replaced by other pronominal forms (like *quem* and *o qual*). In other words, intransitive determiner *que* only appears in prepositional and appositive RCs, where it behaves like an e-type pronoun (bound in

semantics, but not in syntax[20]). On the other hand, in restrictive SBJ and DO RCs, *que* is a transitive determiner, forming a DP with the head noun.

This proposal is in line with Veloso (2013), who also analyzes the relativizer *que* as a relative determiner syntactically equivalent to a noun phrase[21,22].

In this sub-section, I have presented an overview of the different proposals available in the literature to account for the relativizer *que*. Various researchers refer to the nominal properties of this relativizer and its underspecification. Furthermore, the different properties of *que* in prepositional RCs and SBJ/DO RCs are also referred to in various works, even if the authors approach it differently.

In a certain way, Brito's initial proposal (1988/1991), distinguishing the underspecified *que* as a uniform marker of subordination (COMP) in SBJ and DO RCs from the relativizer *que* that occurs in prepositional RCs meets Rinke & Aßmann's suggestion to treat *que* differently, as a transitive determiner in SBJ and DO RCs and as an intransitive determiner in prepositional RCs. Considering the arguments recently presented to revise the status of the COMP, I adopt Rinke & Aßmann (2017) proposal treating *que* as a transitive relative determiner in SBJ and DO RCs and intransitive relative determiner in prepositional RCs.

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[20] The authors extend Cinque's (2008) analysis of Italian *il quale* as an e-type pronoun to appositive RCs in the same context. As for the fact that the Italian *che* does not behave like *que*, the authors explain it as a 'cross-linguistic' contrast.

[21] According to Veloso (2013, p. 2066 and 2077), "A oração relativa, o seu antecedente e o especificador do antecedente (**determinante** ou quantificador) formam um sintagma nominal ao qual chamamos construção relativa." [The relative clause, its head and the specifier of the head (the **determiner** or quantifier) form a noun phrase to which we call relative construction] and "Dentro da oração relativa, e independentemente do estatuto "subjacente" como **determinantes**, os pronomes *que, quem o qual, o que* e *quanto* são sintacticamente equivalentes a sintagmas nominais." [Inside the relative clause, and regardless of its 'subjacent' status as determiners, the pronouns *que, quem, o qual* and *quanto* are syntactically equivalent to noun phrases] (underlined and translated by me).

[22] In her last lesson (December 9th, 2021), Ana Maria Brito revised her hypothesis and adopted Veloso's (2013) and Rinke & Aßmann (2017) proposal according to which *que* is a relative determiner with an empty noun head:

(i) [que e]

Brito argues that this proposal allows for a uniform analysis of *que*, relating the relative determiner *que* that occurs in SBJ and DO RCs with the interrogative and the exclamative *que* in (ii) and (iii):

(ii) *Que livro compraste?*
Det book buy-PST.3SG
'What book did you buy?'

(iii) *Que livro!*
Det book
What a book!

3.2.2. *Quem* 'who'

Quem holds a semantic interpretable [+human] feature and can only enter an Agree operation with a head containing a [+human] feature matching its own. *Quem* 'who' does not vary in gender and number. According to Brito (1988/1991), *quem* bears the abstract φ-features of agreement which are characteristic of a nominal element that does not have a morphophonological expression. This proposal is consistent with the classification of *quem* as a pronoun.

In restrictive RCs, *quem* is always preceded by a preposition and cannot occur in SBJ or DO positions when the head is morphophonologically overt (see (55)). Significantly, *quem* and *que* differ in this respect since *que* can appear in all contexts, regardless of a preposition. Such a difference argues for a distinctive classification of *que* in SBJ and DO RCs, as a COMP (e.g., Brito, 1988/1991) or a transitive determiner (e.g., Rinke & Aßmann, 2017), underspecified in terms of φ-features (see 3.2.1). On the contrary, *quem*, having abstract φ-features, cannot co-occur with a noun.

(55) (a).*O rapaz **quem** falou é
DET.M.SG. boy REL speak-3SG.PST be-3SG.PRT
simpático.
nice
Intended: 'The boy who spoke is nice.'

(b). *O rapaz **quem** eu vi é
DET.M.SG boy REL 1SG see-1SG.PST be-3SG.PRT
simpático.
nice.
Intended: 'The boy who I saw is nice.'

Kato & Nunes (2009) claim that *quem* is unavailable in SBJ (55)a and DO (55)b RCs because it can only occur in the morphological component when surrounded by traces of [+human] elements. Under their view, the contrast between *que* and *quem* in Brazilian Portuguese may be explained in terms of a *que*-to-*qui* configuration. As I have argued in the previous section, this explanation can hardly apply to other *wh*-operators such as *o qual*, that are also in complementary distribution with *que* and may interact with nouns that hold a [-human] feature.

When *quem* is preceded by a preposition, the preposition assigns Case to it and the derivation is viable:

(56) *O* *rapaz* ***de*** ***quem*** *te*
DET-M.SG boy about REL you-ACC
falei *é* *simpático.*
speak- 1SG.PST be-3SG.PRS nice
'The boy about who I've talked is nice'.

3.2.3. *Onde* 'where'

Onde 'where' has an adverbial nature and it is not usually considered a pronoun in a strict sense[23]. Still, it integrates the list of Rel Prs considered for EP in several grammars, such as Barboza (1830), Cunha and Cintra (1984), Huber (1933) e Mateus et al. (2003)[24]. It is considered a relative 'pro-form' in Móia (1992) and Veloso (2013, p. 2101)[25].

Onde entails an inherent locational value, holding the feature [+locative]. The head that precedes *onde* must denote an equal value. *Onde* can introduce a complement or an adjunct, having a locational value in both cases.

The distribution of *onde* is not uniform. *Onde* cannot be preceded by a preposition whenever it relativizes a head that was preceded by the preposition *em*, selected by the matrix verb. In these cases, *onde* is interchangeable with the preposition *em* ('in') followed by *que* or *o qual* (equivalent to 'in which'):

(57) *Restos da casa* ***onde/em que/na qual*** *viveu*
Remains of-DET.F.SG house REL/in REL/in REL-F.SG live-PST.3SG
Colombo com a sua amante Beatriz
Colombo with DET.F.SG POSS.3SG lover Beatriz
Enriquez foram descobertos nos arredores
Enriquez be-PST.3PL discovered in-DET.M.PL surroundings
de Córdova (…)
of Cordoba

[23] However, Adger (2002) considers that 'where' in English bears the pronominal feature [Pr].
[24] There are grammars where *onde* is excluded from the list of relative pronouns, such as Epiphânio Dias (1917) e Cuesta and Luz (1971, from Alexandre 2000, p. 35).
[25] According to Veloso (2013), the other relative pro-forms are adverbial in nature and also bear distinctive semantic features: *quando* ('when') has the feature [+temporal] and *como* ('how') has the feature [+manner].

'The remaining of the house where Columbus lived with his lover Beatriz Enriquez was discovered in the surroundings of Cordoba.'

(CETEM Público[26] par=ext51681-clt-91b-1)

In these cases, Veloso (2013) claims that *onde* has a locational static value. According to Móia (1992, pp. 127–28), the relativizer *onde* has two pro-forms: A prepositional pro-form (*pró-SP*) and a nominal pro-form (*pró-SN*). The prepositional pro-form results from a morphophonological fusion between the relativizer *onde*, which bears a [+locative] value, and the preposition *em*, which holds the same locative value. The prepositional pro-form *onde* cannot combine with the preposition *em*:

(58)	**Restos*	*da*	*casa*	*em*	***onde***	*viveu...*
	Remains	of-DET.F.SG	house	in	REL	live-PST.3SG

The nominal pro-form *onde* can combine with prepositions, except *em*. Contrary to the previous one, it can be replaced by the nominal elements *que* or *o qual*, given its nominal nature (Móia, 1992):

(59)	*A*	*cidade de*	***onde***	*ele*	*veio*
	DET.F.SG	city from	REL	3SG	come-PST.3SG
	é	*cercada*	*por*	*muralhas*	*medievais.*
	be-PRS.3SG	surrounded	by	walls	medieval

(60)	*A*	*cidade de*	***que/a qual***	*ele*	*veio*
	DET.F.SG	city from	REL/REL-F.SG	3SG	come-PST.3SG
	é	*cercada*	*por*	*muralhas*	*medievais.*
	be-PRS.3SG	surrounded	by	walls	medieval

(Móia 1992, p. 127)

[26] CETEMPúblico comprises over 200 million words in EP, extracted from excerpts of digital texts retrieved from the newspaper 'Público'. It is available on the website https://www.linguateca.pt/CETEMPublico/.

With a dynamic locative value, the prepositional RC introduced by *onde* occurs more frequently as a complement of the verb (Veloso, 2013, p. 2102) (see (59)). However, it may also be an adjunct (61):

(61) *Comprei* *uma* *casa* ***de*** ***onde*** *se*
Buy-PST.1SG DET.INDF.F.SG house from REL PASS
vê *o* *mar.*
see-PRS.3SG DET.M.SG sea
'I bought a house where you can see the sea.'
(Veloso 2013, p. 2102, footnote 57)

The preposition that heads the PP specifies the locational value of the PP (Veloso, 2013). The preposition *de* indicates source (62).

(62) *A* *escola* ***de*** ***onde*** *ele* *veio*
DET.F.SG school from REL he come-PST.3SG
era *muito* *problemática.*
be-PRS.3SG very problematic
'The school from where he came was very problematic.'

Onde can contract with the preposition *de* in a single written form *donde* ('from where'), illustrated in (63).

(63) *Só* *no* *município* *de* *Chongqing,*
Only in-DET.M.SG county of Chongqing
donde *Guterres* *partiu* *ontem*
from-REL Guterres leave-PST.3SG yesterday
de *manhã* *para* *Xangai,* *vivem* *30 milhões*
in morning to Shangai live-PST.3PL 30 million
de *pessoas,* *o* *triplo* *de* *Portugal.*
of people DET.M.SG triple of Portugal
'Only in the Chongqing county, from where Guterres left yesterday morning to Shanghai, live 30 million people, the triple of Portugal.'
(CETEM Público par=ext44186-pol-98a-1)

With the prepositions *a* and *para* (with the directional value ‘to’), the relative sentence introduced by *onde* has a semantic value of goal. The locative operator *onde* contracts with the preposition *a*, originating the form *aonde* (64), but it does not contract with *para* (65).

(64) *Cabinda* *é* *a* *única* *parcela*
Cabinda be-PRS.3SG DET.F.SG only part
do *território* *angolano* ***aonde***
of-DET.M.SG territory Angolan to-REL
a *guerra* *ainda* *não* *chegou.*
DET.F.SG war yet not arrive-PST.3SG
‘Cabinda is the only part of the Angolan territory (to) where the war has not arrived yet.’

(CETEM Público par=ext130365-pol-93a-1)

(65) *A* *cidade* ***para*** ***onde*** *veio* *viver* *aos*
DET.F.SG city to REL come-PST.3SG live at
21 anos, *após* *o* *casamento,* *na* *altura,* *não*
21 years after DET.M.SG marriage at-the time not
passava *de* *um* *subúrbio*
pass-PST.3SG of DET.INDF.M.SG suburb
lisboeta.
of Lisbon
‘The city where he came to live at age 21, after his marriage, at the time, was nothing more than a suburb of Lisbon.’

(CRPC, file - R1121)

Despite the above, *onde* and *aonde* can be used indistinctly in the same locational static context. It is possible to see the form *aonde* where *onde* is expected, as in (66). The verb of the adjunct relative sentence is *ficar* ‘to stay’ which selects the locative preposition *em* ‘in’ and not the directional preposition *a* ‘to’:

(66) *Comecei* *a* *andar* *na* *mota* *e*
Start-PST.1SG to ride on-DET.F.SG bike and
como *não* *me* *senti* *bem,* *fui*
as not myself feel-PST.1SG well go-PST.1SG
ao *hospital,* ***aonde*** *fiquei* *hospitalizado*
to DET.M.SG hospital to REL stay-PST.1SG hospitalized
até *de manhã* *a* *soro.*
until in morning with serum

'I started riding the bike, and since I did not feel well, I went to the hospital, where I was hospitalized until morning, with serum.'

CETEM Público par=ext316828-soc-95a-1

The opposite is also true. The relative non-prepositioned form *onde* appears in contexts where the preposition *a* is expected. For instance, in (67), the verb *chegar* 'arrive' selects the preposition *a*. However, the relative marker used was *onde* and not *aonde*, as expected:

(67) *Porque* *ela* *nega* *essa* *pátria*
Because 3SG deny-PRS.3SG DEM.F.SG homeland
maior *que* *é* *Portugal* *e* *as* *terras*
bigger that be-PRS.3SG Portugal and DET.F.PL lands
onde *chegaram* *desde* *sempre* *os* *portugueses.*
REL arrive-PST.3.PL since ever DET.M.PL Portuguese

'Because she denies this greater homeland that is Portugal and the lands where the Portuguese have always arrived.'

(CETEM Público par=ext492916-soc-93a-1)

The same happens with the verb *ir* 'go.' With the meaning of 'going (to) somewhere,' *ir* selects the prepositions *a* or *para,* in a declarative sentence. However, when the PP of the verb *ir* is relativized, the preposition is not even considered necessary (see Veloso 2013, p. 2102, footnote 58). Sentence (68) illustrates it.

(68) *Há* *um* *sótão,* *a* *Campo de Ourique,*
There is DET.INDF.MSG attic nearby Campo de Ourique
onde ***vou*** *muitas vezes* *pensar* *que* *escrevo.*
REL go-PRS.1SG often think COMP write-PRS.1SG
'There is an attic, nearby Campo de Ourique, to where I often go to think I write.'

(CRPC, L0464)

The indistinct use of the forms *onde* and *aonde* probably relates to a popular form *adonde*. The form *adonde* gained a negative value among the educated classes, which then hypercorrected all the forms *aonde* and *adonde*, replacing them with *onde*[27].

This subsection described the distribution of the relative element *onde*, which is marked as [+locative]. However, as I have attempted to illustrate, the relation of *onde* with prepositions is not linear. First, it is incompatible with *em*, possibly because it incorporates the same semantic value. Second, the prepositions selected in the non-relative context may be omitted in the relativization (with verbs like *chegar* or *ir*, (67)-(68)). On the contrary, a preposition not required by the verb may be added in the relativization (like the example (66), with *ficar*). Such inconsistency in the relation of *onde* with the prepositions grounded the decision of considering the locative strategy independently, which will be done in Chapter 3.

3.2.4. *O qual* 'which'

O qual is a variable complex *wh*-phrase, composed of a definite article and a *wh*-form, two elements that must stay together. It agrees in gender and number with the head, having masculine and feminine forms, both singular and plural (*o qual*, *a qual*, *os quais*, *as quais*). Like *quem*, in restrictive RCs, *o qual* cannot occur in SBJ and DO RCs[28]. When

[27] The indistinct use of the forms *onde, aonde* and *adonde* with the same locative value is more common among speakers with a low level of education. According to Veloso (2013), with the evolution of the Latin forms *ubi* ('where'), *unde* ('from where'), *quo* ('to where') and *qua* ('through where'), there was a period during which the meaning of the forms *donde, onde* and *hu* overlapped (in the 15th century). However, in the 18th century, such indistinct use was considered inadequate by the linguistic standards of the time, and the grammarians indicated that *onde* should be used with a locative static value; *donde* with a locative value of source, and *aonde* with the locative value of goal. Nowadays, the standard forms *onde* and *aonde* coexist with the popular form *adonde*. Possibly due to the similarity between the popular form *adonde* and the standard form *aonde*, the educated classes tend to use only *onde* even with the dynamic locative value.

[28] In appositive RCs *o qual* may occur in SBJ and DO RCs.

preceded by a preposition, it introduces prepositional, indirect object, and possessive restrictive RCs. This distribution suggests that *o qual* bears a pronominal feature.

According to Brito (1988/1991), restrictive SBJ and DO RCs are ungrammatical with *o qual* for the same reasons as *quem*. The difference is that the φ-features of *o qual* are not abstract but morphophonologically overt. When *o qual* moves to Spec, CP, an agreement mechanism between the specifier and the head is triggered. The φ-features of *o qual* are transmitted to the maximal projection CP. The CP becomes nominal and, as such, it requires Case. As the structural nominative Case is assigned to the head DP by the finite verb of the matrix sentence, the structural Case is not available. Moreover, as the head DP is not a Case assigner, there is no potential Case assigner within the structure. Hence, the CP cannot receive Case and the derivation crashes:

(69) (a) * *O* *homem* ***o qual*** *escreveu*
DET-M.SG men REL-M.SG write-PST.3SG
é *meu* *amigo.*
be-PRS.3SG my friend

(b) * *O* *homem* ***o qual*** *eu*
DET-M.SG men REL-M.SG 1SG
vi *ontem* *é* *meu* *amigo.*
see-PST.1SG yesterday be-PRS.3SG my friend

(Brito, 1988, p. 256)

According to Veloso (2013, pp. 2091–2092), *o qual* has a semantic feature of [specificity][29], which prevents it from combining with any head that is not specific[30].

[29] Specificity should not be confounded with definiteness. Indeed, specificity can be indicated through an indefinite article, since an indefinite article may introduce a particular entity whose identification is not pragmatically relevant for the interaction. For instance, in sentence (i), the indefinite DP *um livro* 'a book' refers to a specific book whose title is not relevant for the interaction:

(i) Estou a ler **um** **livro** de Saramago.
Be-PRS.1SG to read DET.INDF.M.SG book from Saramago
'I am reading a book from Saramago'.

Hence, in sentence (i) the DP is [- definite, + specific].

By contrast, in sentence (ii) the indefinite DP *um livro* refers to a DP which is not specific, so it can be characterized as [- definite, - specific]:

(ii) Apetece-me comprar **um** **livro** de banda desenhada.
Feel like-PRS.1SG buy DET.INDF.M.SG book of comics
'I feel like buying a comics book'.

[30] However, Aßmann & Rinke (2017, p. 13) claim that *o qual* may also occur in RRCs with a non-specific head noun and the subjunctive mood marking non-specificity, giving the example reproduced below:

Veloso claims that the definite article that integrates *o qual* reflects the specificity that characterizes this *wh*-form.

Apart the specificity salient feature, *o qual* can relate to a head that bears any of the semantic features: [+/- animate] (70), [+/- human] (71), [+/- locative] (72), [+/- temporal] (73), being underspecified in this respect. Therefore, it can be replaced by *quem* (see (71)b) and *onde* (see (72)b) if the head presents any of these semantic features.

(70) *Os* *gatos* ***aos quais*** *só* *dou* *ração*
DET.M.PL cats to-REL.M.PL only give-PRS.1SG pet food
são *o* *Zorba* *e* *o* *Pipoca.*
be-PRS.3PL DET.M.SG Zorba and DET.M.SG Pipoca
'The cats to which I only give pet food are Zorba and Pipoca.'

(71) (a). *O* *rapaz* *com* ***o qual*** *estavas* *a conversar*
DET.M.SG boy with REL-M.SG be-PST.2SG to talk
é *meu* *primo.*
be.PRS.3SG POSS.1SG cousin

(b). *O* *rapaz* *com* ***quem*** *estavas* *a*
DET.M.SG boy with REL are-PST.2SG to
conversar é *meu* *primo.*
talk be.PRS.3SG POSS.1SG cousin
'The boy with whom you were talking is my cousin.'

(72) (a). *Fui* *a* *um* *restaurante* ***no qual***
Go-PST.1SG to DET.INDF.M.SG restaurant in REL-M.SG
se come *a* *melhor lampreia* *de Lisboa.*
itself eat-PRS.3SG DET.F.SG best lamprey of Lisbon

(i) No meu prédio não mora **nenhum** **homem**
in.DET.M.SG my building not lives none man
do qual o meu cão não tenha medo.
of REL DET.M.SG my dog not has-SBJV.PRS.3.SG fear
'There does not live any man in my building whom my dog is not afraid of.'

(b). *Fui* *a* *um* *restaurante* ***onde***
Go-PST.1SG to DET.INDF.M.SG restaurant REL
se come *a* *melhor lampreia* *de Lisboa*.
itself eat-PRS.3SG DET.F.SG best lamprey of Lisbon
'I went to a restaurant where you can eat the best lamprey in Lisbon.'

(73) *O* *ano* ***no qual*** *o* *Papa*
DET.M.SG year in REL.M.SG DET.M.SG Pope
visitou *Fátima foi* *excelente* *para*
visit-PST.3SG Fátima be-PST.3SG excellent to
as *colheitas.*
DET.F.PL harvest
'The year in which the Pope visited Fátima was excellent to the harvest.'
(Examples adapted from Veloso, 2013, p. 2091)

When the relativized DP introduced by *o qual* is associated with the noun through the preposition *de* (with a possessive interpretation), the linear order presents two possibilities. *O qual* and the modified noun may behave as a chunk, in which case the modified noun moves along with *o qual*, being fronted to the initial position of the relativized constituent, like in 0:

(74) *o* *livro* *[a* *capa*
Love-PST.1SG DET.M.SG book DET.F.SG cover
do qual] *o* *meu* *filho* *rasgou.*
of- REL.M.SG DET.M.SG my son tear-PST.3SG
'I loved the book the cover from which my son tore.'
(Veloso, 2013, p. 2093)

The second option is to separate the complex *wh*-element *o qual* and the modified DP, leaving the DP in its base position and fronting the *wh*-element to the initial position of the relativized constituent, as in (75):

(75) *Adorava* *o* *livro* ***[do*** ***qual]***
Love-PST.1SG DET.M.SG book of-REL.M.SG
o *meu* *filho* *rasgou* *[a* *capa]*.
DET.M.SG my son tear-PST.3SG DET.F.SG cover
'I loved the book from which my son tore the cover.'
(Veloso, 2013, p. 2093)

When there is a PP inside the relative sentence, it is not grammatical to leave the modified name (the possessed entity) in its base position; it is necessary to move the whole constituent, as illustrated in (76)a and b:

(76) (a). **Adorava* *o* *livro* ***[do*** ***qual]*** *o*
Love-PST.1SG DET.M.SG book of- REL.M.SG DET.M.SG
meu *filho* *fugiu* *com* [*a* *capa*].
my son escape-PST.3SG with DET.F.SG cover

(b). *Adorava* *o* *livro* *[com* *a*
Love-PST.1SG DET.M.SG book with DET.F.SG
capa ***do qual]*** *o* *meu*
cover of- REL.M.SG DET.M.SG POSS.M.SG
filho *fugiu*
son escape-PST.3SG
'I loved the book with whose cover my son escaped.'

As *o qual* displays morphological gender and number features, it may disambiguate the cases with the invariable *wh*-operators *que, quem, onde*, whenever more than one DP is available to be the head of the *wh*-operator. For example, in sentence (77), the DP *o primo daquela rapariga* 'that girl's cousin' provides two potential heads for the *wh*-operator (*primo* and *rapariga*). The use of *o qual* instead of *quem* points unequivocally to the masculine or the feminine head, agreeing with it in gender and number:

(77) (a). *O* *primo*$_i$ *daquela* *rapariga*$_j$
DET.M.SG cousin of-DEM.F.SG girl
com ***quem***$_{i/j}$ *fui* *ao* *cinema*
with REL go-PST.3SG to- DET.M.SG cinema
é *simpático.*
be-PRS.3SG nice

(b). *O* *primo*$_i$ *daquela* *rapariga*$_j$ *com* ***o qual***$_{i/*j}$
DET.M.SG cousin of-DEM.F.SG girl with REL.M.SG
fui *ao cinema* *é* *simpático.* go-
PST.3SG to- DET.M.SG cinema be-PRS.3SG nice

(c). *O* *primo*$_i$ *daquela* *rapariga*$_j$ *com* ***a qual***$_{j/*i}$
DET.M.SG cousin of-DEM.F.SG girl with REL.F.SG
fui *ao* *cinema* *é* *simpático.*
go-PST.3SG to- DET.M.SG cinema be-PRS.3SG nice
(Veloso, 2013, p. 2092)

According to the prescriptive grammars (e.g., Cunha & Cintra, 1984, pp. 433–34), when a preposition with two syllables or more (*ante* 'before', *contra* 'against', *durante* 'during', *perante* 'in front of', a.o.) or a complex preposition (*acerca de* 'about', *através de* 'through', *em face de* 'in the face of', a.o.) introduces the relativized element, the use of *o qual* is mandatory (78). Still, in current descriptions for EP, only a 'tendency' is highlighted[31].

(78) (a). *As* *injustiças* ***contra*** *as quais* *a*
DET.F.PL injustices against REL.F.PL DET.F.SG
Maria *luta* *são* *muitas.*
Maria fight-PRS.3SG be-PRS.3.PL many
'The injustices against which Mary fights are many.'

[31] See, e.g., Veloso (2013, p. 2093): "O uso de *o qual* **é preferencial ou obrigatório** quando o constituinte relativo é introduzido por uma preposição com duas ou mais sílabas (ante, contra, durante, perante, etc.) ou por uma locução prepositiva (acerca de, através de, em face de, etc.)" [The use of *o qual* **is preferential or mandatory** when the relative constituent is introduced by a preposition with two syllables or (before, against, during, in front of) more or by a prepositional phrase (about, through, in the face of, etc.)] (translation and bold are mine).

(b). *Desconheço* *o* *assunto* ***acerca***
Not know-PRS.1SG DET.M.SG SBJ about
do *qual* *eles* *discutiram.*
of REL.M.SG 3PL discuss-PST.3.PL
'I do not know the SBJ about which they discussed'

Prescriptive grammars also state that, when the head is human, *o qual* is mandatory after the preposition *sem* 'without' to avoid the phonetic dissonance of *sem quem* 'without whom' (Cunha & Cintra, 1984, p. 437).

(79) (a). *Ele* *é* *a* *pessoa sem* ***a qual***
3SG be-PRS.3SG DET.F.SG person without REL.F.SG
eu *não* *vivo!*
1SG not live-PRS.1SG

(b). *Ele* *é* *a* *pessoa sem* ***quem***
3SG be-PRS.3SG DET.F.SG person without REL
eu *não vivo!*
1SG not live-PRS.1SG
'He is the person without which I cannot live!'

3.2.5.*Cujo* 'whose'

Cujo 'whose' has always been considered a Rel Pr (see Cunha & Cintra, 1984; Raposo, 2013). However, based on its distributional properties, the official linguistic terminology for EP (http://dt.dge.mec.pt/) classifies *cujo* as a determiner.

Cujo has overt φ-features (*cujo, cuja, cujos, cujas*). It is the morphological expression of the genitive Case, being comparable to a possessive pronoun of the third person ((80)a and (80)b). It can be replaced by a prepositional phrase introduced by *de* 'of,' indicating the possession relationship (81):

(80) (a). *Vi* *o* *jornalista* ***cuja***
See-PST-1SG DET-M.SG reporter REL
reportagem *foi* *publicada* *hoje.*
story be-PST.3SG published today
´I saw the reporter whose story was published today.'

(b). *Vi* *o* *jornalista.* *A*
See-PST-1SG DET-M.SG reporter DET-F.SG
sua *reportagem* *foi* *publicada* *hoje.*
POSS.3SG story be-PST.3SG published today
'I saw the reporter whose story was published today.'

(81) ?*Vi* *o* *jornalista,* *a*
See-PST-1SG DET.M.SG writer DET-F.SG
reportagem ***do*** ***qual*** *foi* *publicada* *hoje.*
story of REL.M.SG be-PST.3SG published today
'I saw the reporter of whom the story was published today.'

Like a possessive pronoun, *cujo* works as a complement or a modifier of the possessed entity (in the sentences above, *reportagem* 'story'), recovering the possessor's information (in the sentences above, *jornalista* 'reporter'). It precedes the possessed entity, agreeing in gender and number with it.

The constituent introduced by *cujo* can play the syntactic role of SBJ (82), DO (83), oblique complement (84) and adverbial adjunct (85):

(82) *Encontrei* *um* *rapaz* ***cujas*** *primas*
Find-PST.1SG DET. INDF.M.SG boy REL-F.PL cousins
são *minhas* *alunas.*
be-PRS-3PL POSS.1SG.F.PL students
'I found a boy whose cousins are my students.'

(83) *O* *gato* ***cujo*** *nariz* *o* *irmão*
DET.M.SG cat REL-M.SG nose DET.M.SG brother
arranhou *está* *doente.*
scratch-PST.3SG be-3.PRS.SG sick
'The cat whose nose the brother scratched is sick.'

(84) *Turim* *é* *uma* *cidade* *de* ***cuja***
Turim be-PRS.3SG DET.INDF.F.SG city of REL-F-SG
arquitectura *barroca* *gostei* *muito.*
architecture baroque like-PST.1SG really
'Turim is a city whose baroque architecture I really liked.'

(85) *O* *meu* *casaco,* *em* ***cuja*** *lapela*
DET.M.SG my coat in REL-FSG lapel
entornei *uma* *chávena de café,*
sprinkle-PST.1SG DET.INDF.M.SG cup of coffee
ficou *estragado.*
be-PST.3SG ruined
'The coat in whose lapel I have sprinkled coffee was ruined.'
(adapted from Veloso, 2013, p. 2099)

Despite the similarities between *cujo* and possessive pronouns, *cujo* cannot combine with an article. Indeed, this suggests that *cujo* bears a [Determiner] feature and targets the same position as the determiner article *a*, hence resulting in ungrammaticality (86).

(86) * *Vi* *o* *jornalista* ***cuja***
See-PST-1SG DET-M.SG reporter REL-F.SG
a *reportagem* *foi* *publicada* *hoje.*
DET-F.SG story be-PST.3SG published today

Veloso (2013, p. 2097) relates the impossibility of combining *cujo* and an article with the mandatory definite interpretation of the noun that follows *cujo*. When *cujo* occupies the head position of the relative DP, the head and its complement (the possessed

entity) must match the definiteness features. Hence, besides recovering the linear nominal antecedent that corresponds to the possessor (in the examples, *jornalista*), *cujo* contributes to a definite interpretation of the relative constituent (*reportagem*).

Apart from definiteness, *cujo* is underspecified regarding the features of [animacy], [human], and [locative]. In other words, it can relate with a possessor and a possessed entity valued positively or negatively for these features.

To summarize, *cujo* is always a possessive modifier with a salient feature of definiteness that connects two entities – the possessor (preceding it) and the possessed entity (following it, with which *cujo* agrees in gender and number).

3.2.6. *Quanto* 'as much'

The most salient semantic feature of *quanto* 'as much' is [quantity], and, therefore, it relates to a quantificational head. In other words, the head of the RC introduced by *quanto* is the quantifier of the DP, which introduces the domain of quantification.

The quantifier that heads *quanto* can be the indefinite pronoun *tudo* 'all, everything.' Since *tudo* is an invariable form, *quanto* does not vary in gender and number when they relate:

(87)	*Tens*	***tudo***	***quanto***	*querias.*
	Have-PRS.2SG	everything	REL	want-PST.2SG
	'You have everything (that) you wanted.'			

Quanto can also be headed by *tanto(s), tanta(s)* ('as many'). This quantifier *tanto(s), tanta(s)* selects an NP, and the φ-features of the quantifier must agree with the selected NP. In this case, *quanto* relates in gender and number with the quantifier:

(88)	*Compra*	***tantos***	*livros*	***quantos***
	Buy-IMP.2SG	as many-M.PL	books	REL-M.PL
	quiseres			
	like-SBJ.Fut.2SG			
	'Buy as many books as you like.'			

The head NP introducing the quantification domain appears in the NP head (88) or the relativized constituent (89):

(89) *Compra* ***quantos*** ***livros*** *quiseres*.
Buy-IMP.2SG REL-M.PL books like-SBJ-FUT-2SG
'Buy as many books as you like.'

In other words, the head NP cannot occur twice:

(90) **Compra* *tantos* ***livros*** *quantos* ***livros***
Buy-IMP.2SG as many-M.PL books REL-M.PL books
quiseres.
like-SBJ-FUT-2SG

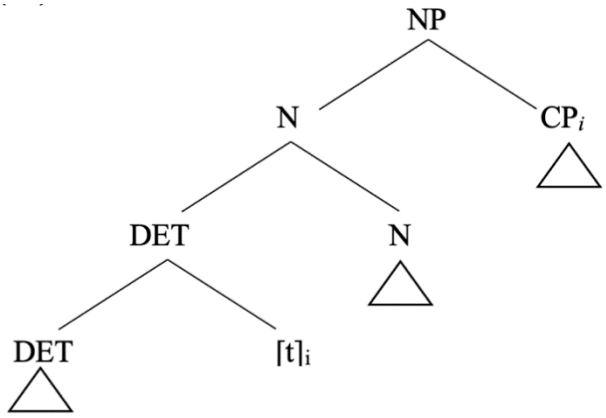
3.3. Existing analyses for European Portuguese RCs

In this subsection, I present a brief overview of the main syntactic analyses proposed for EP RCs.

Brito (1988/1991) adopted the HEA, proposing an adjunction structure for restrictive and appositive RCs. However, Brito combines the HEA implemented as [$_{NP}$ NP CP] with the HRA [DET CP], to account for the constituency between the noun and the RC. Indeed, in the HEA, the RC was right-adjoined to the noun, not forming a constituent with the RC. Combining these two proposals, Brito suggests that the CP is adjoined to the right of the NP, the CP being extracted from the Determiner. The analysis [$_{NP}$ NP CP][32] (91) accounted for the anaphoric interpretation of parasitic gaps and coordinated antecedents, multiple RCs with coordinated antecedents, and for multiple or stacked RCs (Brito, 1988, pp. 119-123).

[32] The original representation [$_{SN}$ SN F] (Brito, 1988, p. 118) is updated according to the changes in the syntactic theory.

(91)



(Adapted from Brito, 1988, p. 122)

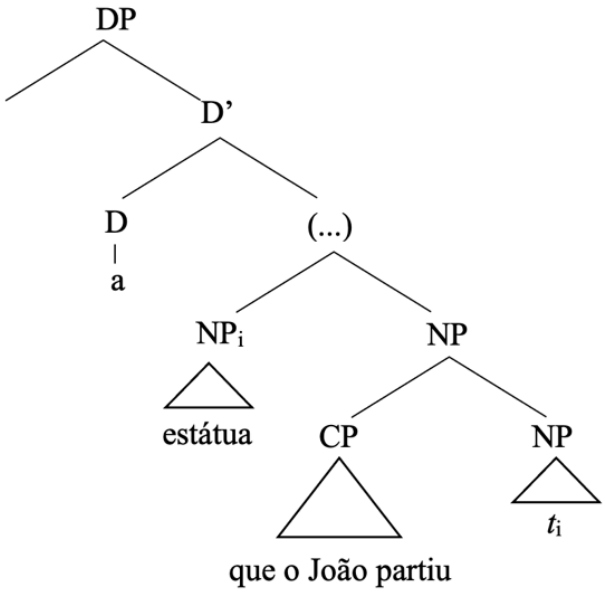
Alexandre (2000, pp. 105-106), however, claims that this analysis poses theoretical problems. In particular, the rightward movement of the relative CP adjoining the NP violates the thematic criterion, given that the relative CP is linked to an argument NP with a thematic role, and "adjunction to an argument will always yield a violation of the theta-criterion" (Chomsky, 1986, p. 16). Furthermore, the Antisymmetry analysis proposed by Kayne (1994), which appeared after Brito's proposal, rules out a structure configuring a right-adjoined CP.

Nevertheless, Alexandre (2000) also adopts the HEA, proposing an adjunction analysis for restrictive RCs in EP. Alexandre builds on Brito (1988/1991) and Cinque (1995), claiming that the relative CP is merged with the NP, creating a structure [$_{NP}$ CP NP][33]. This proposal escapes the right-adjunction problem and solves other empirical questions. In (92) I present a simplified adaptation of Alexandre's (2000) proposal, omitting the functional categories that integrate the DP in Alexandre's analysis.

(92)	(a). *A*	*estátua*	*que*	*o*	*João partiu.*
	DET.F.SG	statue	REL	DET.M.SG	João break-PST.3SG
	'the statue that João broke.'				

[33] The author proposes that other functional categories integrate the DP, namely GenP and NumbP (see Alexandre, 2000, pp. 137-149).

(b).



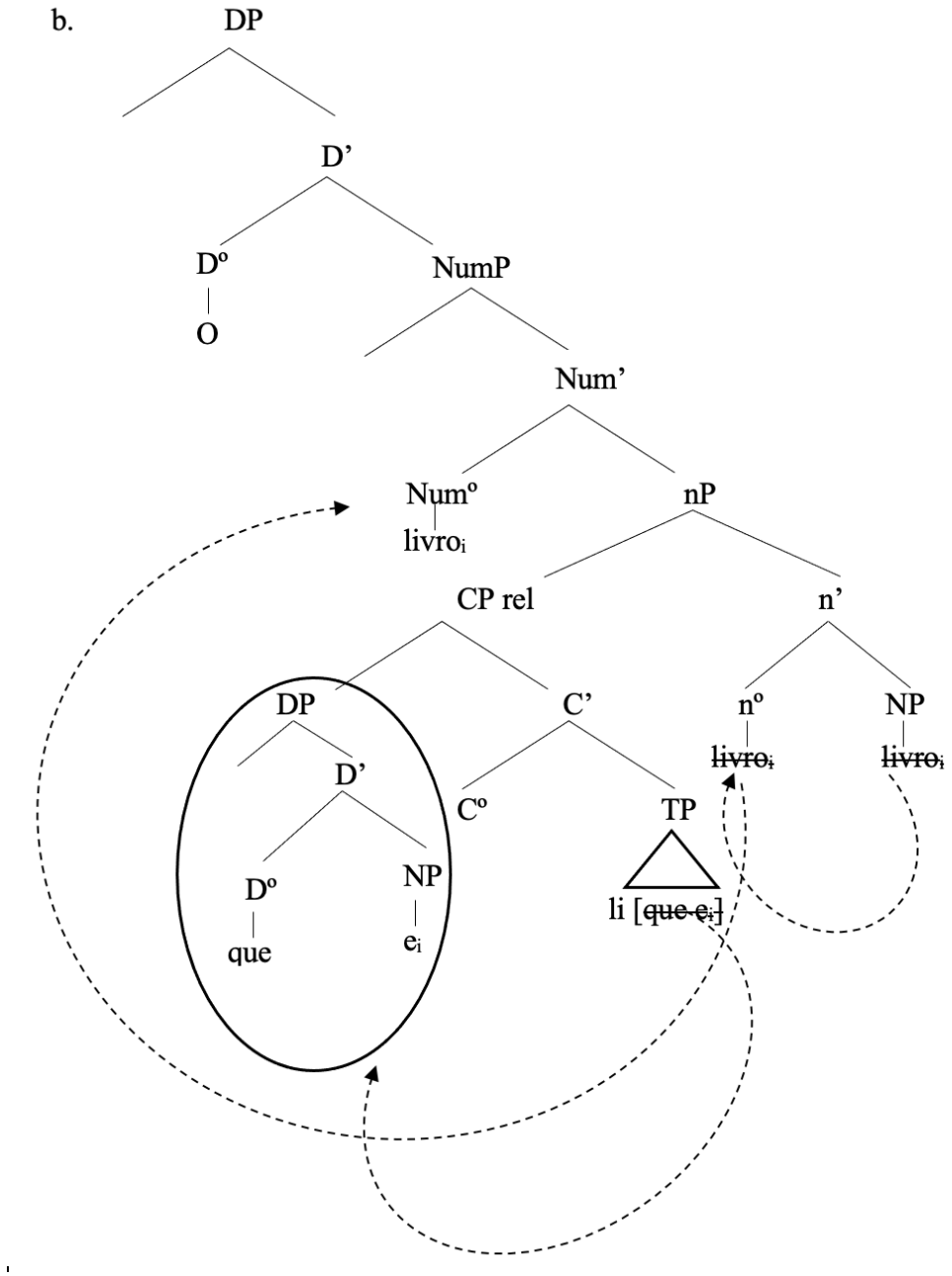
(Adapted from Alexandre, 2000, p. 138)

Likewise, Rinke & Aßmann (2017, p. 19 and following) adopt a HEA for EP RCs in Alexandre's implementation. They differ from Alexandre by claiming that COMPs do not exist in EP. The authors argue that head internal proposals such as the HRA or the MA raise theoretical and empirical problems for restrictive and appositive RCs. On the contrary, in their opinion, the HEA can account for all RCs in EP. Despite this, they claim that the relativizer *que* in SBJ and DO RCs (a transitive determiner) is not the same in prepositional RCs (an intransitive determiner).

In their proposal, the head noun antecedent is originated as a complement of the external DET, outside the RC. The relative CP occupies the position of Spec, nP, so the relative clause is originated pre-nominally. The noun rises to NumP, a functional projection above Spec, nP, due to obligatory movement of the noun to NumP (independently argued, see Cinque, 1995). Inside the relative CP, only a relative operator is moved to the C domain (occupying the position of Spec, CP), where it becomes coindexed with the external noun. *Que* determiner c-commands an empty noun element referentially identified by the head noun (93).

(93) (a). O livro [$_{CP}$ [$_{DP}$ que [$_{NP}$ e$_i$]] C [$_{TP}$ li ~~que e~~...]

(Rinke & Aßmann, 2017, p. 19)



Adaptation from Rinke & Aßmann (2017, p. 21)

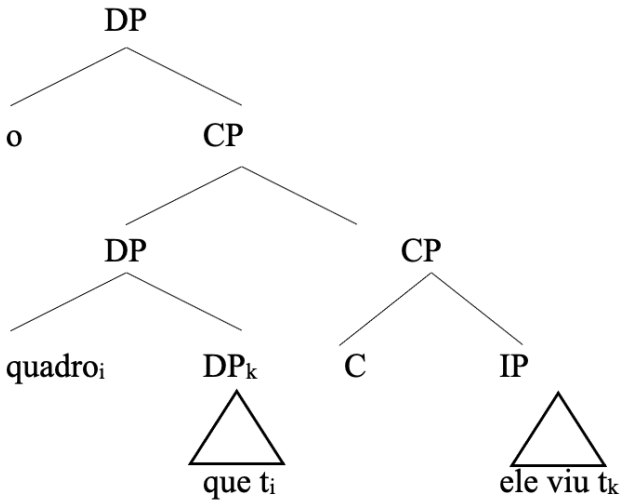
This proposal accounts for reconstruction effects because the empty NP inside the relativizer [$_{DP}$ que [$_{NP}$ e]] is “referentially connected to the head noun outside the RC and to its own copy in argument position” (Rinke & Aßmann, 2017, p. 20). Reconstruction operates in the CI-component, after Spell-out. This analysis also explains Case marking without the need of considering post-syntactic Case assignment, as in Bianchi’s proposal

(see previous section 2.4.). Assuming that two NPs are involved, these can play different syntactic functions, with different thematic roles and hold distinct Cases.

For Brazilian Portuguese, Kato & Nunes (2009) pursue the idea that *que* is a relative determiner, rejecting the distinction between COMP and Rel Pr, but adopting the HRA. The derivation proceeds as follows: the external determiner selects for CP. The relative determiner *que* has the head noun as its complement, and both form the relative DP. The relative DP is generated in the argument position within the RC and raises up to Spec,CP. Inside the relative CP, the head noun raises further, ensuring the linear order of the sentence (94). Following Kato & Nunes (2009), the HRA can also account for all prepositional RCs produced with different relativization strategies as it is developed with greater detail in Chapter 3.

(94) (a). *o* *quadro* *que* *ele* *viu*
DET.M picture REL 3SG see-PST.3SG

(b).



(Adapted from Kato & Nunes, 2009, p. 96)

In this sub-section, I have sketched out some of the analyses proposed for RCs in Portuguese. In the next section, I will present an overview of RCs in Mandarin Chinese (MC), the native language of the participants in this study.

4. Relative Clauses in Chinese

Chinese RCs present unique characteristics that make their analysis a challenging task. Chinese combines a SBJ-Verb-Object (SVO)[34] order in declarative sentences with head-final (prenominal) RCs. Indeed, this combination is rather unusual. Dryer (1992) examined over 130 languages and concluded that Chinese contrasts with the other 60 languages with SVO order but head-initial RCs. It also differs from the languages considered by Dryer that have head-final RCs but an Object-Verb (O-V) order.

Flynn & Espinal (1985) stressed that the combination of head-final RCs with an SVO order constitutes a counterexample to Greenberg's universals (1963): "Within Greenberg's framework, if a language has prenominal RCs, then it should have postpositions. Chinese has prenominal RCs but it has prepositions" (Flynn & Espinal, 1985, p. 98). Nevertheless, Chinese has prepositions and postpositions. Actually, Greenberg claimed that languages with head-final RCs have three possibilities: they can be postpositional; the adjective may precede the noun or both (Universal 24). [35] Chinese has prenominal RCs, but the adjectives are prenominal, so Chinese actually seems to fit in with Greenberg's predictions, even if it has an unusual combination of characteristics.

Besides, Huang (1982a) examined other projections in Chinese that are head-initial, such as the sentence projection IP (now TP), as well as the projections headed by verbs and adjectives. Prenominal verbs and adjectives are also typical in SOV languages (Flynn & Espinal, 1985, p. 98). In sum, Chinese has a mixed nature, presenting a consistent head-final NP but head-initial projections like PP, TP, VP, and AP. This specificity of Chinese is an argument to treat head direction and word order as related but independent parameters (Flynn & Espinal, 1985, p. 99).

Besides this puzzling combination of factors, the nature of the structural particle that stands between the RC and the head noun, DE (的), is not consensual. DE is analyzed as a COMP (although not consensually, see section 4.1.1) and plays other roles in the Chinese language.

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[34] The classification of Mandarin Chinese as an SVO language is not consensual. According to Li & Thompson (1981, p. 26), Mandarin Chinese has as many SVO features as SOV features, which may indicate that Mandarin Chinese (but not the other Chinese dialects) is gradually becoming an SOV language. However, Paul (2015, p. 25) states that the extended verbal projection in Modern Mandarin is head-initial not only for the VP projection, but also for the projections above VP, such as AuxP and AspP, up to IP/TP. According to this analysis, Li & Thompson's statement on the ongoing change of order is discarded.

[35] "Universal 24. If the relative expression precedes the noun either as the only construction or as an alternate construction, either the language is postpositional, or the adjective precedes the noun or both." (Greenberg 1963, p. 55).

Furthermore, there is a line of research (see Ozeki & Shirai, 2007; Yip & Matthews, 2007, reproduced from Xu, 2009) suggesting that Chinese does not have RCs, inspired by Comrie's (2003) proposal for Japanese, which is typologically related to Chinese. Comrie argues that Japanese does not have RCs since there is no significant difference between the alleged RCs and other syntactic structures (Comrie 2003, pp. 19–37).

Focusing on Chinese and considering the structural similarity between RCs and other noun modifiers introduced by the same particle DE in this language, I will synthesize the arguments that differentiate RCs from such noun modifiers in the following subsection.

4.1. Chinese has Relative Clauses

Some of the analyses made for Chinese (Ozeki & Shirai, 2007; Yip & Matthews, 2007) follow Comrie's proposal for Japanese. Comrie (2003, pp. 29-35), following Matsumoto (1999), suggests that, in Japanese, RCs do not have distinctive characteristics and should be analyzed as simple noun-modifier constructions.

Chinese and Japanese have structural properties in common: they are both null-anaphor languages; RCs are head-final in both cases; there is no Rel Pr in none of these two languages; additionally, both have noun-modifying clauses with a structure comparable to the RCs; and, finally, both are topic-prominent languages[36].

MC and Japanese are characterized in the literature as 'discourse oriented' or 'topic prominent languages' (Tsao, 1977)[37]. SBJ-prominent and topic-prominent languages differ in terms of discourse strategy, noun-verb relations, and grammatical

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[36] The distinction between topic-prominent languages and subject-prominent languages was first presented by Li & Thompson (1976). According to these authors, Chinese classifies as a 'topic-prominent language' whereas Japanese classifies as a 'subject-prominent and topic-prominent language'. English and EP are both 'subject-prominent' languages. In the examples (i) and (ii), we can see that the topic has no selectional relation with the verb (in example (ii), the copular verb is omitted, but the subject of the predication is *shù-shen* 'trunks' and the predicate is the adjective *da* 'big'):

(i) *Nei-chang huo xingkui xiaofang-dui lai de kuai*
That-Cl fire fortunate fire-brigade come adv. Particle quick
'That fire (topic), fortunately the fire brigade come quickly.'

(ii) *Nei-xie shumu shu-shen da*
Those-Cl tree tree-trunk big
'Those trees (topic), the trunks are big.'

(Li & Thompson, 1976, p. 462)

Apparently, Chinese and Japanese are discourse oriented, although not to the same extent.

[37] The classification of Mandarin Chinese as a Topic Prominent language goes back to Hong (1956), Householder and Cheng (1967), Tai (1973), Huang (1973) and Alleton (1973) – all from Li & Thompson (1976, p. 477).

processes. Topic-prominent languages are discourse-oriented. The basic sentences of the language may have a topic-comment structure, being introduced by a topic that does not establish a syntactic relation with the verb of the same sentence. The topic always begins the sentence, and it is the theme of the sentence. It is a discursive notion, contrasting with the SBJ, which is a syntactic notion. It is not verb-dependent syntactically or semantically since the speaker can freely choose the topic without linking it to the main verb.

Another property shared by Chinese and Japanese is the possibility of null anaphors. However, whereas Japanese allows pronoun deletion in almost all syntactic functions, Chinese only licenses pronoun deletion in the SBJ position. Hence, example (95) is ungrammatical unless it occurs in a question-answer context (96), where it is not analyzed as a *pro*, but as a variable bound to an empty topic *zhe ben shu* 'this book' (Huang, 1984)[38]:

(95) **Xiaoming mai-le.*
Xiaoming buy-ASP

(96) A: *shei mai-le zhe ben shu? Xiaozhang haishi Xiaoming?*
who buy-ASP DEM Cl book? Xiaozhang or Xiaoming?
'Who bought this book? Xiaozhang or Xiaoming?'

B: *Xiaoming mai-le e. Xiaozhang mei mai e.*
Xiaoming buy-ASP Xiaozhang NEG buy
'Xiaoming bought this bought; Xiaozhang didn't.'
(Adapted from Xu, 2009, p. 31).

Analyzing Chinese DO RCs as noun-modifying structures raises a problem since the empty category cannot be analyzed as a *pro*:

(97) *[[Xiaoming mai e] de [zhe ben shu]]*
Xiaoming buy e DE DEM Cl book
'the book that Xiaoming bought.'
(Examples from Xu, 2009, p. 32).

[38] Huang (1984, p. 548) proposes that zero object pronouns in Chinese are a variable bound by a zero topic; that is the object is first topicalized and then deleted from its topic position.

Long before the extension of Comrie's (2003) proposal to Chinese, the linguistic tradition analyzed Chinese RCs together with other noun modifiers (Ding, 1961; Zhu, 1982, among others). As RCs, all noun modifiers precede the head noun. Moreover, possessives (98)a, adjectival modifiers (98)b and locational modifiers (98)c are also introduced by the morpheme DE:

(98) (a). *ta* *de* *shu*
3SG DE book
'his book(s).'

(b). *hen* *hou* *de* *shu*
very thick DE book
'a very thick book/ very thick books'

(c). *zhuozi* *shang* *de* *shu*
desk top DE book
'a book on the desk/ books on the desk'

(Examples from Zhang, 2007, p. 1)

Evidence to analyze RCs and noun modifiers separately was first brought up by Tang (1979) (from Zhang, 2007). Tang pointed out that RCs may contain either a SBJ gap or an object gap, being the first to highlight that, despite the seeming similarities, RCs present a different structure when compared with other nominal modifiers.

Moreover, Xu (2009) adds that the apparent structural similarity between RCs and noun-modifying clauses in Chinese is superficial. Whereas noun-modifying clauses in Chinese cannot have a phonetically null head, RCs can[39]. The examples below contrast a headed RC (99)a and its head-free counterpart (99)b, with a noun modifying clause (100)a and its head-free counterpart (100)(b).

(99) (a). [$_{NP}$ *ta* *gaosu* *wo* *de]* *zhe* *jian* *shi]*
3SG tell 1SG DE DEM Cl thing
'the thing that he told me about.'

[39] The existence of relative constructions with a null head in Chinese is mentioned in the literature (Aoun & Li, 2003, pp. 179-181, among others).

(b). *zhe* *jian* *shi* *shi* [$_{NP}$ *ta* *gaosu* *wo* *de]*
DEM Cl thing be 3SG tell 1SG DE
'this thing is what he told me about.'

(100) (a). [$_{NP}$ *ta* *ci- zhi* *de* *zhe* *jian* *shi]*
3SG resign-post DE this Cl thing
'the thing of his resignation/the fact that he resigned'

(b). **zhe* *jian* *shi* *shi* [$_{NP}$ *ta* *ci-zhi* *de]*.
DEM Cl thing be 3SG resign-post DE
Intended: this is the thing/fact of his resignation

(Examples from Xu 2009, p. 37).

In this sub-section, I have briefly discussed the existence of RCs in Chinese. The similarities of RCs with other noun modifying structures in Chinese led Chinese linguists to treat them alike, in the past and more recently, in the sequence of Comrie's proposal for Japanese, which is typologically related. However, other researchers have shown that the linguistic characteristics underlying Comrie's proposal for Japanese are not precisely equivalent to Chinese, despite the similarities between the two languages.

4.1.1. Absence of Relative Pronouns in Mandarin Chinese Relative Clauses

Contrary to EP, which displays different *wh*-elements, MC does not have Rel Prs (Ning, 1993; Aoun & Li, 2003; Del Gobbo, 2007; Huang et al., 2009; Pan, 2016a and 2016b; among others). The *wh*-words available in interrogative clauses in MC (see (101)b) cannot be used in relativization (see (101)c) (Wen, 2020, p. 51):

(101) (a). *Zhe jiu* *shi* *[na-ge* *[[[Lisa kanjian] de] guniang]]*.
this exactly be DEM-Cl Lisa see DE girl
'This is the girl who Lisa saw.'

(b). *Lisa kanjian* ***shui****?*
Lisa saw who
'Who did Lisa see?'

(c). * [$_{CP}$ ***shui*** *Lisa* *kanjian* *de]* *guniang*
who Lisa see DE girl

MC RCs involve the particle DE (see previous section), which is mainly analyzed as a COMP (Ning, 1993; Aoun & Li, 2003; Huang et al., 2009; Pan, 2016, among others). Other researchers proposed that DE is a determiner (e.g., Simpson, 2002), an independent functional head (Ning, 1996, reproduced from Wen, 2020), and a modifier head (Zhang, 2005 cited in Wen, 2020). These different assumptions impact the analyses proposed for Chinese RCs.

Some proposals claim a covert relative operator involved in the derivation of MC RCs (e.g., Ning, 1993, Del Gobbo, 2007). Accordingly, a relative construction has an underlying structure exemplified in (102).

(102) *[na [* Op$_i$ *Lisa kanjian* t_i *de] guniang]*
DEM Lisa see DE girl
'the girl who Lisa saw'

(Del Gobbo, 2007, p. 182)

4.1.2. Resumptive pronouns in Mandarin Chinese RCs

Unlike EP, MC displays grammatical RPs in RCs. In other words, resumption is a standard relativization strategy in MC, obeying some conditions.

First, RPs in Chinese cannot appear in SBJ (103)a and DO positions (103)(b).

(103) (a). * *Zhe jiu shi* ***[ta$_i$*** *xihuan-le Lisi de] na-ge nuren.*
DEM exactly be her like-asp Lisi DE DEM-Cl woman
'This is the woman who admired Lisi.'

(b). * *Zhe jiu shi [Zhangsan xihuan-le* ***ta$_i$*** *de] na-ge nuren.*
DEM exactly be Zhangsan like-asp 3SG DE DEM-Cl woman
'This is the woman who Zhangsan admired.'

(Wen, 2020, p. 53)

However, the authors have pointed different exceptions to this restriction. For instance, Pan (2016a and 2016b) states that RPs may appear in SBJ RCs, depending on

the predicates involved in the relativization. Experiencer subjects (104) do not seem to be as sensitive as others (105) to the presence of an RP (Pan, 2016b, p. 3, footnote 2).

(104) *[(Ta$_j$) qunian sheng-le yi-chang da bing] de na-ge xuesheng$_j$*
3SG last.year have-Perf one-Cl big ill DE DEM-Cl student
'The student who was terribly ill last year'

(105) *[(*Ta$_j$) da-le Lisi] de na-ge ren$_j$*
3SG beat-Perf Lisi DE DEM-Cl person
'The person who beat Lisi'

Yang (2016) argues that when the DO is relativized, the presence of the RP in the gap position within the RC depends on a lexical feature of the head. If the head is [+animate], the RP is optional (106); if the head has a [-animate] feature, the RP cannot occur (107):

(106) (a). *Wo xihuan (ta) de na-ge nvhai*
1SG like (3SG) DE DEM-Cl girl
'the girl that I like'

(b). *Xiaowang sha-le (ta) de nazhi ji*
xiaowang kill-ASP (3SG) DE DEM hen
'the hen that Xiaowang killed'

(107) (a). *Mama zuo-hao (*ta) de fan*
mom prepare-PST (*3SG) DE food
'The food that mom prepared.'

(b). *Ni xie (*ta) de lunwen*
2SG write (*3SG) DE thesis
'The thesis that you write.'

(examples from Yang, 2016, pp. 20-21)

Moreover, Wen (2020) claims that an RP may be added in SBJ and DO positions if an adverbial modifier is present (108).

(108) *Zhe jiu shi [Zhangsan xihuan-le ta$_i$ hen jiu*
DEM exactly be Zhangsan like-ASP 3SG very long
de] na-ge nuren$_i$.
DE DEM-Cl woman
'This is the woman who Zhangsan admired for a long time.'

On the contrary, when the relativized element involves a preposition, an RP is mandatory (109). Since the present dissertation is devoted to prepositional RCs, these are further detailed in Chapter 4.

(109) (a). *Zhe jiu shi[Zhangsan song * (ta$_i$) shu de] na-ge ren$_i$.*
DEM exactly be Zhangsan give 3SG book DE DEM-Cl person
'This is the man who Zhangsan gives the book to.'

(b). *Zhe jiu shi[Zhangsan dui * (ta$_i$) xiao-le-xiao de] na-ge ren$_i$.*
DEM exactly be Zhangsan to 3SG smile DE DEM-Cl person
'This is the man who Zhangsan cast a smile to.'

(Wen, 2020, p. 53)

Finally, RPs can only appear in definite relative constructions, introduced by the demonstratives *zhe* 'this' or *na* 'that' (110).

(110) (a). *Zhe jiu shi [Zhangsan xihuan-le* ***ta$_i$*** *hen jiu de]*
DEM exactly be Zhangsan like-ASP 3SG very long DE
na *yi-ge nuren$_i$.*
DEM one-Cl woman

(b). **Zhe jiu shi [Zhangsan xihuan-le* ***ta$_i$*** *hen jiu de]*
DEM exactly be Zhangsan like-ASP 3SG very long DE
yi-ge nuren$_i$.
one-Cl woman
'This is the woman who Zhangsan admired for a long time.'

(Wen, 2020, p. 54)

4.1.3. The position of the Relative Clause in the Chinese DP

In this section, I look at the position of the RC regarding a demonstrative, a numeral, or both. The position of the RC has consequences for the interpretation.

Before proceeding, I would like to note that, in Chinese, like in English or EP, a noun can be preceded by a number to express quantity. However, in Chinese, a Numeral (NUM) alone cannot directly function as an attributive modifier of a noun; it must combine with a classifier (Cl). All the nouns have their classifiers that 'will specify the unit with which the entity denoted by the noun is counted or measured' (Huang et al., 2009, p. 214). In turn, before the number, it is possible to have demonstratives or other words that are in complementary distribution with demonstratives, such as the quantifier *mei* 每 'every.'

That said, in Modern Chinese, the RC can occupy one of two main positions[40]. It can precede the whole sequence DEM/ NUM + Cl + head noun (111), or it can stay between the sequence DEM/ NUM + Cl and the head noun (112):

(111)	**[RC *Ta***	***xihuan***	***de]***	*[DEM na]*	*[(yi)- ge]*	*haizi*
	3SG	like	DE	DEM	one-Cl	child

'That child that he likes.'

(112)	[DEM Na]	[(yi)- ge]	**[RC ta**	**xihuan**	**de]**	haizi
	DEM	one-Cl	3SG	like	DE	child

'That child that he likes.'

(Examples from Huang et al., 2009, pp. 214-215).

[40] Huang, Audrey Li, and Li (2009, p. 215) note that a third order is available, according to which the RC stands between a Dem and a NUM, as in the sentence below:

(i)	*Zhe*		*Zhangsan*		*shou*	*chulai*	*DE*	*yi-ju*	*hua*
	DEM		Zhangsan		speak	out	DE	one-Cl	word
	bi		na	Lisi	xie	chulai	de	yibai-ju	hua
	compare		DEM	Lisi	write	out	DE	one hundred- CLF	word
	hai	you	yong.						
	more	have	use.						

'This one sentence that Zhangsan uttered is even more useful than those hundred sentences that Lisi wrote.'

Nevertheless, as Huang *et. al.* (2009) note, this 'is not the most natural position for a relative clause'. As Huang *et. al*. (2009), I will put this order aside in the present dissertation.

The difference between the two internal orders and their consequences for the interpretation have received much attention (Chao, 1968; Del Gobbo, 2003; Huang, 1982a; N. Zhang, 2001, among others).

One of the issues complexifying the analysis is that the distinction between these two orders in Chinese is not entirely comparable to the difference between RRCs and ARCs in other languages such as, for example, English or EP (see Del Gobbo, 2003, 2005; N. Zhang, 2001). However, although adopting a distinct terminology, the authors agree that the sequence represented here in (111), where the RC precedes the DEM, restricts the reference of the noun. On the other hand, when the RC follows the DEM, as in the example (112) above, the clause is considered 'descriptive' or 'non-restrictive'.

Del Gobbo (2003), following Huang (1982), shows that the distinction can be related to scope modification: a RC modifies what follows it (the scope of modification is constituted by the elements to the right of the modifier). So, in the sequence DEM/ NUM + RC + Noun (112), the DEM is deictic, referring to a designated definite entity 'this one,' 'that one,' that has the property expressed by the RC. In the pattern here represented in (111), the DEM is an 'anaphoric' expression identified by the RC that precedes it[41].

To summarize, the literature agrees that a RC in Chinese is restrictive when it stands before a

1) DEM (+ Cl),

2) a Numeral + Cl, or

3) a sequence composed of (DEM + NUM + Cl).

The term 'restrictive' is equivalent to the one used to classify a restrictive RC in English or EP. In this case, in Huang's (1982a) terms, the DEM is anaphoric. In other words, before the sequence DEM/ NUM + Cl, the modifier helps to identify the referent of the nominal expression (Lu, 1998).

On the other hand, when the RC follows a DEM (+ Cl), a NUM + Cl, or a sequence DEM + NUM + Cl, like in (112), the literature diverges in its classification since the interpretation is not equivalent to an appositive RC in EP or English. In this case, the DEM is deictic. After the sequence DEM/ NUM + Cl, the modifier contributes to the description of the property (Lu, 1998).

[41] Such a distinction can also be understood considering a descriptive vs. identificational use of the RC. This discussion, however, is out of the scope of the present dissertation. For further arguments, see for instance Lu (1998) or Xu (2009), among others.

Since the present work studies the acquisition of restrictive RCs in EP by Chinese native speakers, we will further investigate and describe the structures where the RC precedes the whole sequence DEM/ NUM (+ Cl) or only a NUM (+ Cl). The structure analyzed in the literature as ARC raises questions that are out of the scope of the present dissertation.

4.2. Existing Analyses for Mandarin Chinese RCs

In the current subsection, I present the primary analyses proposed so far for RCs in MC. For a more detailed revision, see Wen (2020), chapter 3.

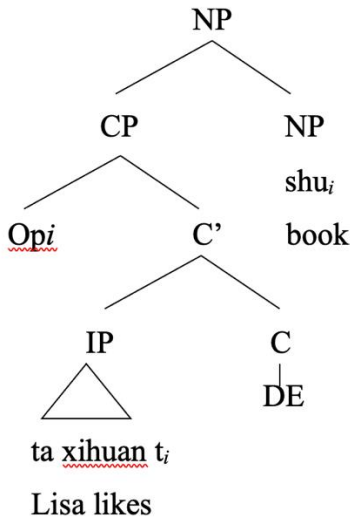
Ning (1993) (from Wen, 2020) proposes a HEA for Chinese RCs, with null relative operator movement. Ning assumes that the particle *DE* occupies the head of the CP that contains the RC. RCs are clausal complements of *DE*, having a gap or an RP. Ning (1993) assumes an operator-variable construction, after which an NP containing the head noun of the RC projects. The null operator is moved to Spec, CP (headed by DE). Ning's proposal for gap RCs is presented in (113) (from Wen, 2020, p. 61):

(113) (a). *[$_{CP}$ Op$_i$ [$_C$' [Lisa xihuan t$_i$] [$_C$ de]] shu$_i$]*

Lisa like DE book

'the book that Lisa likes.'

(b).



In Ning's proposal, the head DE stands to the right of its complement (the RC), possibly to maintain the RC's linear order.

Simpson (2002) adopts an HRA analysis for Chinese RCs. Unlike Ning (1993) and unlike what is generally assumed, Simpson proposes that DE is a determiner, being generated in D^o. More specifically, Simpson claims that DE is an enclitic particle that appears as a determiner within the RC construction. The relative C^o takes the relative sentence as its complement. The head noun moves to Spec, CP and the remaining IP moves to Spec, DP, deriving the surface order. Simpson attributes the movement of the RC to the specifier of DP (with DE as head) to the particular phonological requirements of DE (see (114), reproduced from Wen 2020, p. 67).

(114) $[_{DP}\ [_{IP}\ \textit{ta}\ \ \textit{xihuan}\ t_i\ ]_m\ [_D\ \textit{de}\ [\ \textit{na-ben}\ [_{CP}\ \textit{shu}_i\ t_m\ ]]]]$

According to Simpson, assuming that DE is a determiner may help solve the word order of head-final RCs and is adequate to describe the structure of Chinese RCs within Kayne's (1994) proposal.

Xu (2009) analyses MC RCs within the MA. In particular, Xu (2009) proposes a left-adjoined CP to an NP. DE appears as a COMP, head of the CP that is projected to a RC. Following the MA, there are two head nouns, the internal one being deleted after matching with the external one.

Aoun & Li (2003) claim that MC RCs belong to different types, and these should be analyzed differently. The first includes SBJ, DO, and IO RCs. When RCs involve a gap, they consider that the HRA is the most adequate analysis. When an RP is present, they propose a base-generation analysis of RCs. The second type includes adjunct relativization. When an adjunct PP, marking place, reason, or time, is relativized, they propose to apply null operator movement. Summing up, argument NP relativization involves the HRA. Adjunct RCs imply operator movement. When RPs are involved (in adjunct relativization and NP relativization), they apply base-generation.

Apart from this, Aoun & Li (2003) propose that the underlying structure for RCs is always NP adjunction (both for HRA and MA). That is, RCs are always adjoined to the left of the head noun. Besides, Aoun & Li (2003) propose an NP (instead of a DP) for Mandarin RCs.

Pan (2016a) adopts the HRA for all RCs in Chinese (involving a gap or an RP), assuming that the relativized NP raises from its base argument position inside the RC to

the CP position. The structure is derived by A'-movement and it is subject to locality conditions, thus evidencing island effects.

In this section, I have sketched the primary analyses of RCs in MC. One of the challenges in these analyses consists in accounting for the head-final structure of MC RCs. The solutions found by Ning (1993), putting the head and the complement in reversed positions, or by Simpson (2002), assuming that DE occupies the position of a determiner, seem out of the box solutions for this challenge. I leave the discussion of the analysis of resumptive RCs in Chinese for Chapter 4.

5. Conclusion and assumptions made for the present dissertation

In the current chapter, I have introduced RCs, the linguistic structure analyzed in the present dissertation. Although I am interested in one subtype of RCs – prepositional RCs –, I have chosen to present some of the crucial questions that the analysis of RCs has raised within generative research. I have shown different analyses of RCs, namely the HEA, the HRA, and the MA. I have discussed the main arguments that are usually presented for or against them.

I have also dedicated one section to the general characterization of RCs in EP and MC. Due to the differences in RCs between the two languages, these sections are structured differently and focus on different aspects. At the end of each section, I have synthesized some of the syntactic analyses available for each language. However, we should not forget that the analysis of RCs in each language is only a part of this dissertation. In fact, it focuses on the L2 acquisition process of this specific structure. For this reason, although some of the topics approached in the current chapter deserve a more profound analysis, the information provided so far is sufficient to prepare the study of prepositional RCs developed in the following chapters.

Even if the primary goal of the present dissertation is not the analysis of the syntactic structures *per se*, some assumptions that constitute the base of the acquisition process have to be put forward. As previously mentioned, the three analyses face criticism and empirical problems.

Most of the analyses proposed for EP follow the HEA (see section 3.3). Traditionally, one of the weaknesses pointed to this analysis is the fact that it does not explain reconstruction effects. However, if we take into account the contributes from Belletti & Rizzi (1988) and Lebeaux (2009), Principle A does not necessarily need to be

fulfilled before movement. In other words, anaphors have to be bound in some moment during the derivation, but this may occur in the C-I component at the latest. In this case, reconstruction effects are not a problem for the HEA, making it a very interesting option for EP. Indeed, it allows to propose a unified derivation for restrictive and appositive RCs (Rinke & Aßmann, 2017); besides, treating *que* as a relative determiner in all contexts (Veloso, 2013; Rinke & Aßmann, 2017) relates the relative *que* with the interrogative and exclamative *que*. The HEA in the version here adopted does not present issues regarding constituency, Case assignment nor Principle C effects (see Table 2).

The following chapters 3 and 4 are dedicated to Prepositional RCs in Portuguese and Mandarin Chinese, respectively.

Chapter 3

Prepositional Relative Clauses in EP

In the current chapter, I am interested in prepositional RCs in EP. Given that EP displays different relativization strategies to relativize a Prepositional Phrase (PP), each section addresses them individually, considering the properties that characterize them and proposing a syntactic derivation for each case.

Prepositional RCs are exceptionally complex from a semantic and a syntactic perspective. On the one hand, RCs are more complex than other filler-gap dependencies in the theta-role assignment. The relativized element enters semantic/thematic relations with two different lexical verbs: the matrix verb and the embedded verb in the RC (cf. Chapter 2, section 1). Other filler-gap dependencies, such as cleft-sentences or *wh*-questions, do not display the same complexity. Furthermore, Prep RCs are more complex than SBJ or DO RCs, considering the NPAH proposed by Keenan & Comrie (cf. Chapter 2, section 1).

For these reasons, prepositional RCs are a complex structure to acquire. Indeed, studies dedicated to L1 acquisition showed that Prep RCs are acquired late and evolve along with schooling. This is true for EP (e.g., Fontes, 2009; Valente, 2009; Vasconcelos, 1991; Vasconcelos, 1996), but also for other languages (see Guasti & Cardinaletti, 2003, for Italian; Labelle, 1990, for French; McDaniel et al., 1998, for English or Pérez-Leroux, 1995, for Spanish). I postpone the literature review on L1 acquisition of prepositional RCs to chapter 5.

Additionally, native EP speakers show variability in RCs' production, using standard and non-standard relativization strategies[1]. The non-standard relativization strategies are absent from prescriptive grammars, native speakers' curricula, and from the main textbooks of EP as a foreign language. Consequently, it is expected that L2ers are exposed to them mainly outside the classroom.

The descriptive grammars of EP (see Mateus et al., 2003; Raposo et al., 2013) consider and describe the different relativization strategies in detail. Besides, the literature for European and Brazilian Portuguese has dedicated them a lot of attention (Tarallo, 1983, 1985; Kato, 1993; Brito, 1995; Peres & Móia, 1995; Alexandre, 2000; Arim et al.,

[1] In this dissertation, the designation 'non-standard' does not intend to mirror the current use of these strategies by the EP speaking population, but follows the designation adopted in the literature.

2004; Valente, 2008; Fontes, 2009; Kato & Nunes, 2009; Santos, 2014; Aßmann & Rinke, 2017; Rinke & Aßmann, 2017, among others[2]).

Pied-Piping (PiP) is the standard strategy to relativize a prepositional phrase in EP ((1)a). The non-standard strategies are Preposition-Chopping (P-Chop)[3], with the omission of the mandatory preposition ((1)b), and resumption ((1)c), in which a resumptive element appears in the (standard) gap site preceded by the preposition selected by the verb. In the present dissertation, I am also analyzing the use of *onde* as an independent strategy ((2)a), instead of preposition + *que* ((2)b). I am referring to it as the 'locative' strategy[4].

(1) (a). *Foi* *um* ***debate***$_{i}$ *[[*$_{OBL}$ ***a*** ***que****]*
be-PST.3SG DET.INDF.M.SG debate to REL
valeu a pena *assistir* t_i*]].*
be.worth- PST.3SG watch

(b). *Foi* *um* ***debate***$_{i}$ *[[*$_{OBL}$ Ø ***que****]*
be-PST.3SG DET.INDF.M.SG debate REL
valeu a pena *assistir* t_i*]].*
be.worth-PST.3SG watch

(c). *Foi* *um* ***debate***$_{i}$ *[[*$_{OBL}$ *que]*
be-PST.3SG DET.INDF.M.SG debate REL
valeu a pena *assistir* ***a*** ***ele****]].*
be.worth-PST.3SG watch to 3SG

All: 'It was a debate that was worth watching.'

[2] The different relativization strategies were also studied in other varieties of Portuguese. For Mozambican Portuguese, see, e.g., Chimbutane, 1996; Gonçalves, 1996; Gonçalves & Stroud, 1998; Brito, 2000. For Angolan Portuguese, see Chavagne, 2005. For Cape Verdean Portuguese and the Portuguese of San Tome and Principe, see Alexandre, Gonçalves & Hagemeijer, 2011. For the relativization strategies in Guinean and the Guinean Gulf Creoles, see Alexandre & Hagemeijer, 2002; Alexandre, 2012. For an overview regarding the Portuguese-related creoles and the different African varieties of Portuguese, see Alexandre & Hagemeijer, 2013.

[3] This strategy is also referred to in the literature as "Null-Preposition", as is detailed in section 1.3. of the current chapter.

[4] The locative strategy is not usually considered individually in the literature about relative clauses. However, given the results of my experimental design, which are further presented in Chapter 7, I am considering it as an independent strategy that is in complementary distribution with Pied-Piping in some contexts.

(2) (a). *Foi* *um* *debate [[$_{OBL}$* ***onde****]* *o* *Presidente*
be-PST.3SG a debate REL DET.M.SG President
participou.
participate-PST.3SG
'It was a debate where the President participated.'

[Standard]

(b). *Foi* *um* *debate [[$_{OBL}$* ***em que****]* *o* *Presidente*
be-PST.3SG a debate in REL DET.M.SG President
participou.
participate-PST.3SG
'It was a debate in which the President participated.'

One of the goals of the present dissertation is to understand if and how L2ers integrate these strategies in their L2 acquisition process. To clarify this process, I analyze the derivation of the different relativization strategies and their features in the following sections.

1. Relativization Strategies

1.1. Pied-Piping

Pied-Piping takes place when the preposition moves obligatorily along with the relative pronoun, leaving a gap in the extraction site. In EP, PiP may occur with different relativizers: *que, quem, o(a)(s) qual(is), onde, cujo(a)(s), quanto(a)(s).* This strategy applies to all relativized PPs that are complement of the verb, oblique ((3)a) and indirect object ((3)b), and to adjuncts introduced by preposition ((3)c):

(3) (a). *O* *rapaz* *de* *quem* *eu* *falei* ***Ø***
DET. M.SG boy about REL 1SG speak-PST.1SG
vem *à* *festa.*
come-PRS.3SG to- DET.F.SG party.
'The boy about whom I spoke comes to the party.'

(b). *O* *rapaz* *a quem* *a* *menina*
DET.M.SG boy to REL DET.F.SG girl
deu *um* *livro* *ficou* *contente.*
give-PST.3SG DET.INDF.M.SG book be-PST.3SG happy
'The boy to whom the girl gave a book was happy.'

(c). *O* *escritório* *em que* *o Pedro*
DET.M.SG office in REL DET.M.SG
trabalha *fica* *no centro* *da* *cidade.*
work-PRS.3SG be-PRS.3SG in-DET.M.SG of-DET.F.SG city
'The office where Pedro works is in the city center.'

Pied-Piping is considered a costly operation because it involves the movement of additional lexical material (the preposition) along with the *wh*-operator. It isn't available in all languages (as we will see later, it is not available in MC).

Moreover, even when a language displays this strategy, the speakers use other options instead. That is the case of English, where an alternative to PiP consists of leaving the preposition stranded after the verb that selects it:

(4) That's the house [(that, which) she lived **in]** last year.

This strategy, known as 'preposition stranding' (PS), is not available in EP nor in other Romance languages, but it is highly productive in Germanic languages like English and Swedish (Salles, 1997). The RC is formed with the movement of the relative pronoun (or its operator) and the *wh*-NP is extracted from the PP, leaving the preposition stranded. The stranded preposition must properly govern and Case-mark the empty category, which is the trace of the moved element.

Considering the late acquisition of PiP RCs in L1, Kenedy (2007) argues for a theory on the anti-naturality of PiP (APP). He claims that Prep RCs with PiP do not integrate the natural computational system in human languages, being acquired due to instruction and schooling[5]. As such, PiP RCs are not constrained by UG and are

[5] For example, Kenedy attributes to extra-linguistic factors the fact that PiP is much more productive in EP than in BP, as reported in the literature (see Alexandre, 2000). Under his view, this difference is a

antinatural. Since they are acquired through skills developed artificially, as a result of teaching and formal learning, these structures present a problem even for native adults, who hesitate in their production.

Looking at RCs from a purely syntactic perspective, not considering the data from L2 acquisition, Kenedy (2002, 2007) claims that P-Chop integrates the grammar of natural languages, contrary to PiP.

For Kenedy, PiP differs from the other relativization strategies available in human language (P-Chop, Resumption, and PS) regarding the (lack of) economy. According to him, all these structures entail movement, but PiP implies moving a heavier constituent. It implies the movement of the PP (that contains a DP as its complement), while P-Chop, Resumption, and PS only entail the movement of the DP. Avoiding heavy movement aligns with the Convergence Principle (Radford, 2004, p. 2016), according to which "a head which attracts a constituent containing a feature [F] attracts movement of the smallest accessible constituent containing [F] which leads to a convergent derivation" (Radford, 2004, p. 2016). Thus, PiP is a non-minimal derivation that should be blocked.

An analysis of RCs based on economy principles is appealing. However, Kenedy's proposal does not account for the fact that, at least in EP, there are contexts where PiP is in complementary distribution with the other non-standard relativization strategies (but excluding PS). In particular, P-Chop RCs are much more frequent with some verbs than with others, and native EP speakers seem to accept them more in specific contexts (see, for further details, Chapters 7 and 8).

Furthermore, the data presented by Perpiñán (2010) for Spanish indicate that PiP does not constitute a heavier burden in the comprehension of Prep RCs, for natives nor for L2ers. So, the idea of excluding PiP from the computational system of human languages seems excessive.

1.1.1. Derivation

The derivation proposed for PiP RCs in EP follows the HEA (see Chapter 2).

In the minimalist approach, the Numeration is composed of lexical items associated with their strings of formal features. Following Pesetsky & Torrego (2007, p. 2), I assume that there are features on lexical items that come from the lexicon unvalued,

consequence of the different percentages of population with mandatory schooling in Portugal and Brazil (Kenedy, 2008, p. 104).

receiving their value from a valued instance of the same feature. Nevertheless, other features come from the lexicon already valued. The unvalued features get their value as a consequence of the syntactic process of Agree.

I am also adopting the authors' proposal of feature sharing. Indeed, the uninterpretable/ interpretable distinction supposes that interpretable features make a semantic contribution to the derivation. Uninterpretable features need to be deleted to prevent the derivation from crashing. Under Chomsky's (2000, 2001) proposal, the deletion of *u*F occurs via Agree, an operation of feature assignment. Pesetsky & Torrego suggest that Agree should be understood as feature sharing, instead of as feature assignment, as in (5).

(5) Agree (feature sharing version)

(i) An unvalued feature F (a *probe*) on a head H at syntactic location α (F_α) scans its c-command domain for another instance of F (a *goal*) at location β (F_β) with which to agree.

(ii) Replace F_α with F_β, so that the same feature is present in both locations.

(Pesetsky & Torrego, 2007, p. 6)

In other words, when a goal valued for a given feature shares that feature with the correspondent one in an unvalued probe, the result is a valued F. The difference regarding Chomsky's version is that two instances of a given feature F share a link when valued and are accessible for other processes.

Moreover, Pesetsky & Torrego (2004/2007) expand the types of features possible in Chomsky's proposal, considering that lexical items can hold valued *u*F and unvalued *i*F. So, this proposal stipulates the existence of an additional pair of features not considered by Chomsky[6]:

(6) ***u*F *val* uninterpretable, valued** *i*F *val* interpretable, valued

*u*F [ ] uninterpretable, unvalued ***i*F [ ] interpretable, unvalued**

(Pesetsky & Torrego, 2007, p. 8***)***

[6] Chomsky (2001: 5) assumes the existence of a Valuation/Interpretability Biconditional:

(i) A feature F is uninterpretable iff F is unvalued.

Given that probes must be unvalued, in Pesetsky & Torrego's proposal, two types of features can act as probes: uninterpretable, unvalued features, and interpretable unvalued features.

This system makes it possible to account for *wh*-constructions in a more economical way. In Chomsky's approach, C must bear two different features: an uninterpretable unvalued *wh*-feature with an EPP property (*u*Wh$_{EPP}$ [ ]) that probes for a *wh*-goal and triggers movement; and a valued interpretable feature *i*Q, relevant for the interpretation of the clause, and identifying different types of *wh*-constructions (interrogatives, clefts, relatives, etc.). In Pesetsky & Torrego's perspective, one feature on C (interpretable but unvalued) acts as a probe. It gets the "relative" value from an uninterpretable valued counterpart on the *wh*-phrase[7]. As the authors acknowledge, their proposal is an "Agree account" of the "clause-typing" proposal of Cheng (1991). Like Pesetsky & Torrego, I assume that C^{o} holds only one feature responsible for triggering movement, but I consider that this is uninterpretable and unvalued *u*Wh[ ] since it is placed at a functional node, being verified and valued by a correspondent *i*Wh feature present in the *wh*-element.

In the cases where C supports successive cyclic movement, the authors consider that it holds an unvalued and uninterpretable feature (*u*Q[ ]). However, to distinguish C in complement clauses from C in RCs, I am assuming that, in the latter, C has a REL value which allows for the interpretation of the sentence as an RC.

The derivation of an RC formed with the PiP strategy in EP (7), adapting Pesetsky & Torrego (2004/2007), and following the HEA, is presented in (8)[8]. Accordingly, the head noun is external to the RC and moves mandatorily to NumP (Cinque, 1995). The relative CP occupies the position of Spec, nP. Inside it, C^{o} holds an *u*Wh unvalued feature and probes for an interpretable valued counterpart, targeting the PP, which carries an *i*Wh valued [REL] feature. Therefore, the PP moves to Spec, CP (establishing a Spec-head agree relation with C^{o}). In the case of prepositional RCs (as in 7), the relativizer is intransitive, meaning that it does not have a complement. It has the status of an e-type pronoun, setting the relation between the elements discursively.

[7] Despite Pesetsky & Torrego's proposal that this feature is *i*Q[ ], which can get different values ([interrogative], [relative], etc.), I will assume, instead, that the feature should be *i*Wh[ ], typing the sentence as a *wh*-structure.

[8] The details of the derivation that are superfluous for the representation of relative clauses are not provided.

(7) *o* *debate de* *que* *ele* *falou...*
DET.M.SG debate of REL 3SG speak.PST.3SG
'the debate about which he spoke…'

Stage 1 - Numeration

[$_{C}^{0}$ *u*Wh [ ], *i*Cat[DET]...]

[$_{D}^{0}$ que, *i*Wh [REL], *u*Cat[ ]]

[$_{P}^{0}$ de, *i*Case [Obl], uCat[ ]

[$_{NP}^{0}$ debate, *i*Cat[N], *i*Gen[Masc], *i*Nb[ ], *u*Case[ ]...]

[$_{DP}^{0}$ O *i*Cat[DET], *i*Nb[SG], *u*Gen[Masc]]

[$_{NP}^{0}$ ele, *i*Cat[N], *i*Gen[Masc], *i*Nb[SG], *u*Case[Nom]]

[$_{VP}^{0}$ falou, *i*Nb[SG], *i*Person[3rd]]

Stage 2 – Move [debate] to nP

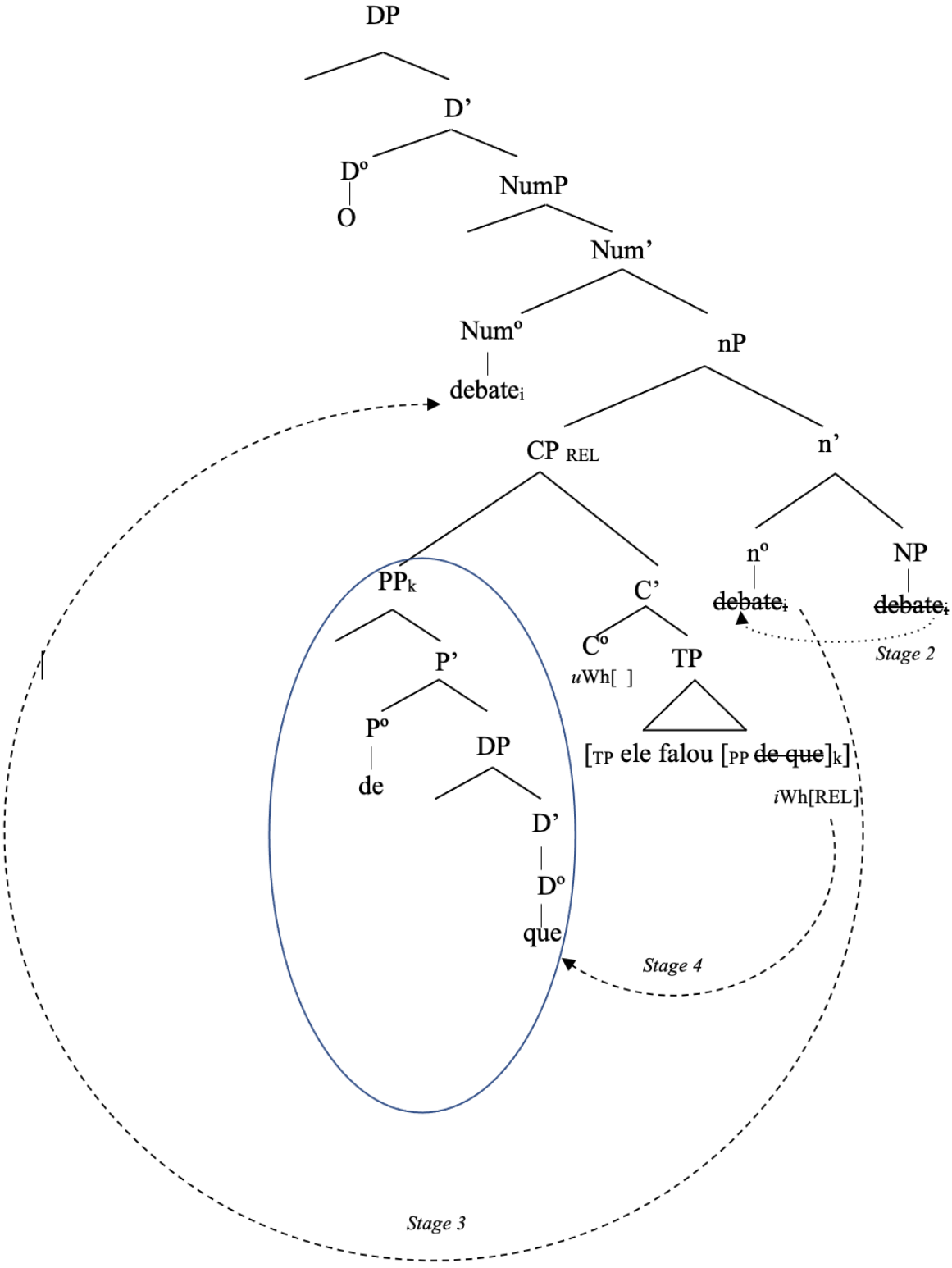
Stage 3 – Move [debate] to NumP (the NP moves to the functional projection to verify number features).

Stage 4– C^{o} probes for an element to value and verify its *u*Wh[ ] feature. The PP [de que] is targeted and move to Spec,CP. (Spec-Head agree)

probe	*goal*		
C^{o}	[$_{PP}$ de que]		
*u*Wh[ ]	~~*i*Wh[REL]~~	> > *i*Wh[REL]	~~*u*Wh[Rel]~~

The derivation is represented in (8).

(8)


DP
D'
Dº
O
NumP
Num'
Numº
debate_i
nP
CP REL
n'
PP_k
C'
nº
NP
debate_i
debate_i
Stage 2
Cº
uWh[ ]
TP
P'
Pº
de
DP
[TP ele falou [PP de que]_k]
iWh[REL]_i
D'
Dº
que
Stage 4
Stage 3

1.2. Locative strategy

In the present dissertation, I am considering an additional (non-)standard relativization strategy that is introduced by the relativizer *onde*, which is semantically marked as locative. Moreover, this strategy seems to be in complementary distribution with PiP in specific contexts. The results of the production task, which are presented in Chapter 7, led me to separate this strategy from the others.

As it has an inherent locative value, *onde* can only relativize inanimate PPs (arguments (9) or adjuncts (10)). The locative value may be concrete (cf. (9)a and (10) or abstract ((9)b).

(9) (a). *Os condóminos do último andar do prédio* ***onde***
DET.M.PL co-owners of last floor of-DET.M.SG building REL
vivo *têm as suas habitações recuadas,*
live-PRS.1SG have-PRS.3PL DET.F.PL Poss rooms backed
com terraço de cobertura à frente.
with terrace of roofing in-DET.F.SG front
'The co-owners of the last floor of the building where I live have their rooms backed, with a terrace with a roofing in the front.'
[CETEM Público, *par=ext1136696-clt-soc-94a-1*]

(b). *...o corredor italiano da Saeco/Levira*
DET.M.SG racer italian of-DET.F.SG Saco/Levira
é sempre candidato a ganhar qualquer etapa
be-PRS.3SG always candidate to win any stage
ou prémio nas provas ***onde*** ***participa.***
or prize in-DET.F.PL competitions REL participate
"The Italian racer from Saeco/Levira is always a candidate to win any stage or prize in the competitions where he participates."
[CETEM Público, *par=ext88089-des-96b-1*]

[standard target]

(c). *...nas* *provas* ***em que*** ***participa.***
in-DET.F.PL competitions in REL participate

(10) (a). *À* *hora* *de almoço,* *os* *dois agentes*
At-DET.F.SG time of lunch DET.M.PL two agents
estiveram *na* *escola e* *pediram* *autorização*
be-PST.3PL in-DET.F.SG school and ask-PST.3PL permission
ao *Conselho Directivo* *para* *revistarem* *o*
to-DET.M.SG School Board to search DET.M.SG
departamento ***onde*** ***trabalha*** *Marques da Silva.*
department REL work-PRS.3SG Marques da Silva

[standard target]

(b). *o* *departamento* ***em que*** ***trabalha*** *Marques da Silva.*
DET.M.SG department in REL work-PRS.3SG Marques da Silva
'At lunchtime, the two agents were at the school and asked for permission from the School Board to search the department where Marques da Silva works.'
[CETEM Público, *par=ext12793-des-94b-2*]

Interestingly, *onde* cannot be associated with the preposition *em*[9] 'in', while PiP with *que* is possible with all prepositions. When the verb selects the preposition *em* 'in,' the PP can be relativized with *onde* or with *em que/ no(a) qual*.

(11) (a). *O* *debate* ***onde*** *o* *Presidente*
DET.M.SG debate REL DET.M.SG President
participou *foi* *interessante.*
participate-PST.3SG be-PST.3SG interesting

[9] This led Móia (1992) to consider it as a prepositional pro-form in these contexts (cf. Chapter 2, section 4.2.3.).

(b). *O* *debate* ***em que/no qual*** *o* *Presidente*
DET.M.SG debate in REL/in REL.M.SG DET.M.SG President
participou *foi* *interessante.*
participate-PST.3SG be-PST.3SG interesting
"The debate where the President participated was interesting."

Without going into the phenomenon in depth (for economy reasons), I am assuming that, in these cases, the relativizer *onde* incorporates the preposition *em*.

All PPs relativized with *onde* have a locative nature. When the verb selects for other prepositions that are different from *em* 'in', the preposition may co-occur with *onde,* like in (12), where the preposition *de* 'from' selected by the verb *telefonar* 'call' precedes the relativizer:

(12) *O* *hotel* *[$_{OBL}$* ***de*** ***onde*** *o João* *telefonou]*
DET.M.SG hotel from REL DET.M.SG call-PST.3SG
sofreu *um* *ataque* *terrorista*.
suffer.PST.3SG DET.INDF.M.SG attack terrorist
'The hotel from where João called suffered a terrorist attack.'

However, as seen in Chapter 2, section 3.2.3., even when the matrix verb selects the prepositions *de* or *a*, the speakers tend to use *onde* without the preposition in the relativization, instead of the form conflated with the preposition (*aonde/donde*). In the example (13), repeated from Chapter 2, *aonde* would be the expected, since the verb *ir* selects the preposition *a*.

(13) *Há* *um* *sótão,* *a* *Campo de Ourique,*
There is DET.INDF.MSG attic nearby Campo de Ourique
onde ***vou*** *muitas vezes* *pensar* *que* *escrevo.*
REL go-PRS.1SG often think COMP write-PRS.1SG
'There is an attic, nearby Campo de Ourique, to where I often go to think I write.'

(CRPC, L0464)

Although this topic deserves a deeper analysis that is out of the scope of the present dissertation, native speakers tend to hypercorrect the coalescent forms with *onde*, given that they are associated to low level instruction. Given this, when the verb selects for the preposition *de* or *a* expressing the value of source or target, I believe that the fact that the preposition is omitted in the relativization does not necessarily mean that the original locative value is lost, but only that *onde* undergoes a simplification process possibly motivated by historical reasons. This aspect should be kept in mind in the analysis of the results of the oral production task, since I have subsumed the relativization with *onde* under a major 'locative' umbrella, not considering here the presence/absence of the preposition *de* with the verbs that select it.

The derivation proposed in the previous section for RCs produced with PiP adequately describes RCs produced with the locative strategy.

1.3. Preposition-Chopping

Preposition-Chopping (Alexandre, 2000, 2012; Arim, Ramilo & Freitas, 2004; Duarte, 2013; Tarallo, 1985, among others) is also referred to in the literature as Null-Preposition (Klein, 1993; Perpiñán, 2010, 2020, among others)[10], the latter designation being primarily adopted in the literature that deals with it in L2 acquisition. P-Chop takes place when the preposition heading the PP is omitted (or chopped) in the relativization (cf. the standard relativization with PiP in (14) and the non-standard relativization with P-Chop in (15)). The position where the preposition is expected is indicated with *Ø*.

(14) *O rapaz* $_i$ *[*$_{CP}$ ***de*** *que eu falei* ~~*rapaz*~~ $_i$ *]*
DET.M.SG boy about REL 1SG talk-PST.1SG
vem à festa.
come-PRS.3SG to-DET.F.SG party.
'The boy about whom I spoke comes to the party.'

[10] The chopping transformation rule was first mentioned by Ross (1967, p. 421 and following). Klein (1993) names the chopped preposition 'null-preposition', since she argues that a null preposition is present in the structure, as it is developed in Chapter 5.

(15) *O* *rapaz* $_i$ *[*$_{CP}$ ***[Ø]*** *que* *eu* *falei* ~~*rapaz*~~ $_i$*]*
DET.M.SG boy REL 1SG talk-PRF.1SG
vem *à* *festa.*
come-PRS.3SG to-DET.F.SG party.
'The boy that I spoke comes to the party'

P-Chopping RCs are preferentially introduced by *que*, which works as a neutral element, irrespective of the syntactic function of the relativized element (e.g., Peres & Móia, 1995, p. 276)[11].

This strategy is attested in EP diachronically. Duarte (2013) presents several examples of P-Chop in different periods of the history of the Portuguese language, since the Middle Ages (identified by Ø):

(16) *o* *dia Ø* *que* *eu* *tal* *pesar* *vi*
DET.M.SG day REL 1SG such grief see-PST.1SG
'the day (in) which I saw such grief'
(*Cancioneiro da Ajuda*, 10224; Huber, 1933, from Duarte 2013, p. 8)

(17) *de* *aquel* *tempo* *que* *vos* *vi* *e* *Ø*
from DEM.M.SG time REL you see-PST.1SG and
oí *falar*
listen-PST.1SG talk
'From that time (in) which I saw you and I listened to you speaking.'
(*Canc. d'el-rey D. Denis*, 880; Huber, 1933, from Duarte 2013, p. 8)

[11] To my knowledge, P-Chop relative clauses are only attested with the relativizer *que*. The data that I have collected among native EP speakers reinforce the hypothesis that they do not accept P-Chop relative clauses introduced by different relativizers (cf. Espírito Santo, 2020).

(18) *e* *avia* *tall* *força* *que* *em* *todo*
and have.PST.3SG such strength REL in every
homem *Ø* *que* *posesse* *a* *lamça* *nom*
man REL put-SBJ.PST.3SG DET.F.SG lance not
lhe *valia* *armadura* *que* *se* *lhe*
DAT.3SG worth-PST.3SG armor REL itself DAT.3SG
nom *quebrasse*
not break.SBJ.PST.3SG
'And he had such a strength that in every man (in) which he stuck his lance, there wasn't any armor capable of saving him.'

(*IV Livro de Linhagens*, Nunes, 1981, p. 24 (13th century); from Duarte 2013, p. 9)

(19) *porque* *olhando* *de* *mais* *longe* *nossas* *acçoens,*
because looking from more away our actions
entenderão *dellas,* *com* *a* *propria* *liberdade* *Ø*
understand-FUT.3PL of-3.PL with DET.F.SG own liberty
que *nòs* *entendemos* *agora* *as* *dos*
REL we understand now DET.F.PL from-DET.M.PL
passados.
former

'because, looking at our actions from a greater distance, they will learn from them with the same liberty (with) which we now understand the actions from our ancestors'

(D. Francisco Manuel de Mello (1660). *Epanáforas de Vária História Portuguesa. Edição semi-diplomática de E. Verdelho* [semi-diplomatic edition from E. Verdelho]: 8. Celga. 2007, from Duarte 2013, p. 9)

(20) *A* *«vocação»* *revelara-se* *bruscamente*
DET.F.SG talent reveal-PST.3SG-himself abruptly
um *dia Ø que* *ele* *descobriu* *no*
DET.INDF.M.SG day REL 3MSG find-PST.3SG in-DET.M.SG
sótão, entre *rimas* *de* *velhos* *alfarrábios,*
attic between rimes of old books
um *rolo* *manchado* *e* *antiquado* *de*
DET.INDF.M.SG roll stained and antique of
estampas *anatómicas*
drawings anatomic
'His talent revealed to himself abruptly, one day (in) which he found, in the attic, between old books of poetry, a stained and antique roll with anatomic prints.'
(Eça, *Os Maias*, p. 63. http://figaro.fis.uc.pt/queiros/obras/Maias/Maias_20001210.pdf, from Duarte 2013, p. 9)

Synchronically, this strategy is attested in other varieties of Portuguese, such as the Portuguese of São Tomé (21), the Portuguese from Cape Verde (22) and Brazilian Portuguese (23) (see Tarallo, 1985; Kato & Nunes, 2009; Gonçalves, 2010; Alexandre, Gonçalves & Hagemeijer, 2011; Alexandre & Hagemeijer, 2013, among others).

(21) *Tenho* *uma* *moça lá* *em casa Ø que não chamo*
Have-PRS.1SG one lady there in home REL not call-PRS.1SG
empregada *[~~a uma moça~~]*.
cleaner (to one lady)
'I have a girl there at my place that I do not call a waitress.'

(22) *Faz* *umas* *coisas Ø que* *eu* *não gosto [~~de umas coisas~~]*.
Do-PRS.3SG some things REL 1SG not like (of some things)
'He does some things that I don't like.'
(both from Alexandre, Gonçalves & Hagemeijer, 2011, p. 22)

(23) *Nova Iorque é uma cidade Ø que você respira*
New York be-PRS.3SG one city REL 2SG breathe
Gershwin [~~em Nova Iorque~~].
Gershwin (in New York)
'New York is a city where you breathe Gershwin.'

(Tarallo, 1985, p. 358)

In other languages this strategy is also attested, such as Haitian Creole, some varieties in northern Greece, colloquial Puerto Rican, colloquial Italian, Venezuelan Spanish, Catalan, Montreal French, and Quebecois, 17th French and Roviana (a language from the Salomon Islands) (Klein, 1993). P-Chop is common in contemporaneous spoken and written French (Duarte, 2013) as well. Sentence (24) illustrates how, in Roviana, the preposition in the declarative sentence (a) is omitted in the relativization (b). Sentence (25) exemplifies a P-Chop RC from Venezuelan Spanish.

(24) (a). *Eleponia Jone **koe** Mere sa buka.*
PST give Jone Prep Mere DET livro
'Jone gave the book to Mere.'

(b). *Sa barikalege Ø sapu ele ponia buka Jone .*
DET mulher REL PST give book Jone
'The woman (to) whom Jone gave the book'

(Klein, 1993, p. 128)

(25) *Puse mucho énfasis en las secciones Ø*
put-PST.1SG a lot enfasis in DET.F.PL sections
que se discuten los aspectos gramaticales
REL Pass. discuss-PRS.3PL DET.M.PL aspects grammatical
~~[en estas secciones]~~
'I have emphasized the sections (in) which the grammar aspects are discussed.'

(Flores, 1987, p. 2, from Klein, 1993, p. 191)

Nevertheless, the literature is not consensual regarding the relevance of P-Chop among the native speakers of EP. Peres & Móia (1995) consider it a rising strategy but still less common than resumption[12] (both being non-standard strategies which are less productive than PiP). Other works state that in contemporary EP P-Chop is more productive than resumption but less frequent than PiP (see Alexandre, 2000; Arim, Ramilo & Freitas 2004). However, there is more and more research claiming for the frequency of this strategy in EP, highlighting that P-Chop integrates the oral speech of EP speakers, irrespective of their level of instruction (Brito & Duarte, 2003, p. 667[13]; Santos, 2014; Aßmann & Rinke, 2017, among others).

When describing the preferential contexts for P-Chop, researchers do not follow a consistent approach. Some focus on the syntactic function of the relativized object (e.g., Veloso, 2013; Aßmann & Rinke, 2017), whereas others adopt a lexical approach, underscoring the verbs and prepositions with which P-Chop RCs are more frequent. For instance, Arim, Ramilo & Freitas (2004) emphasize, in concrete, the combinations *gostar de* 'like of', *falar de* 'talk about', *precisar de* 'need of', *necessitar de* 'need of' and *chamar a* 'call to', and the prepositions *em* 'in' and *a* 'to'.

The authors that follow the syntactic approach do not agree regarding the preferred contexts for P-Chop. Veloso (2013), for example, claims that P-Chop is more frequent in the relativization of temporal (26) or locative PPs (27), followed by the functional prepositions *de/*a, required by verbs such as *gostar* (28), *falar* (29) and *precisar* (30). The prepositions introducing indirect objects and oblique semantic objects would be less prone to drop.

[12] "…mas é indubitável que a primeira [resumptiva] é muito frequente e generalizada no discurso oral e a segunda [cortadora] está progressivamente a ganhar terreno, possivelmente por influência do português do Brasil [there is no doubt that the first strategy (resumption) is very common and generalized in the oral speech and that the second strategy (P-Chop) is progressively conquering space, possibly due to the influence of Brazilian Portuguese] (Peres & Móia, 1995, p. 291, the translation is mine).

[13] "Embora numa perspetiva purista ambas as estratégias [cortadora e resumptiva] sejam consideradas marginais, o que é certo é que a primeira (estratégia cortadora) faz actualmente parte do registo oral de falantes altamente escolarizados, o que permite supor que estamos perante uma tendência de mudança, mesmo no português europeu." [Although, from a purist perspective, both strategies [P-Chop and resumption] are considered as non-standard, the fact is that the first (P-Chop strategy) integrates the oral speech of highly instructed speakers, which allows us to suppose that we are facing a trend of change, even in European Portuguese."] (Brito & Duarte, 2003, p. 667, my translation)

(26) *Não havia dia nenhum [Ø] que*
there is no-PRF.3SG day any REL
não saísse cataplanas.
no come out-SBJ- PRS.3SG traditional dish
'There wasn't a day (in) which this specialty dish wasn't made.'

(Veloso, 2013, p. 2128)

(27) *Tens máquinas [Ø] que tu metes uma*
Have-PRS.2SG machines REL you put a
chave diária e aquilo faz tudo sozinha.
key daily and that thing do-PRS.3SG everything alone
'There are machines where you insert a daily key, and they work by themselves.'

(Veloso, 2013, p. 2128)

(28) *Porque há coisas na cultura americana [Ø]*
Because there is-inf things in the culture American
que eu realmente não gosto.
REL 1SG really do not like-PRS.1SG
'Because there are things in the American culture that I really don't like.'

(Veloso, 2013, p. 2129)

(29) *Os adolescentes não progridem através*
DET.M.PL teenagers not progress-PRS.3PL through
destas diferentes etapas de desenvolvimento
of-DEM.F.PL different stages of development
[Ø] que eu falei, separadamente.
REL 1-SG speak-PST.1SG separately
'Teenagers do not progress through these different stages of development (about) which I spoke, separately.'

(Veloso, 2013, p. 2129)

(30) *Nós* *temos* *obrigação* *e* *vamos* *ter*
1PL have-PRS.1PL obligation and will-PRS.1PL have
os *serviços* *[Ø]* *que* *o* *cliente*
DET.M.PL services REL DET.M.SG client
precisa.
need-PRS.3SG
'We have the obligation, and we will have the services that the client needs.'

(Veloso, 2013, p. 2129)

On the other hand, Aßmann & Rinke (2017, p. 31) have identified indirect object relativization as the most frequent target for P-Chop (97.4% of the sentences they analyzed), followed by verbal complements (93.1%), temporal PPs (76.8%), locative PPs (58.6%), and oblique PPs (51.5%). However, the authors treat oblique and verbal PPs separately without clarifying what criteria they take into consideration, which may have influenced their overall results[14]. Looking exclusively at the prepositions subcategorized by the verb, Aßmann & Rinke (2017) state that *de* and *a* are the most frequently omitted in the *corpora* analyzed[15].

Santos (2014) underscores that P-Chop occurs more often with complements than adjuncts. These data (*corpora*-driven) deserve our attention since they are at odds with what is assumed by, for instance, by Veloso (2013).

Santos (2014, pp. 37-38) also notes that nominal adjuncts and complements present a higher percentage of P-Chop than verbal adjuncts and complements. Of the four prepositions considered by this author (*em*, 'in'; *de*, 'of'; *a*, 'to'; *com*, 'with'), *de* is the most frequently chopped.

[14] Duarte (2003), for instance, includes all syntactic functions that are not central under the designation 'oblique': "Chamam-se oblíquas (abreviadamente OBL) às relações gramaticais que não são centrais. Têm relações gramaticais oblíquas tanto argumentos obrigatórios e opcionais do predicador verbal (i.e., complementos do verbo) como adjuntos (…) os constituintes com relações gramaticais oblíquas são tipicamente de natureza preposicional, adverbial ou frásica. [We call oblique (abbreviated OBL) the grammatical relations that are not central. Mandatory and optional arguments of the verbal predicator (that is, complements of the verb) and adjuncts may have oblique grammatical relations (…) the constituents that have oblique grammatical relations are typically prepositions, adverbs or sentences.] (Duarte in Mateus et al., 2003, p. 294) (the translation is mine).

[15] The authors consider verbal chopping cases that are usually classified as complement adjectival clauses, such as *ser/estar habituado* 'be used to', *estar ligado a* 'be connected to', *ser curioso por* 'be curious by'.

The existing research on P-Chop in EP shows that this is an intricated subject. The reasons behind the omission of the preposition or the contexts where it happens are not consensual.

Espírito Santo (2020) follows a lexical approach to identify the contexts more prone to P-Chop. This study includes experimental data collected from native speakers, testing the omission of the preposition with the verbs more commonly associated with P-Chop, but also with other verbs selecting the same prepositions[16] in simple declarative sentences and RCs. One of the goals is to see whether P-Chop in RCs is a consequence of an alteration in the theta-grid of some specific verbs, which could be changing their argument structure selecting a DP instead of a PP. The data show that some verbs may have complementary theta-grids (V + Prep + DP and V + DP)[17]. However, there is no clear link between the behavior of the preposition in simple declarative sentences and P-Chop RCs. For instance, *gostar de* is one of the verbs with which P-Chop RCs are more frequent, but the participants rejected the omission of the preposition with *gostar* in declarative sentences. This result is in line with Brito (1995), who claims that the existence of P-Chop RCs with certain verbs does not necessarily correlate with a change in the theta-grid of the same verbs.

Other combinations of V + Prep displaying P-Chop in RCs are identified in Espírito Santo (2020), such as *assistir a* 'watch (to)', *lembrar-se de* 'remember (of)', *recordar-se de* 'remember (of)', *esquecer-se de* 'forget (of)'. Nevertheless, Espírito Santo (2020) does not provide solid conclusions regarding the contexts where P-Chop tendentially occurs. Neither the absolute frequency of the sequence V + Prep nor the weak acoustic salience of the preposition are consistent criteria to predict the selection of P-Chop in the relativization (Espírito Santo, 2020, p. 168)[18]. P-Chop results of a combination of elements: the presence of a [-animate] head seems to favor it when the preposition is phonetically less salient.

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[16] The verbs tested were: *agradar a* 'please (to)', *assistir a* 'assist to', *esquecer-se de* 'forget (of)', *falar de* 'talk about', *gostar de* 'like (of)', *lembrar-se de* 'remember (of)', *necessitar (de)* 'need of', *precisar de* 'need (of)', *recordar-se de* 'remember (of).

[17] In the study I have developed with native speakers, this seems to be the case with the verbs *agradar* 'please', *precisar* 'need', *necessitar* 'need' and *falar* 'speak'.

[18] On the one hand, the absolute frequency of the combination V + Prep is not determinant. For instance, the combinatory *chegar a* has an absolute frequency in the language comparable to the other verbs tested, but P-Chop is not accepted by native speakers, perhaps due to the locative value of the preposition. On the other hand, the weak acoustic weight of the preposition does not explain P-Chop entirely: the combinations *agradar a* and *assistir a* select the same preposition and presented opposite results. Native speakers do not accept P-Chop RCs with *agradar a*, but P-Chop with *assistir a* is highly accepted. In this case, the fact that *agradar a* requires a complement Noun [+human] probably plays a role.

Interestingly, the data collected in Espírito Santo (2020, pp. 169-171) seem to indicate that the preference for P-Chop among native speakers may also relate to specific thematic roles associated with the PP selected. Studies developed in L2 acquisition of interrogatives show that the theta-role associated with the PP might contribute to L2 P-Chop (Jourdain, 1996).

1.3.1. Derivation

Several proposals are available for the derivation of P-Chop RCs in natural languages and L2 acquisition. The analyses of P-Chop in the ILG of L2ers are described with greater detail in Chapter 5. In the following section, I will briefly present the main proposals for the derivation of P-Chop RCs in Portuguese.

For Brazilian Portuguese (BP), Tarallo (1985, p. 362) states that P-Chop is the outcome of a diachronic change in the Brazilian pronominal system, "that started dropping pronouns in main clauses from the top of the syntactic scale down to the bottom, moving further down to relatives and other subordinates." (Tarallo, 1985, p. 362). Tarallo relates P-Chop to resumption, suggesting that this strategy involves the replacement of the RP by a "zero anaphora", which may occur due to the changes in the pronominal system (1985, p. 372). The preposition is deleted afterward. Likewise, Ingria (1981) relates preposition drop in Greek RCs to a previous rule of object dropping. As Klein notes (1993, p. 169), given that P-Chop may occur in varieties and languages without object-drop, such as Venezuelan Spanish, this proposal is not entirely adequate.

Kato (1993) and Kato & Nunes (2009) offer a different analysis. Kato (1993) considers that all restrictive RCs in BP are headed by relative pronouns[19]. According to Kato (1993), PiP, P-Chop, and resumption differ in the launching site from where the relative pronoun is moved and not in the grammatical resources employed. In standard RCs, *que* generates in the argument position (involving PiP when a PP is relativized). Non-standard RCs with resumption or P-Chop arise when *que* is generated in the left dislocation position, where it receives default Case.

Kato & Nunes (2009) updated Kato's (1993) uniform account of RCs to the HRA[20], assuming that RCs only involve relative pronouns and that the DP headed by a

[19] Rejecting the distinction between relative pronoun and complementizer, cf. Chapter 2, section 4.2.1.

[20] Kato (1993) suggests that *quem* 'who' retains an accusative specification that explains its ungrammaticality in SBJ and DO RCs. Kato & Nunes (2009) consider that it is problematic to assume that only the relative pronoun *quem* retains the accusative specification, whereas the interrogative pronoun *quem*

relative determiner may be generated in Spec, CP. In standard RCs, *que* is generated in the argument position ((31)a). In non-standard RCs, the DP is generated in the left dislocated position. Resumptive and P-Chop have a similar derivation. However, in resumptive RCs, the pronoun is overt ((31)b); in P-Chop RCs, the pronoun is null ((31)c). Although I am tackling the P-Chop strategy in this section, I present Kato & Nunes' (2009) proposal for all relativization strategies (31) to clarify the differences between them.

(31) (a). [[*o* *livro*]$_i$ [$_{CP}$[$_{PP}$ *de que*$_i$]$_k$ [$_{IP}$ *você* *precisa* t$_i$]]]
DEM.M.SG book of which 2SG need.PRS.3SG
'The book you need.'

(b). *Este* *é* [[*o* *livro*]$_i$ [$_{CP}$ *que*$_i$
DEM.M.SG be-PRS.3SG DET.M.SG book which
[$_{LD}$ t$_i$ [$_{IP}$ *você* *vai* *precisar* *dele*$_i$ *amanhã*]]]]
2SG will needing of it tomorrow
'This is the book that you're going to need it tomorrow.'

(c). *Este* *é* [[*o* *livro*]$_i$ [$_{CP}$ *que*$_i$
DEM.M.SG be-PRS.3SG DET.M.SG book which
[$_{LD}$ t$_i$ [$_{IP}$ *você estava* *precisando pro*$_i$]]]]
2SG be.PST.3SG needing
'This is the book that you needed.'

(all from Kato & Nunes, 2009, pp. 111-113)

Kato & Nunes (2009) argue that the chopped prepositions in P-Chop RCs are a realization of inherent Case. Since the insertion of prepositions for inherent Case realization purposes is subject to Last Resort, the preposition does not surface if the pronoun is null but surfaces when the pronoun is overt. According to the researchers, the analysis of the chopped prepositions as a realization of inherent Case also explains why P-Chop is

is compatible with any type of Case. As such, they argue that *quem* "reflects a *que*-to-*qui* type of effect, which arises when the NP complement of the invariant relative determiner *que* moves from its adjoined position, leaving two traces surrounding *que*." (Kato & Nunes, 2009, p. 113). When the configuration $t_{[+human]}$ *que* $t_{[+human]}$ does not arise, *quem* is ruled out.

lexically determined, since "inherent Case is tied to lexical/thematic selection" (Kato & Nunes, 2009, p. 110).

I believe this analysis presents some problems for EP. First, it ignores the fact that the relativizer *que* is analyzed differently in SBJ and DO RCs and in Prep RCs, regardless of this difference should be presented in terms of an (in)transitive *que* (Rinke & Aßmann, 2017) or assuming the distinction between COMP and relative pronoun proposed by Brito (1988/1991) (see Chap. 2, section 3.2.1. for this discussion). The plasticity and underspecification of *que*, which is not shared with the other *wh*-operators in EP, seems a compelling argument to consider the existence of homophonous forms.

Moreover, this analysis is grounded on the "salient productivity of left-dislocation structures" in Brazilian Portuguese, which is not necessarily equivalent in EP[21]. Besides, it is not clear why the relativizer is generated in the left dislocated position in non-standard relativization strategies and in the argument position in the standard relativization strategies.

For EP, Brito (1995) suggests a different approach. She rejects that P-Chop is a consequence of a change in the structure grid of the verbs[22] (as previously mentioned, the experimental data collected by Espírito Santo (2020) among native speakers support Brito's claim). According to Brito (1995), the element that introduces P-Chop RCs is a general marker of subordination, behaving as a COMP and not as a relative pronoun. The

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[21] Kato & Nunes (2009) provide examples of left dislocated constructions in BP whose grammaticality is questionable in EP:

(i) ? *esse* *livro,* *eu* *falei* *com* *um aluno* *que*
DET.M.SG book 1Sg speak-PST.1Sg with one student REL
estava *precisando* *ontem.*
be-PST.3Sg neeeding yesterday
'This book, I spoke to a person who needed it yesterday.'

(Kato & Nunes, 2009, p. 109)

On the other hand, the authors argue that PPs cannot be left dislocated in BP (cf. (ii)), but this is possible in EP (cf. (iii))

(ii) (**com) [a* *minha amiga]$_i$ você falou* *com ela$_i$ por telefone*
with DET.F.SG my friend 2Sg speak.PST.2Sg with her by telephone
'With my friend, you spoke with her on the telephone.'

(Kato & Nunes, 2009, p. 112)

(iii) *sobre este caso, o* *jornalista vai falar* *(dele)* *no* *jornal das oito.*
about Dem case DET.M.SG journalist go-PRS.3Sg speak in-the news at eight
'about this case, the reporter will talk in the evening news.'

[22] "... o mesmo tipo de falantes que produz relativas como as indicadas [cortadoras] respeita os requisitos de seleção categorial e temática noutros tipos de frases" [the same type of speakers that produces relative clauses as the ones mentioned [P-Chop] respects the categorial and thematic requirements in other types of sentences] (Brito, 1995, p. 76, my translation).

experimental data from native speakers rejecting P-Chop RCs with *quem* (cf. Espírito Santo, 2020) and the absence of P-Chop RCs with other relativizers, such as *o qual*, support that the element introducing P-Chop RCs is the same as the one introducing SBJ/DO RCs.

Following Brito (1995, pp. 76-77), the empty category in the interior of the relative sentence behaves like a variable, and it is interpreted in coreference to its head. A null relative operator intervenes, and there is operator movement, similar to what happens with SBJ and DO RCs in Brito's analysis. The COMP is base generated, and the predication rule ensures the co-indexation between the head and the empty category.

The diagnostic tests usually applied to identify movement support the assumption that the empty category inside P-Chop RCs behaves like a variable and not as a *pro*. The variable is sensitive to strong crossover effects (32), licenses parasitic gaps (33) and is sensitive to long movement, that is, to extraction from strong islands[23] (34).

(32) **Aqui está a rapariga$_i$ que a*
Here be-PRS.3SG DET.F.SG girl REL DET.F.SG
Joana$_i$ gosta t$_i$.
Joana like-PRS.3SG
'Here is the girl that Joana likes.'

(33) *Este é o autor$_i$ que eu*
Dem.M.SG be-PRS.3SG DET.M.SG author REL 1SG
gosto t_i apesar de nunca ter lido e_i
like-PRS.1SG although never have read
'This is the author that I like, although I have never read (it).'

[23] Syntactic islands are usually used to diagnose *wh*-movement, since these are domains from which is not possible to extract elements. Since they are particularly relevant for resumption, I reserve a more detailed debate about them to the following section (1.4.).

(34)

[Nominative Island]

(a). **Os livros$_i$ [que$_i$ falar t$_i$ se tornou*
DET.M.SG books REL talk Pass become-PST.3SG
difícil] estão aqui.
hard be-PRS.3PL here
Lit: 'The books of which talking about become hard are here.'

(b). **O modo$_i$ [que$_i$ comportar-se t$_i$ seria*
DET.M.SG way REL behave be-COND.PRS.3SG
inadequado] é o seguinte.
inadequate be-PRS.3SG DET.M.SG following
Lit: 'The way that behaving would be inadequate is the following.'

[Complex-NP Island]

(c). **A pessoa$_i$ [que$_i$ tu encontraste alguém*
DET.F.SG person REL 2SG find-PST.2SG someone
que falaria t$_i$] está doente.
REL talk-Cond.3SG be-PRS.3SG sick
Lit: 'The person that you would find someone who would talk about is sick.

(d).**O modo$_i$ [que$_i$ tu encontraste alguém que*
DET.M.SG way REL 2SG find-PST.2SG someone REL
arranjaria o carro t$_i$] agrada-me.
fix-Cond.2SG DET.M.SG car please-PRS.2SG-me
Lit: 'The way that you have found someone who would fix the car pleases me.'

[Adverbial Adjunct Island]

(e).**A pessoa$_i$ [que$_i$ tu partiste sem falares t$_i$]*
DET.F.SG person REL 2SG leave-PST.2SG without speak
adoeceu.
get sick-PST.3SG
Lit: 'The person that you left without speaking got sick.'

(f). *O modo$_i$ [que$_i$ ele foi despedido [depois de
DET.M.SG way REL 3SG get-PST.3SG fired after
se ter comportado t_i]] *foi* *indecente.*
Pass have behaved be-PST.3SG indecent
Lit: 'The way that he was fired after he had behaved was indecent.'

As I assuming that SBJ/DO RCs are introduced by a relative determiner, and not by a complementizer, my proposal diverges from Brito's. Nevertheless, like Brito (1995), I suppose that the element introducing P-Chop RCs is the same that is present in SBJ/DO RCs. Following the derivation proposed for SBJ and DO RCs (see Chapter 2, section 3.3.), the transitive determiner is generated in the argument base position, holding an empty NP as its complement. The empty NP establishes the relation with the external head NP through a coindexation relation. Cº holds a *u*Wh feature which is unvalued and probes for a *i*Wh valued feature, targeting the DP_{REL}. The DP_{REL} with the empty NP moves to Spec,CP. The reasons that motivate the DP movement, leaving the preposition behind, are supported by a Preposition incorporation mechanism (disclosed in Chapter 8, given that the study of the L2 acquisition of these structures provides evidence that helps to unravel this issue).

Following Pesetsky & Torrego (2004/2007), I suggest the derivation of the P-Chop RC (35) in (36).

(35) *O debate que ela falou*
DET debate REL 3SG.F speak-PST.3SG
'The debate that she talked (about).'

Stage 1 - Numeration

[$_{C}{}^{0}$ *u*Wh [ ], *i*Cat[DET]...]
[$_{DP}$ que, *i*Wh[REL], *u*Cat[ ]]
[$_{NP}$ e *u*Cat[ ]]
[$_{P}{}^{0}$ de, *i*Case [Obl], *u*Cat[ ]
[$_{NP}{}^{0}$ debate, *i*Cat[N], *i*Gen[Masc], *i*Nb[ ], *u*Case[ ]...]
[$_{DP}{}^{0}$ O *i*Cat[DET], *i*Nb[SG], *u*Gen[Masc]]
[$_{NP}{}^{0}$ ela, *i*Cat[N], *i*Gen[Masc], *i*Nb[SG], *u*Case[Nom]]
[$_{VP}{}^{0}$ falou, *i*Nb[SG], *i*Person[3rd]]

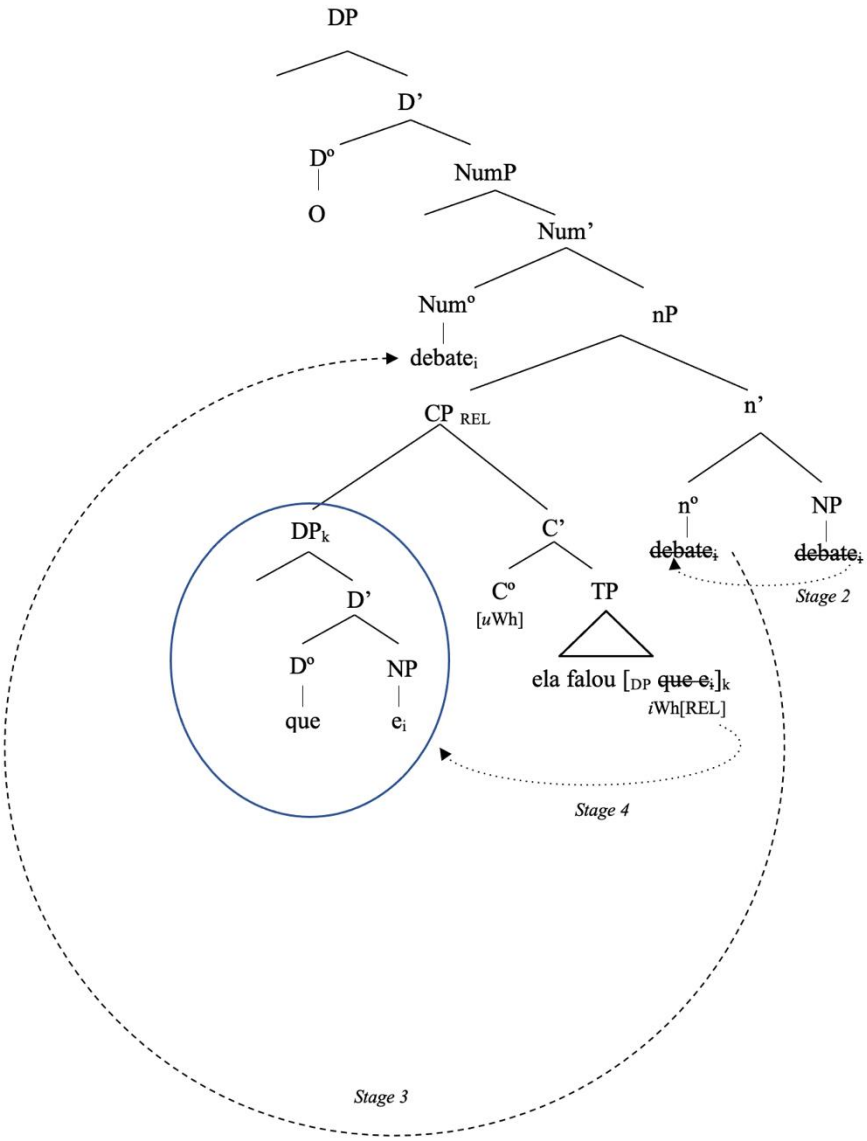
Stage 2 – Move [debate] to nº

Stage 3 – Move [debate] to NumP (movement to the functional projection to verify number features).

Stage 4– Cº probes for an element to value and verify its *u*Wh[ ] feature. The DP headed by *que* and holding an empty NP [que e_i] is targeted and moves to Spec,CP (Spec-Head agree).

probe	*goal*	
Cº	[$_{DP}$ que e_i]	
*u*Wh[ ]	*i*Wh[REL]	> ~~*u*Wh[ ]~~ > *i*Wh[REL]

(36)



1.4. Resumption

Before tackling into resumption, it is important to clarify the notion of syntactic "island", given its relevance for the discussion. The concept was introduced by Ross (1967) to refer to syntactic domains from which an element cannot be moved out.

It is possible to extract *wh*-phrases across certain domains, as in a matrix (37) and in an embedded clause (38):

(37) (a). This girl danced with Mark.

(b). Who$_i$ did $_{IP}$[this girl dance with ~~who~~$_i$]?

(38) (a). You said that this girl danced with Mark.

(b). Who$_i$ did $_{IP}$[you say $_{CP}$[~~who~~$_i$ that this girl danced with ~~who~~$_i$]?

(Belikova & White, 2009)

However, there are certain domains from which a *wh*-phrase cannot be moved. Among these are *wh*-islands (39); complex noun phrase islands ((40) and (41))[24]; subject islands (42); and adjunct islands (43)).

[*wh*-island]

(39) (a). I asked [$_{CP}$ what$_i$ John bought ~~what~~$_i$]

(b).*[$_{CP}$ How$_k$ do [$_{TP}$ you wonder [$_{CP}$ what$_i$ [$_{TP}$ John bought ~~what~~$_i$ ~~how~~$_k$]]]]

(adapted from Carnie, 2013, pp. 375–376)

[Complex NP Island]

(40) (a). You spread a rumor [that this girl danced with Mark].

(b). *Who did $_{IP}$[you spread $_{DP}$[a rumor $_{CP}$[~~who~~ that $_{IP}$[this girl danced with ~~who~~]]]]?

[24] Ross (1967, p. 127) claims that sentential complements of Nouns and relative clauses are subject to the Complex Noun Phrase Constraint (CNPC), which excludes movement from these domains:

(i) The Complex NP Constraint

No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation.

(41) (a). You met a girl [that danced with Mark].

(b). *Who did [you meet ~~who~~ [a girl that danced with ~~who~~]]?

[Subject Island]

(42) (a). [That this girl danced with Mark] annoyed you.

(b). *Who did [[that this girl danced with ~~who~~] [annoy you]]?

[Adjunct Island]

(43) (a). You met this girl [after she danced with Mark].

(b). *Who did [you meet this girl [after she danced with ~~who~~]]?

((41), (42) and (43) adapted from Belikova & White 2009, pp. 201-202)

Chomsky (1973) formulates the Subjacency condition, accounting for these limitations to movement in a principled way. This condition, first reviewed in 1977, indicates that *wh*-movement should be cyclic. It restrains movement by defining bounding nodes, stating that movement cannot cross more than one bounding node at a time. In sentences (37)b and (38)b, the *wh*-phrase crosses one bounding node at a time (IP and/or CP), whereas in syntactic islands the *wh*-phrase crosses two bounding nodes ((39)b to (43)b), resulting in ungrammaticality.

In its first formulation, in 1973, the Subjacency condition revealed itself too weak in some cases and too strong in others. On the one hand, it did not account for some instances of ungrammaticality; on the other hand, it banned grammatical sentences[25]. Moreover, it did not explain the differences among languages, since extractions from *wh*-islands are acceptable, for instance, in Italian, French, and Hebrew (Rizzi, 1982).

Chomsky (1986a) reviews the concept of bounding node and the Subjacency condition, stating that Subjacency constrains movement by forcing long distance dependencies to be formed with the combination of smaller movement steps. That is, *wh*-movement must target landing sites (Spec, CPs) that are "subjacent" to the gap position, where "subjacent" is defined as crossing fewer than two bounding nodes (any NP or IP that dominate the gap position).

[25] For instance, (i) is grammatical even though two bounding nodes have been crossed (DP and TP); whilst (ii) is ungrammatical, but only one bounding node was crossed:

(i) [Which city]$_i$ did $_{IP}$[you witness $_{DP}$[the destruction of t_i]]?

(ii) *[Which city]$_i$ did $_{IP}$[you visit Paris $_{PP}$[before t_i]]?

(Belikova & White, 2009, p. 207)

More recently, significant experimental research has been developed in order to explain the unacceptability of extractions from islands in native languages (see Perpiñán, 2020). The debate separates the "grammatical theories" (Philips, 2013) from the "resource-limitation" theories (e.g., Kluender, 1991, 1998; Kluender & Kutas, 1993; Hofmeister et al. 2013; Kluender & Giselman, 2013). The former explain the lack of acceptability of extractions from islands as a syntactic/grammatical phenomenon, while the latter consider it as the result of a processing failure/limitation, such as semantic anomaly, processing difficulties, etc.

Although RPs are mainly reported in island contexts (44), they can also occur when the head of the unbounded-dependency is distant enough from the tail (45) and to avoid that-trace effects (46).

(44) I'd like to meet the linguist that Mary couldn't remember if she had seen **him** before.

(Sells, 1984, p. 11)

(45) This is the girl that Peter said that John thinks that yesterday his mother had given some cakes to **her**.

(Erteschik-Shir, 1992, p. 89)

(46) This is a donkey that I don't know where **it** lives.

(Ferreira & Swets, 2005, p. 7)

In each of these situations, the sentence with the resumptive should be better than its gap counterpart[26].

Indeed, research on resumption distinguishes at least two different uses of RPs: the grammatical and the intrusive. In particular, Sells (1984) named RPs that rescue island configurations from ungrammaticality as "intrusive"[27] (1984, p. 17). RPs occurring outside island configurations are "real/true or grammatical resumptives" in Sell's terms. In the same line of reasoning, Aoun et. al. (2001) differentiated "true" and "apparent

[26] Asudeh (2012) classifies these sub-types of resumptives as 'island resumptives', complexity resumptives and COMP resumptives (respectively (44), (45) and (46) from the text).

[27] Ross (1967, pp. 432-434) was the first to note that RPs may obviate island effects in certain languages.

resumption," based on Lebanese Arabic evidence: RPs embedded in syntactic islands are "true" resumptives; resumptives occurring outside syntactic islands are "apparent".

In a nutshell, "intrusive" or "true resumption" takes place when RPs rescue syntactic islands from ungrammaticality[28]. On the contrary, "real/true/grammatical" or "apparent resumptives" occur in unbounded dependencies in different languages of the world, being fully grammatical. The differences in the use of the terminology by these researchers are schematized in Table 1.

Table 1

Differences in the terminology adopted by Sells (1984) and Aoun et al. (2001)

	RPs that are licensed options of the language	RPs that rescue island configurations
Sells (1984)	Real/ true/ grammatical	Intrusive
Aoun et al. (2001)	Apparent	True

This dissertation refers to grammatical RPs and intrusive RPs, following Sells' (1984) classification.

In RCs, EP displays intrusive RPs, whereas MC has grammatical RPs. I leave the description and discussion of grammatical resumption to Chapter 4, where I look at prepositional RCs in Chinese.

Intrusive resumptives are resumptive elements (not necessarily pronouns) inserted in a position where a gap would lead to ungrammaticality or processing difficulty[29]. When in island configurations they are typically described as a "last resort" mechanism that rescues islands from ungrammaticality (Rizzi, 1990; Shlonsky, 1992; Aoun, 2000; Aoun et al. 2001). These structures do not involve movement and the interpretation occurs via A'-binding.

Resumptive RCs in EP are introduced by the invariable *que* in the great majority of situations (Peres & Móia, 1995; Alexandre, 2000; Arim, Ramilo, & Freitas, 2004;

[28] Asudeh (2012) refers also to intrusive RPs as "processor resumptives".

[29] See, among others, Kroch (1981); Erteschik-Shir (1992); McDaniel & Cowart (1999); Alexopoulou & Keller (2002, 2007); Swets & Ferreira (2003); Ferreira & Swets (2005); Heestand et al. (2011).

Duarte, 2013; Veloso, 2013, among others). A resumptive element occupies the gap position, as illustrated in sentence (1)c, here repeated in (47):

(47) *Foi* *um* *debate*$_i$ *[[*$_{OBL}$ *que]*
be-PST.3SG DET.INDF.M.SG debate REL
valeu a pena *assistir* ***a*** ***ele****]].*
be-worth-PST.3SG watch to 3SG
'It was a debate that was worth watching.'

However, resumptive RCs can also be introduced by relative pronouns that have a morphophonological or abstract realization of their φ-features, as the examples in (48) illustrate:

(48) (a). *São* *comportamentos* [$_{CP}$ *para* ***os*** ***quais***
Be-PRS.3PL behaviors to DET.M.PL REL-M.PL
nós *não* ***lhes*** *encontrávamos* *resposta*].
1PL not CL-DAT find-PST.3PL answer
'These are behaviors to which we could not find an answer **to them**.'

(b). ... *acabar* *com* *toda* *essa,* *esse* *generozinho* *do*
…finish with all this this kind of-DET.M.SG
consultório privado [$_{CP}$ *em* ***que*** *o* *indivíduo* *leva*
clinic private in REL DET.M.SG person takes
para ***lá*** *o* *clientezinho* *que* *tem* *muito* ...]
to there DET.M.SG client REL has much
'…finish with all that, that kind of private practice in which the individual takes **there** the client that has much….'

(Alexandre, 2000, p. 73, footnote 56)

When the element in the gap position of resumptive RCs is variable in gender and number, the morphophonological realization of its φ-features (gender, person, and number) and Case is coreferent with the RC head (which acts as its antecedent). Resumptive elements can be strong pronouns, clitic pronouns, demonstratives, adverbs, or even the whole antecedent.

According to Alexandre (2000, p. 60), the resumptive strategy is the only option available for EP speakers when they need to form a RC inside a syntactic island, and resumption occurs outside and inside island contexts in EP. Therefore, apparently, resumption is not only a last resort operation.

1.4.1. Resumptive pronouns *outside* syntactic islands

In EP, resumption in RCs outside islands may occur in all syntactic positions. Alexandre (2000) attests examples of resumptive production from spontaneous (non-controlled) contexts, in structures that do not involve extraction from syntactic islands. According to the author, synchronically, this strategy is less productive than P-Chop, and it is more rejected by native speakers than P-Chop since it doubles the head of the RC inside it (Alexandre, 2000; 61 and 154). The following examples show that this strategy is available in subject (49), direct object (50), indirect object (51), and oblique position (52):

(49) *Temos lá, no meu ano,* ***rapazes*****$_i$** *[$_{CP}$ que*
Have-1PL there in-DetM.SG my year boys REL
[$_{SU}$ ***eles***]$_i$ *parecem atrasados mentais], quer dizer, não ...*
3PL look-3PL morons mean say no
"We have there, in my year, boys that they seem like a moron, I mean, don't..."

(50) *Não sou... eu não, sou antiga! Sou*
not be-PRS.1SG 1SG not be-PRS1SG old be-PRS1SG
antiga, então, há certas ***coisas*****$_i$** *[$_{CP}$ que não [$_{OD}$* ***as]$_i$***
old, so, be-PRS.3SG certain things REL not DO-Cl.F.PL
compreendo e ***as$_i$*** *acho bem].*
understand-PRS.1SG and DO-Cl.F.PL think-PRS.1SG well
"I am not... No, I am old! I am old, so there are certain things that I do not understand them and that I consider them well."

(51) *Existem* ***aqueles morros*** *aqueles$_i$ [$_{CP}$ que eles [$_{OI}$* ***lhes]$_i$***
Exist-PRS.3PL those hill-tops those REL 3PL DAT-Cl
chamam morros] e que nós cá chamaríamos ...
call-3PL hill-tops and REL 1PL here call-Cond.1PL
"There are those hill-tops, those that they call them hill-tops and that we here would call..."

(52) *Bem, há certas, não é, há*
Well exist-Prs-3SG certain not be-PRS.3SG exist-PRS.3SG
freguesas boas$_i$ *[$_{CP}$ que a gente já*
customers good REL DET.F.SG people already
está habituada a trabalhar [$_{OBL}$ ***com elas]$_i$*** *] ...*
be-PRS.3SG used to work with 3PL.F
"Well, there are certain good customers, isn't it, that we are already used to work with them."

(all from Alexandre, 2000, p. 63)

Furthermore, Veloso (2007, 2013) states that, outside syntactic islands, resumption occurs more often when a presentational verb selects the head noun, when the antecedent is indefinite, and when the RC refers to a real context, with the verb in the indicative mood (contrasting with the subjunctive). Following Veloso, coordinated RCs favor the presence of an RP in the second element of the coordination (Veloso, 2013, pp. 2130-2131).

A corpora-based study developed by Aßmann & Rinke (2017)[30] shows no RPs attested in syntactic islands contexts. Resumptive RCs (53) occur in 2.5% of the corpus (48 resumptive RCs out of 1913).

[30] The authors analyze data from two corpora: the Syntax-oriented Corpus of Portuguese Dialects (*Corpus Dialectal para o Estudo da Sintaxe, CORDIAL-SIN*), provided by the Centre of Linguistics of the University of Lisbon (Martins 2000- present), and the *Perfil Sociolinguístico da Fala Bracarense* (Braga), provided by the University of Minho (Barbosa 2011-2014). They collected 1913 relative clauses: 353 free relative clauses and 1560 headed relative clauses (specifically, 1279 restrictive and 281 appositive relative clauses).

(53) *Fui* *a* *um* *senhor* *que*
Go-PST.1SG to a gentleman REL
*chamam-**lhe*** *o* *Arlindo.*
call-PRS.3PL- DAT.3SG DET.M.SG Arlindo
'I went there to a gentleman whom they call Arlindo.' (ASCRP, Outeiro)
(Aßmann & Rinke, 2017, p. 30)

In the corpus considered by Aßmann & Rinke (2017), RPs occur in the relativization of different syntactic positions but preferentially with indirect objects. It is noteworthy that "there is no instance of a canonical IO-RS *without* resumption" (Aßmann & Rinke, 2017, p. 31). The authors also note that the percentage of resumption is not significantly different with indefinite (3.9%) and definite heads (2%).

1.4.2. Resumptive pronouns inside syntactic islands

In EP, a RC formed with an element extracted from a syntactic island is more acceptable with the resumptive strategy (see (54)-(56)b) than with the gap strategy (see (54)-(56)a) (Alexandre, 2000; Veloso, 2007, among others).

(54)

[Subject Island]

(a). **Os* *livros$_i$* *[$_{CP}$* *de* *que$_i$* *[falar* ~~*os livros$_i$]*~~
DET.M.PL books of REL talk ~~DET.M.PL books~~
se *tornou* *difícil]* *estão* *aqui.*
REFL become-PST.3SG hard be-PRS.3PL here

(b). *Os* *livros$_i$* *[$_{CP}$* *que* *[falar* ***deles$_i$]*** *se*
DET.M.PL books REL talk about-3PL REFL
tornou *difícil]* *estão* *aqui.*
become-PST.3PL hard be-PRS.3PL here
'The books that talk about them become hard are here.'

(55)

[Complex NP Island]

(a). *A pessoa$_i$ [$_{CP}$ com quem$_i$ tu encontraste
DET.F.SG person with REL 2SG find-PST.3SG
[alguém que falaria ~~a pessoa$_i$~~]]
someone REL speak-COND.3SG ~~DET.F.SG person~~
está doente.
be-PRS.3SG sick

(b). A pessoa$_i$ [$_{CP}$ que tu encontraste
DET.F.SG person REL 2SG find-PST.3SG
[alguém que falaria **com ela$_i$**]] está doente.
someone REL speak-COND.3SG with 3SG be-PRS.3SG sick.
'The person that you found someone that would speak with her is sick.'

(56)

[Adjunct Island]

(a). *A pessoa$_i$ [$_{CP}$ com quem$_i$ tu partiste
DET.F.SG person with REL 2SG leave-PST.2SG
[sem falares ~~a pessoa$_i$~~]] adoeceu.
without speak-INF.2SG ~~DET.F.SG person~~ get sick-PST.3SG

(b). A pessoa$_i$ [$_{CP}$ que tu partiste
DET.F.SG person REL 2SG leave-PST.2SG
[sem falares **com ela$_i$**]] adoeceu.
without speak-Inf.Infl.2SG with her get sick-PST.3SG
'The person with whom you left without speaking with her got sick'.

(all adapted from Alexandre, 2000, pp. 77-78).

The contrast between sentences (a) and (b) argues for considering that resumptive chains do not involve moved constituents but establish coreferential binding relations, as claimed by Alexandre (2000). She believes that this strategy is a way to avoid long and successively cyclic *wh*-movement and rescue the sentence from ungrammaticality (Alexandre, 2000, pp. 76-78). The author also notes that this strategy is less frequent with

direct object and subject RCs than with Prep RCs since the relativized material is heavier in the latter than in the former.

1.4.3. Derivation

Alexandre (2000) proposes that resumptive RCs in EP should be derived as a binding chain without movement.

As mentioned in the previous section, island configurations are accepted better in EP with an RP than with its gap counterpart. The improvement of resumptive RCs formed with elements extracted from a syntactic island supports the argument that resumptive chains do not involve moved constituents but establish coreferential binding relations.

Furthermore, she observes that RPs in EP license parasitic gaps (57), contrary to other languages[31], and are sensitive to strong crossover effects (58). This behavior argues for treating them as pronominal variables in the syntax before spell-out. Constructions containing pronominal variables (Cinque, 1990, p. 99) do not involve *wh*-movement,

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[31] In Spanish and Hebrew, resumptive RCs do not license parasitic gaps, as (ia.)/(ib.) illustrates for Spanish and (iia.)-(iic.) for Hebrew:

(i) a. *El reloj de que me hablaste,*
DET.M.SG watch of REL 1SG talk-PST.2SG
[$_{CP}$ *que lo han conseguido arreglar], ha quedado*
REL it can-PST.3.PL fix became-PST.3SG
muy bien.
verygood
'The watch about which you told me that they have managed to fix it is working very well.'

b. **El reloj de que me hablaste,*
DET.M.SG watch of REL 1SG talk-PST.2SG
[$_{CP}$ *que lo*$_i$ *han conseguido arreglar [sin mover* ***e***$_i$]],
REL it can-PST.3.PL fix without move
ha quedado muy bien.
became-PST.3SG very good
'The watch about which you told me that they have managed to fix it without moving is working very well.'

(ii) a. *elu ha-sfarim [$_{CP}$ še-Dan tiyek* t$_i$ otam$_i$
DEM.PL DET.M.PL-books that-Dan archive.PST.3SG 3PL
[*bli likro* otam$_i$]].
without read 3PL
'These are the books that Dan archived without reading.'

b. ?*elu ha-sfarim [$_{CP}$ še-Dan tiyek* t$_i$ *[bli likro* **e**$_i$]]
DEM.PL DET.M.PL-books that-Dan archive.PST.3SG without read

c. **elu ha-sfarim [$_{CP}$ še-Dan tiyek* t$_i$ otam$_i$
DEM.PL DET.M.PL-books that-Dan archive.PST.3SG 3PL
[*bli likro* e$_i$]].
without read

(Alexandre 2000, p. 70)

while structures that display pure variables are formed with *wh*-movement. Given that pronominal variables and pure variables are in complementary distribution, RPs are pronominal variables that occur in *wh*-constructions not involving *wh*-movement (Alexandre, 2000, pp. 71-72).

(57) (a). *Aqui* *tem* *uma* *carta*$_i$ *[*$_{CP}$ *que*
Here have-Imp.2SG DET. INDF.F.SG letter REL
eu agradecia *que* *fizesse* *o*
1SG thank-PST.3SG COMP.Decl do-SBJV.3SG DET.M.SG
favor *de* ***a***$_i$ *ler* *[sem* *comentar* e$_i$*]].*
favour of ***it*** read without coment
'Here you have a letter that I would appreciate if you read it without commenting.'

(b). *Esta* *é* *uma* *realidade*$_i$
DEM.F.SG be-PRS.3SG DET.INDF.F.SG reality
[$_{CP}$ *que* *não* *nos* *podemos* *dissociar*
REL not ourselves can-PRS.1.PL dissociate
dela$_i$ [depois de conhecermos *e*$_i$]].
of it after of know-INF.1.PL
'This is a reality that we cannot dissociate ourselves from it without knowing.'

(adapted from Alexandre 2000, pp. 70-71)

(58) **Aqui* *tem* *uma* *menina*$_i$
Here have-Imp.2SG DET.Indf.F.SG girl
[$_{CP}$ *que* *a* *Maria*$_i$ *agradecia*
REL DET.F.SG Maria thank-PST.3SG
o *favor* *de* *a*$_i$ *tratar].*
DET.M.SG favour of her treat
'Here you have a girl that Maria would appreciate the favor of treating her.'

(adapted from Alexandre 2000, p. 69)

Based on the fact that resumptive RCs occur mainly with *que*, Alexandre (2000) states that the different configuration of the CP allows distinguishing resumptive RCs from standard RCs and complement clauses. Since the CP head in resumptive RCs is [-Wh], it does not trigger movement[32].

Therefore, for the derivation of resumptive RCs, I am adapting Alexandre's (2000) proposal for EP, following the HEA, assuming that *que* is spelled out in Cº. C holds an uninterpretable, Wh feature (*u*Wh [REL]), since this is the type of C that supports successive cyclic *wh*-movement (Pesetsky & Torrego, 2007). A null operator is realized in Spec,CP, holding the predication relation between the external head and the RP inside the RC. When the N *debate* 'debate' moves to Numº, it forms a chain with Dº and presents itself as an appropriate antecedent for the RP. The referential connection is established, after Spell-Out, attributing the same index to the head noun and to the null operator, which transmits the same index to the tail of the binding chain. In other words, there is no movement internal to the RC, and the chain is insured via co-indexation, which is consistent with the fact that resumptive RCs are not as sensitive to island effects, and also with the hypothesis that these hold pronominal variables (not subject to movement).

Contrary to what happens with other RCs, *que* is base-generated and spelled out in Cº. The derivation of sentence (59) is presented in (60).

(59)	*O*	*debate$_i$ que*	*ela*	*falou*	*dele$_i$*
	DET	debate REL	3SG.F	speak-PST.3SG	of-3SG.M
	'The debate that she talked about it.'				

Stage 1 - Numeration

[$_{C}{}^{0}$ que *u*Wh [REL], *i*Cat[DET]...]

[$_{P}{}^{0}$ de, *i*Case [Obl], *u*Cat[ ]

[$_{NP}{}^{0}$ debate, *i*Cat[N], *i*Gen[Masc], *i*Nb[ ], *u*Case[ ]...]

[$_{DP}{}^{0}$ O *i*Cat[DET], *i*Nb[SG], *u*Gen[Masc]]

[$_{NP}{}^{0}$ ele, *i*Cat[N], *i*Gen[Masc], *i*Nb[SG], *u*Case[ ]]

[$_{NP}{}^{0}$ ela, *i*Cat[N], *i*Gen[Fem], *i*Nb[SG], *u*Case[Nom]]

[$_{VP}{}^{0}$ falou, *i*Nb[SG], *i*Person[3rd]]

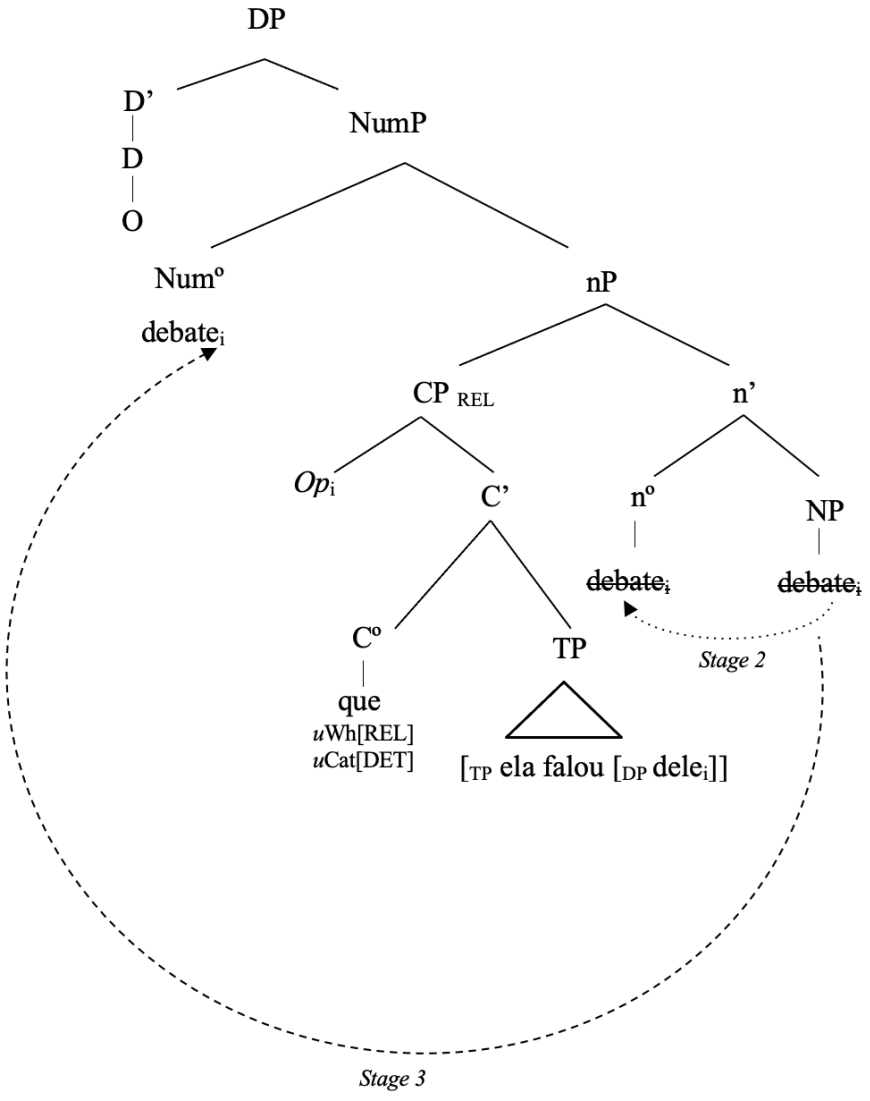
[32] The proposal of a base-generated operator in Spec, CP had already been made for the resumptive RCs in Irish by McCloskey (1990), and also for Portuguese by Faria & Duarte (1989) e Chimbutane (1996).

Stage 2 – Move N [debate] to nº

Stage 3 – Move N [debate] to NumP (the noun moves to the functional projection to verify number features).

The derivation is represented in (60):

(60)



1.4.4. The paradox of intrusive resumptives

The literature on 'intrusive' resumptives is far from consensual, claiming that these RPs improve island violations in English (for instance, Kroch, 1981; Chomsky, 1986a; Creswell, 2002). Under this view, a syntactic island with an RP seems to be better

than its gap counterpart ((61)a and (61)b), as it is claimed for Portuguese by Alexandre (2000), among others (see section 1.4.2.).

(61) (a). *Which man$_i$ did Jane say that [the parent who scolded __$_i$] forgave the babysitter's mistake?

(b). Which man$_i$ did Jane say that [the parent who scolded him$_i$] forgave the babysitter's mistake?

(example from Ackerman et al., 2018)

However, experimental data resorting to different methods, such as Likert scale judgment tests (Heestand, Xiang & Polinsky, 2011; Polinsky et al., 2013) and magnitude estimation tasks (Alexopoulou & Keller, 2007) cast doubt on the ability of RPs to rescue island configurations.

Zukowski & Larsen (2004) and Ferreira & Swets (2005) ask the participants to assess resumptive dependencies and conclude that they find them considerably worse than the grammatical controls. However, these studies do not compare resumptive dependencies with their gap counterparts, as noted by Polinsky (2013, p. 344).

Other studies tested the ability of RPs to rescue island configurations, comparing them with their gap counterparts, finding no relevant improvement on the grammaticality of extractions from islands with resumptives (see, among others, Alexopoulou & Keller, 2002, 2007; McDaniel & Cowart, 1999; Heestand et al. 2011, Polinsky et al., 2013). For instance, Alexopoulou & Keller (2007) show that RPs never improve island violations (both weak and strong); nevertheless, the RP appeared to increase acceptability in more embedded structures.

Although experimental data collected by different researchers and using several methods show that speakers do not accept RPs even in regions of processing difficulty, the puzzling fact is that speakers produce them. The contrast between production and acceptance is considered theoretically (Kroch, 1981; Prince, 1990) and confirmed experimentally (Swets & Ferreira, 2003; Ferreira & Swets, 2005). Prince (1990) attests sentences with RPs in spontaneous non-controlled production, similar to the ones identified in EP by Alexandre (2000), even in structures that are not particularly complex and that could well survive without the pronoun.

(62) (a). You get a rack that the bike will sit on **it**. (Prince, 1990: (15d))

(b). I have a friend who **she** does all the platters. (Prince, 1990: (4c))

(from Asudeh, 2012, p. 43)

The inserted element may be a non-coreferential pronoun ((63)a) or a full NP presenting a definite description (63)b) (Kroch, 1981).

(63) (a). I have a manager, Joe Scandolo, who **we've** been together over twenty years.

(b). He's got this lifelong friend who he takes money from the parish to give to **this lifelong friend**. (Prince, 1990 (34b))

(from Asudeh, 2012, p. 43 and p. 285)

Sentences like these are considered "further evidence that the RPs are discourse pronouns, since they can be substituted with elements that cannot be bound" (Asudeh, 2012, p. 285).

The production of intrusive RPs is also identified under controlled circumstances in English (Swets & Ferreira, 2003; Ferreira & Swets, 2005), with and without time pressure. Researchers aim at verifying if the absence of time pressure gives more time to the participants to plan the utterance avoiding the RP. Nevertheless, the participants mainly produced sentences with RPs within syntactic islands, regardless of the time pressure.

Beltrama & Xiang (2016) propose that the paradox of RPs is a result of the type of the task used. They looked at the rescuing effect of RPs in Italian and English, comparing the results of an acceptability judgement task and a comprehension task. RPs did show an amelioration effect when the participants were asked about the comprehension of the sentences, but not when the question was about the grammaticality. The authors concluded that the rescuing effect of RPs is not at the level of grammaticality/ acceptability, but at the level of sentence comprehension.

Different analyses have been proposed for the type of relationship RPs involve. Considering the results obtained in their experimental task, Polinksy et al. (2013) claim that resumption never solves a problem in the derivation and that RPs are only grammatical if they occur in a construction that does not involve movement. Under this

view, RPs in English are not considered a strategy to establish an A'-dependency. Instead, they are seen as a mechanism establishing a coreferential relationship that obeys discourse-pragmatics and not syntax. In the authors' words, RPs in English are a "(co)reference tracking device," similar to a cross-sentential anaphora, "a way for speakers to maintain coreference and add more information without breaking the production chain"[33] (Polinsky et al. 2013, p. 357). Beltrama & Xiang (2016, p. 17) also claim that RPs are anaphorically linked to their antecedents and that they aid parsing "in very particular and yet principled ways". RPs facilitate the comprehension of the sentence, by ensuring that the sentence is locally well formed. Besides, in complex structures, RPs provide clues to the identification of the tail of a non-local dependency. The fact that RPs provide morphological explicit clues (such as number, gender, etc.) contributes to guide the retrieval of the appropriate antecedent, despite the intervening islands boundaries (Clemens et al., 2013, cited in Beltrama & Xiang, 2016).

Like Polinsky et al. (2013), McDaniel & Cowart (1999) propose that RPs do not repair movement violations, but they suggest that intrusive RPs are spelled-out traces, i.e., morphological manifestations of traces that remain in the derivation when the derivation with the trace is not possible due to syntactic constraints. According to their account, "RPs are predicted to save only violations of conditions on representation; they should not affect the status of violations of conditions on the derivation (i.e., on movement itself)" (McDaniel & Cowart, 1999, pp. B17-B18). On the other hand, based on opposite results obtained with an off-line task, Ackerman et al. (2018) conclude that English native speakers prefer RPs in island contexts.

Within a comprehension-based approach, Chacón (2019) attempts to resolve the intrusive resumption paradox by proposing a comprehension account of resumption, according to which resumption "is constructed when a comprehender has failed to maintain an expectation of a gap" (Chacón, 2019, pp. 1-2). Under this view, speakers prefer to resolve a filler-gap dependency with a gap than with an RP. This representation needs to be committed in the working memory over time. Suppose the working memory becomes overloaded (as it happens while processing complex syntactic constructions, such as island configurations), and the expectation of the gap is lost. In that case, an RP

[33] As noted by the authors, the understanding that the production of RPs is motivated by performance pressures, whenever the syntactic structure does not allow the speaker to create a syntactic dependency between a given antecedent in the discourse and the upcoming position of the relevant argument, is equivalent to Shlonsky's "last resort" view. That is, speakers use resumption when they have no other way to save the derivation from crashing.

may help the speaker recover the intended interpretation through a regular coreference relation.

2. Conclusion and synthesis

In the current chapter, I have looked at prepositional RCs in EP, considering different relativization strategies. A literature review and a proposal for a syntactic derivation was presented for each case.

I argue that the HEA, according to which the head noun antecedent is external to the RC, can account for the RCs that are the product of the three relativization strategies available in EP.

PiP RCs involve *wh*-movement of the relativized PP to Spec, CP. They comprise a relative determiner *que*, which is intransitive, in Rinke & Aßmann's (2017) vein. Cº holds an *u*Wh[ ] feature that needs to be valued and verified, triggering PP movement.

P-Chop RCs involve a transitive relative determiner *que*, which can be also found in SBJ and DO RCs. In this case, *que* entails an empty noun as its complement and only the DP moves to Spec,CP, because of a preposition incorporation mechanism (further explained in Chap. 8).

Finally, resumptive RCs are analyzed as involving a resumptive chain not derived by movement. The RP takes part of the Numeration and the relativized element (the head) is moved to Numº establishing a relation with the null operator that stands in Spec,CP and bears the same referential index as the RP, in the tail of the chain.

The differences between the three relativization strategies available for prepositional RCs in EP are synthetized in Table 2.

Table 2

Summary of relativization strategies and Cº configuration in EP Prep RCs

Relativization strategy	*Wh*-movement	Moved element	Relativizer	Cº configuration
Pied-Piping	Yes	PP	Wh-operators	*u*Wh[ ], *i*Cat[DET]
P-Chop	Yes	DP	[*que* e]	*u*Wh[ ], *i*Cat[DET]
Resumption	No	-	*que* generated in Cº	*que*, *u*Wh[REL], *u*Cat[DET]

In the following chapter, I look closer at prepositional RCs in MC.

Chapter 4

Prepositional Relative Clauses in Mandarin Chinese

In the current chapter, I am addressing the properties of prepositional RCs in MC. I start by tackling the questions regarding prepositions in Chinese since such a category is not consensual among researchers (section 1). Additionally, the literature does not agree regarding the need to distinguish PP adjuncts from PP arguments in Chinese. Such debate is briefly sketched in section 2. Section 3 addresses the possibility of omitting the preposition in Chinese matrix clauses, and section 4 describes adjunct prepositional RCs with a gap and adjunct prepositional RCs with an overt preposition and an RP are addressed.

For the sake of the current discussion, I consider that RCs with an overt preposition and an RP are the most relevant. Therefore, grammatical resumptive RCs in MC are described in section 5, considering the data from other languages that also display grammatical RPs.

The existence of *wh*-movement in prepositional RCs is not consensual as well. Section 6 presents different views of the phenomenon. Some researchers assume that the computation of prep RCs involves *wh*-movement, while others do not, and the assumptions about the existence of *wh*-movement are determinant for the analyses that these researchers adopt for RCs. Finally, section 8 focuses on the different proposals to analyze prepositional RCs. I presenr the different analyses and the main arguments that were argued to support them, so that the choice for the analysis adopted in the current dissertation is clearly justified.

1. Prepositions in Chinese[1]

There are very different approaches to the study of prepositions in MC. Some researchers highlight the need to distinguish between verbs and prepositions (Djamouri & Paul, 1997; Paul, 2009). Others consider that prepositions are hybrid in nature. For instance, Li & Thompson (1981) propose analyzing MC prepositions as ‘coverbs’. Huang et al. (2009) suggest that prepositions are categorically dual and hold a bundle of [-Noun] [+ Verb] features. Some authors go further and even question the existence of prepositions in Chinese (Cheng & Sybesma, 2015).

[1] I acknowledge the contributions of W. Paul and V. Pan, via personal communication, which were essential to clarify this section.

Paul (2015) argues that this vagueness in the category status of prepositions may be explained by several cases of homophony between verbs and prepositions in MC. Indeed, some prepositions have the same form and sound (and tone) as Chinese verbs (see Paul, 2015, pp. 56-57 for a list of these words). To reinforce the existence of prepositions as an autonomous category, Paul (2015) notes that, in an inventory of more than thirty prepositions, at least eleven particles are exclusively prepositions, because they do not have an homophonous verb[2] and it is safe, thus, to consider them as a separate class.

Besides, the authors note that prepositions are incompatible with aspectual marks and cannot function as predicates (Chao, 1968; Paul, 2015, a.o.).

Furthermore, contrary to verbs, prepositions cannot have a null complement[3]. In other words, it is not possible to strand a preposition in Mandarin. Indeed, when a verb selects a PP, the NP complement of the preposition cannot be extracted (as illustrated in (1) and (2)). In (1) the verb *mài*, 'sell' selects two arguments: an NP theme (*yi ge shoubiao*, 'one watch') and a PP goal (*gei Meilii*, 'to Mary'). On the other hand, the ungrammaticality of (2) shows that the noun selected by the preposition cannot be topicalized and the preposition cannot stay stranded.

(1) *Wo* *mai-le* *yi ge* *shoubiao* *gei* *Meilii*
1SG sell-PST one-Cl watch to Mary
'I sold a watch to Mary'.

---

[2] The eleven prepositions that are exclusive according to Paul et. al (2015, p. 55) are:
1) *chúle* 'except for, besides, in addition';
2) *cóng* 'from, by way of';
3) *duìyú* 'with regard to, of';
4) *guānyú* 'about, concerning, with regard to';
5) *hé* '(together) with';
6) *wàng* 'to, towards';
7) *wèi* 'for (the sake of), on behalf of';
8) *wèile* 'because of, for (the sake of), on behalf of; in order to';
9) *yīnwei* 'because of, on account of; because';
10) *zhìyú* 'as for, as to';
11) *zìcóng* 'since'.

[3] The fact that the object of a preposition must be expressed contrasts with the possibility of omitting a direct object in Mandarin Chinese. Below are two examples of a null object:

(i) *Zhangsan renshi* [*e*]
Zhangsan know
'Zhangsan knows him/her/them/you...'

(ii) *Zhangsan shuo Lisi bu renshi* [*e*]
Zhangsan say Lisi not know
Zhangsan said that Lisi does not know him/her/them/you...'

(Examples from Huang, 1991, p. 57)

(2) *Meili$_i$ wo mài-le yi ge shoubiao gei [e]$_i$
Mary 1SG sell-PST one Cl watch to
(Example adapted from Paul 2015, p. 76)

The impossibility of stranding a preposition was observed in relativization and topicalization by Huang (1982a). Paul (2015) notes that Huang's (1982a) examples are all preverbal and shows that post-verbal PPs also disallow P- stranding. Wen (2020, p. 83) extends Paul's conclusion as a general ban on preposition stranding in MC. In other words, when the complement of P^o is moved and the preposition remains *in situ*, an RP must appear as an overt argument in order to yield grammatical sentences.

In MC prepositions may appear before the noun ((3)a), after the noun (in this case, being postpositions as in (3)b)), and before and after the noun (acting as circumvent-positions, as (3)c) illustrates):

(3) (a). *Mary gang [$_{PP}$ **cong** jiaoshi] hui bangongshi.
Mary just from classroom come-back office
'Mary just came back to the office from the classroom.'

(b). *Mary bu néng [$_{PP}$ xíngdong **shàng**] zhichí yóuxíng*.
Mary not can action on support parade
'Mary cannot support the parade in action.'

(c). *Mary [$_{PP}$ **zái** bangongshi **li**] pigai shijuàn*
Mary at office in mark exam-paper
'Mary marked exam-paper at the office.'
(Wen, 2020, p. 81).

2. Prepositional Phrases

Like in EP, in MC, PPs can appear before or after a VP inside a clause. Following Wen (2020, p. 85), in MC, preverbal PPs can only modify VPs, and post-verbal PPs can modify VPs or NPs if the VPs have an overt complement. PPs may have different functions and meanings, depending on the position they occupy. So, PPs are not interchangeable (see (4)a and (4)b).

(4) (a). *Ta [$_{PP}$ **zai** caochang **shang**] pao-le ji-quan.*
3SG in playground on run-PST several-circle

(b). *$^{???}$Ta pao-le ji-quan [$_{PP}$ **zai** caochang **shang**]*
3SG run-PST several-circle in playground on
'There are several circles in the ground that were caused by his running.'
(Wen, 2020, p. 85)

Some researchers argue that PP adjuncts can only occur in preverbal positions (Huang et al., 2009; Djamouri et al., 2013; Paul, 2015; a.o.). For instance, Paul claims that the preverbal position is the default position for all phrases with an adverbial function: adverbs (5), adjunct PPs (6), PostPs (7) and adverbial phrases (8) (Paul, 2015, p. 60)[4].

(5) *Tā [$_{NP}$ xingqitiān] [$_{vP}$ [$_{adverb}$ **zǐzǐxixide**] [$_{vP}$ zhenglǐ fángjiān]]]*
3SG Sunday carefully tidy room
'He carefully tidies up his room on Sundays.'

(6) *Wo [$_{vP}$ [$_{PP}$ **cóng** nóngcūn] [$_{vP}$ huílái]]*
1SG from village return
'I return from the village.'

(7) *Wo [$_{vP}$ [$_{PostP}$ chúxi **yǐqián**] [$_{vP}$ yào huí jiā]]*
1SG New.Year's eve before need return home
'I need to go home before New Year's eve.'

(8) *Tā [$_{vP}$ [$_{adjunct\ clause}$* pro ***da*** ***dianhua***] *jiao che]]*
3SG strike phone call car
'He called a cab using the phone.'
(all from Paul, 2015, p. 60)

[4]According to Paul (2015, p. 21), Modern Chinese contrasts with pre-archaic Chinese since in Modern Chinese 'adverbs and phrasal adjuncts are totally excluded from the postverbal position' and 'have to precede the verb'.

Wen (2020) also suggests that when a PP acts as a verbal modifier, it cannot follow the verb (see (9)a-b).

(9) (a). **Ta chang ge [PP **gei** ta pengyou]*
3SG sing song to 3SG friend

(b). *Ta **[gei** ta pengyou] chang ge.*
3SG to 3SG friend sing song
'He sang songs to his friends.'

(Wen, 2020, pp. 87-88)

The post-verbal position[5] is reserved to arguments selected by the verb. In the examples (10)-(12), the verb selects for an NP theme and a PP goal, that needs to be post-verbal. Furthermore, following Paul, the set of prepositions acceptable in post-verbal position is confined to *gei* 'to, for' (10), *zài* 'at, in' (11), and *dào* 'to, until' (12) (2015, pp. 75-76):

(10) (a). *Tā mài-le yi ge shoubiao [PP gei Meili]*
3SG sell-PST 1 Cl watch to Mary
'He sold a watch to Mary.'

(b). *Tā da - le jǐ ci diànhuà [PP gei péngyou]*
3SG strike-PST several time phone to - friend
'She phoned her friends several times.'

[5] According to Paul (2015), the post-verbal position is reserved to arguments or 'quasi' arguments depending on the verb's aktionsart, as in (ii) and (iii) (Huang, 1982b; Li, 1985, 1990; Paul, 1988; Tang, 1990). In the double object construction, the indirect object and the DO both follow the verb (iv).

(i) *Tā dǎsǎo fángzi*
3SG sweep room
'She has cleaned the room.'

(ii) *Tā yě děng-le [QP bàn ge xiǎoshí]*
3SG also wait-PERF half Cl hour
'He also waited for half an hour.'

(iii) *Tā yǐjīng lái-le [QP wǔ cì] le*
3SG already come-PST 5 time SFP
'He has already come five times.'

(iv) *Tā sòng -le [NP háizi] [NP hěn duō qián]*
3SG give-PST childvery much money
'He gave the child a lot of money.'

(All from Paul, 2015, p. 21)

(b). *Tā* *ji - le* *yi ge bāoguo [$_{PP}$ gei Meili]*
3SG send-PST 1 Cl parcel to - Mary
'He sent a parcel to Mary.'

(11) (a). *Nǐ* *xie* *jǐ* *ge zi* *[$_{PP}$ zài benzi shàng]*
2SG write several Cl character in notebook on
'Write down several characters into your notebook.'

(b). *Tā diū -le shénme [$_{PP}$ zài chē shàng]*?
3SG lose-PST what in car on
'What did he leave in the car?

(12) (a). *Tā da - le* *jǐ ci* *diànhuà [$_{PP}$ dào bàngōngshi]*
3SG strike-PST several time phone to office
'She called the office several times.'

(b). *Tā* *ji - le* *yi ge* *bāoguo [$_{PP}$ dào Shànghai]*
3SG send-PST 1 Cl parcel to Shanghai
'He sent a parcel to Shanghai.'

(All adapted from Paul, 2015, pp. 75-76)

Additional evidence to consider that post-verbal PPs are arguments is presented by the possibility of incorporating a preposition within the verb (as *zài* 'in' in (13)). Indeed, Li & Thompson (1973); Huang (1982) and Paul (2008) claim that post-verbal PPs may be NPs, because when the preposition follows the verb, it may incorporate it. In this case, the combination of the two elements (verb and preposition) is analyzed as a verbal compound:

(13) *Ta* *manman-de* *[$_{VP}$ zou [**zai**] – (le)* *[$_{PostP}$ caodi shang]]*
3SG slowly-DE walk on PST grass above
'He walked slowly on the grass.'

(Wen, 2020, p. 88)

Djamouri, Paul & Whitman (2013, ap. Wen, 2020) consider that in *zou-zai* the preposition *zai* can be part of the verb *zou* 'walk', functioning as a verbal compound. Note that the preposition *zai* can be separated from the remaining PostP *caodi shang* 'grass above' by the aspectual marker *le,* reinforcing that it is a verbal compound. Moreover, the intervention of the aspectual marker is only possible with complements of the verb.

Finally, Wen (2020) proposes that A-*not*-A questions in Mandarin provide further evidence to treat PP arguments and adjuncts separately. When a PP is an adjunct, the preposition can be duplicated in a A-*not*-A pattern ((14)a). If the PP is a complement, it is not possible to do so ((14)b).

(14) (a). *Mary* $[_{PP}$ ***zài*** *méi* ***zài*** *jia] shang gangqinke?*
Mary at not at home have piano-lesson
'Does Mary have piano lessons at home?'

(b). * *Mary dai* $[_{PP}$ ***zài*** *méi* ***zài*** *bangongshi]?*
Mary stay in not in office
Intended: 'Does Mary stay in office?'

(Wen, 2020, pp. 89-90)

However, the above does not prevent argument PPs from occurring before the verb. For instance, the PP headed by *dui* occurring before the verb can introduce an argument, depending on the verb.

Despite the evidence earlier presented, the analysis of post-verbal PPs as arguments is not consensual. Given the impossibility of establishing an absolute boundary between an argument PP and an adjunct PP, some researchers, like V. J. Pan (personal communication), tend to analyze PPs uniformly as adjuncts.

For the sake of exposition, I will consider here the relativization of all PPs that are overtly realized with a preposition, leaving aside the debate on whether these should be regarded as arguments or adjuncts.

3. Omission of the preposition

Some prepositions can be optionally omitted in MC matrix clauses:

(15) (a). *Mary zhu **(zai)** xuexiao-de sushe.*
Mary live in school-POSS dormitory
'Mary lives in school dormitory.'

(b). *Na-ben shu, Lisa la **(zai)** túshuguan le.*
that-Cl book Lisa leave in library PST
'That book, Lisa left in the library.'

(Wen, 2020, pp. 91-92)

Wen (2020, pp. 91-92) extends Collin's (2007)[6] analysis of null preposition in English to MC to derive these structures. The author argues that, when the preposition is omitted on the surface, a covert preposition is present in the underlying structure (16).

(16) *Na-ben shu, Lisa là [$_{PP}$ túshuguan [ZÀI [t]]] le.*
that-Cl book Lisa leave library on PST
'That book, Lisa left in the library.'

The preposition combines with the following noun (*túshuguan* 'library') and gets deleted when the Spec position is occupied.

[6] Collin (2007) suggests that, in English, nominals such as *here*, *there* and *home* should be analyzed as PPs, because they cannot be preceded by prepositions:
(i) *Mary went **to** there
Besides, they occur without preposition after verbs that only select prepositional phrases, such as *go*:
(ii) I went **there**.
(iii) *I went the place next door.
Following this, Collin proposes that a preposition is present in the underlying structure, after the nominal:
(iv) Mary went [$_{PP}$ there/home [$_{P}$ TO [*t*]]
According to the Doubly Filled Comp Filter, only one element on the edge of a phrase can be spelled out, either the specifier or the head, but not both. Collin argues that, in normal PPs, the specifier position is empty, and the head can be spelled out. However, in cases like (iv), the complement of the PP (*there/home*) is moved to the Spec, PP position. The element in Spec position is spelled out and the preposition in P^{o} is deleted in the surface.

4. Prepositional Resumptive RCs and Prepositional Gap RCs

The possibility of omitting a preposition in matrix sentences is also observed in relativization. Consequently, the authors have identified gap adjunct RCs and PP-in situ adjunct RCs. Ning (1993) classified gap adjunct relatives into five subtypes (17), and PP-in situ adjunct RCs into three subtypes (18).

(17) Gap adjunct relative clauses

[Locative Adjunct Relative Clause]

(a). *Zhe jiu shi na-suo [$_{NP}$ [$_{IP}$ Lisa t xue-le Yuyannxue si nian] de daxue].*
this exactly be DEM-Cl Lisa study-PST Linguistics four years DE university
'This is the university where Lisa studied Linguistics for four years.'

[Time Adjunct Relative Clause]

(b). *Zhe jiu shi na-ge [$_{NP}$ [$_{IP}$ Lisa t likai jia qushangxue] de yewan].*
this exactly be DEM-Cl Lisa leave home go-to-school DE night
'This is the night that Lisa left home for school.'

[Instrumental Adjunct Relative Clause]

(c). *Zhe jiu shi na-gen [$_{NP}$ [$_{IP}$ Lisa t da laoshu] de gunzi].*
this exactly be DEM-Cl Lisa beat mouse DE stick
'This is the stick which Lise beat mouse with.'

[Manner Adjunct Relative Clause]

(d). *Zhe jiu shi [$_{NP}$ [$_{IP}$ Lisa t kaocha yuangong] de fangshi].*
this exactly be Lisa inspect staff DE way
'This is the way that Lisa inspected staff.'

[Reason Adjunct Relative Clause]

(e). *Zhe jiu shi [$_{NP}$ [$_{IP}$ Lisa t lika xuexiao] de yuanyin].*
this exactly be Lisa leave school DE reason
'This is the reason why Lisa left school.'

(18) Adjunct relative clauses with preposition and RP

[Comitative Adjunct Relative Clause]

(a). *Zhe jiu* *shi* *[$_{NP}$ [$_{CP}$ wo *(gen ta)* *tiaowu de] guniang]*.
this exactly be 1SG with 3SG dance DE girl
'This is the girl whom I danced with.'

[Goal Adjunct Relative Clause]

(b). *Zhe jiu* *shi* *[$_{NP}$ [$_{CP}$ wo* **(dui ta) xiao-le-xiao de]*
this exactly be 1SG to 3SG smile-ASP-smile DE
na-ge *ren]*.
DEM-Cl man
'This is the man whom I cast a smile to.'

[Ablative Adjunct Relative Clause]

(c). *Zhe jiu* *shi* *[$_{NP}$ [$_{CP}$ ta* **(cong nar)* *lai* *de] na-ge*
this exactly be 3SG from there come DE DEM-Cl
xiaozhen].
town
'This is the town where he came from.'

(Ning, 1993, from Wen, 2020, pp. 95-96)

From the above, it is clear that the analysis of prepositional RCs is a complex subject with many unsolved questions. First, prepositions in MC are not undisputedly a separate class. Second, researchers do not agree in distinguishing arguments and adjuncts PPs. Although several authors propose that adjunct PPs must be preverbal (and that post-verbal PPs are complements), others claim that the frontiers between both are too blurred and that all should be analyzed as adjuncts. Third, prepositional (adjunct) RCs may involve a gap (with no overt preposition) or may comprise an overt preposition and a resumptive element, reflecting a property of MC visible in matrix clauses.

The analysis of prepositional RCs in MC will allow us to better understand the learnability task involved in acquiring Prep RCs in EP by native MC speakers. From what has been described so far, in Chinese, regardless of their status as arguments or adjuncts, PPs may be relativized with the preposition and a mandatory resumptive element

(resumptive RCs) or without any preposition (gap RCs). Furthermore, in MC, the omission of the preposition is also available in matrix clauses.

In the following paragraphs, I look closer at resumptive prepositional RCs in MC.

5. Grammatical resumption

5.1. Grammatical resumption in different languages

As mentioned in Chapter 3 (section 1.4), researchers distinguish grammatical resumption from intrusive resumption. In the former, RPs are licensed options in the languages that display them, whereas, in the latter, resumption appears as a last resort mechanism to rescue syntactic islands from ungrammaticality. I have addressed intrusive resumption in the previous chapter, dedicated to prepositional RCs in EP. I have also tackled the existence of grammatical resumption in EP as a non-standard strategy. However, in the current chapter, I am interested in grammatical resumption, given that MC prepositional RCs with an overt preposition are the output of this strategy.

Several different languages, such as Irish, Hebrew, Swedish, Vata or Welsh, make a grammatical use of RPs in unbounded dependencies. In these constructions, RPs are interpreted as bound pronouns (McCloskey, 1979, 1990; Sells, 1984) whereas gaps are interpreted as bound variables. Binder-resumptive dependencies and filler gap-dependencies are understood as variable-binding relations (McCloskey, 2006, p. 105).

Different studies have noted that grammatical RPs do not have the same behavior in all the languages that display them. In 'free variation' languages, also referred to as 'Type I,' in McCloskey's (2006) typology, RPs occur in all types of constructions and these do not involve movement. For instance, in Irish, RPs may occur in restrictive RCs, non-restrictive RCs, questions, clefts, reduced clefts, and comparatives. Sentences (19)a and (19)b are an example of free alternation between gaps and RPs in long-distance dependencies in Irish, with no detectable "pragmatic distinction" (McCloskey, 2001, p. 93).

(19)	(a). *an*	*ghirseach*	*a*	*ghoid*	*na*	*síogaí*	_
	DET	girl	COMP	stole	DET	fairies	

'The girl who the fairies stole.'

(b). *an* *ghirseach* *ar* *ghoid* *na* *síogaí* ***í***
DET girl COMP stole DET fairies her
'The girl who the fairies stole.'

(McCloskey, 2001, p. 93)

Other languages display grammatical resumption in specific constructions involving movement. These are 'restricted variation' languages or Type II in McCloskey's (2006) typology. For example, in Vata, RPs may only appear in the SBJ position, where they are obligatory, whereas gaps can only occur in the other syntactic positions. Sentences (20)-(23) illustrate these differences with *wh*-questions.

[highest SBJ]

(20) *àlÓ* *o/**_* *le¯* *sàká* *lá*
who he eat rice wh
'Who is eating rice?'

[embedded SBJ]

(21) *àlÓ* *`n* *gūgū* *nā* *ò/*_* *yi* *lá*
who you think that he arrive wh
'Who do you think arrived?'

[highest object]

(22) *yi* *Kòfí* *lé* *_/*mí* *la*
what Kòfi eat _/*it wh
'What is Kófi eating?'

[embedded object]

(23) *àlò* *`n* *gūgū* *nā* *wà* *yé`* *_/*mò* *yé* *lá*
who you think that they see _/*him PART wh
'Who do you think they saw?'

(all from Koopman, 1982, p. 128, cited from Asudeh, 2012, p. 264)

Furthermore, some languages with grammatical resumptives obey the Highest Subject Restriction (HSR). The use of RPs is not allowed in the highest SBJ position of a RC (McCloskey, 2001, 2006; Shlonsky, 1992, a.o.). This is illustrated by the Hebrew sentence in (24), where an RP cannot replace the SBJ gap, contrasting with sentence (25), where the resumptive may occur in embedded SBJ position.

(24) *ha-ʔiš* *še* *(*hu)* *ʔohev* *ʔet-Rina]*
DET-man COMP RP-3SG loves ACC-Rina
'the man who loves Rina.'

(Shlonsky, 1992, p. 445)

(25) *ha-ʔiš* *še* *xašavt* *še-(hu)*
DET-man COMP-(2SG.F) think-PST COMP-(3SG)
melamed *ʔanglit*
teach-PRS English
'the man that you thought that-(he) teaches English.'

(Shlonsky, 1992, p. 444)

Syntactic diagnostic tests for gaps and filler-gap dependencies are used to distinguish the two types of grammatical RPs (type I and type II, according to McCloskey, 2006), namely: sensitivity to islands, weak crossover effects, across-the-board extraction, parasitic gaps, and reconstruction.

Engdahl (1985) for Swedish and Koopman (1982) for Vata and Gbadi[7] noted that binder-resumptive dependencies might involve movement in specific languages. Thus, McCloskey (2006) concluded that grammatical RPs could evidence movement (as in the former languages) and non-movement properties, as in Irish. These distinct properties can be unified if RPs are treated as a 'spell-out' of a trace in the languages where they show the properties of A-bar movement: "as long as we can make sense of the idea that a pronoun can be a spell-out of a trace (…), the larger conceptual architecture is not severely threatened" (McCloskey, 2006, p. 109).

Alexandre (2012) proposes for Cape Verdean Creole (CVC) that the forms traditionally described as RPs are true RPs in chains that do not involve movement and 'defective copies' in chains that involve movement. The proposed distinction is based on the fact that, first, CVC displays two different forms, *es* 'they/them' (3PL) and *el* 'he/she/it' (3SG), and on the observation that the latter form is defective in terms of number features since it is invariable, not agreeing with the head of the chain in number (whether in interrogative clauses or RCs). Second, the structures involving *el* are sensitive to *wh*-movement tests, licensing parasitic gaps, being sensible to Principle-C effects, and

[7] Engdal (1985) and Koopman (1982) cited from Asudeh (2012).

showing sensitivity to island effects. On the contrary, the structures with *es* agree with the head in number and do not evidence signs of movement. Thus, the author concludes that, in CVC:

> ...restricted relativized PPs are subject to two different strategies, yielding two distinct chains. One of them results from a PSST/'defective copy' strategy, involving movement of the DP head to $SpecCP_{rel}$ and spelling out, at PF and in the form of an expletive-like pronoun *el*, the surviving formal feature [*u*Cat + D] of the lower copy in the complement position of a preposition.
>
> Alexandre (2012, p. 217)

Considering CVC data, Alexandre (2012, pp. 212-213) suggests that the asymmetry found between languages that display conventional resumption, such as the asymmetry between Irish and Welsh, may come from the fact that resumptives of type II in McCloskey (2006) terminology are actually 'defective copies.' Indeed, Alexandre's (2012) proposal matches McCloskey's in considering that the type II RPs are the spell-out of traces.

It is not completely clear whether MC should belong to the Type I or Type II category. On the one hand, outside syntactic islands, resumptives and gaps can alternate freely, except in Prep RCs with an overt preposition, where RPs are mandatory (Pan, 2016a, 2016b). Such distribution suggests that Chinese fits in with Type I languages of McCloskey's (2006) typology. However, Pan (2016b, footnote 2) identifies many additional syntactic and semantic constraints on using the RPs in Chinese, suggesting that it can belong to Type II.

Additionally, some languages can show both grammatical and intrusive RPs simultaneously, which invalidates this macro-variation classification (Pan, 2016a)[8]. It should be taken in consideration that, when resumptive elements are realized as pronouns, they "are pronouns (at least in their apparent form)" (McCloskey, 2006, p. 96). As such, there is still no answer for the issue of co-occurrence: considering that grammatical and intrusive resumptives have identical forms, why would two different languages use the same form for different operations? (Polinsky et al., 2013, p. 344); and why would the

[8] According to Pan (2016a), Chinese also displays intrusive RPs in left-dislocation structures. Pan argues that the typology of macro-variation that differentiates types of languages distinguishing the grammatical from the intrusive use of RPs is not valid, given that the same language can show both grammatical and intrusive RPs. Pan also argues that Chinese exhibits intrusive RPs in structures derived by Match, which are not subject to locality constraints, such as resumptive dislocation structures. However, intrusive RPs are not licensed in RCs and left-dislocation structures with gaps because these are derived by Agree and subject to locality constraints. According to him, "the boundary between a true resumptive pronoun, i.e., the grammatical/systematic use of a resumptive pronoun, and the intrusive use of a resumptive pronoun, simply does not exist" (Pan, 2016a, p. 256).

same language resort to more than one type of resumptive? (Erteschik, 1992; Aoun et al., 2001, from Polinksy et al. 2013). This already gives us an idea of how difficult it is to classify/categorize languages according to the presence of RPs and how little we know yet about their availability and their (non-)movement derivation.

Despite the current debate, I am assuming that grammatical and non-grammatical RPs are different phenomena.

5.2. Grammatical resumption in MC Prepositional Relative Clauses

In Prep RCs with an overt preposition, MC displays grammatical resumptive elements, such as the pronouns *ta* '3SG' or *qi* '3SG/PL' or an adverb as *nar* 'there'.

The pronoun *ta* morphologically varies in number (*tamen* '3PL') (26). *Qi* is an invariable third personal and possessive pronoun (27) and, according to Pan (p. c.), it is associated with a formal register being mainly used in classical Chinese and literary contexts.

(26) *Wo* *dui* ***tamen***$_j$ *hen* *bucuo* *de* *na-xie*
1SG to 3PL very not.bad DE DEM-Cl
pengyou(men)$_j$
friends
'The friends to whom I am very kind'

(Pan, 2016a, adapted)

(27) *Ta* *zhe-ci* *meiyou chenggong,* ***qi*** *yuanyin*
3SG DEM.time Neg succeed 3GEN reason
hen *fuza*
very complicated
'He has not succeeded this time and the reason (for which he has not succeeded) is complicated.'

(Pan, 2016a, p. 201)

In RCs, resumptive elements are mandatory whenever the object of the preposition is relativized. Chinese behaves exactly like Welsh (Rouveret, 1994) or Hausa (Tuller, 1986) in this respect: neither of these languages permits PiP nor preposition stranding. Thus, to

avoid the ban on preposition stranding and PiP, an RP is mandatory in the object position of the preposition in Chinese Prep RCs, as (28)-(31) illustrate.

(28) *[Ta-men zài *(**nar**$_i$) du-guo miyue] de chengbao$_i$*
3PL at there spend-Exp honeymoon DE
castle
'the castle where they had their honeymoon'

(29) *[Wo dui *(**ta**$_i$) hen bucuo] de na-wei péngyou$_i$*
1SG to 3SG very not.bad DE that-Cl friend
'the friend to whom I am very kind'

(30) *[You *(**ta**$_i$) daibiao dajia fa yan] de na-wei tongshi$_i$*
by 3SG represent everyone give talk DE that-Cl colleague
'the colleague that the talk by *(her) represented everyone.'
= the colleague who gave a talk representing everyone.

(31) *[Dangnian yi *(**nar**$_i$) zuowei gonsi zongbu de dalou$_i$*
those.years with there used.as company headquarter DE building
'the building that was used as the headquarter of the company during those days'

(all from Pan, 2016a, pp. 287-288)

From the above, it is clear that Chinese fits in with languages that display fully grammatical RPs. However, it remains to be clarified whether RPs in Chinese behave like a binding chain without movement (as in Irish) or as a movement chain (as in Swedish). In other words, it is essential to understand whether resumptive RCs behave like categories in a binder-resumptive dependency or like a variable, similar to the one which occurs in filler-gap dependencies.

6. To move or not to move, that is the question

Extractions from syntactic islands are traditionally used to diagnose the presence of movement (see Chapter 3, section 1.4). However, the literature on MC is not consensual regarding this issue.

Aoun & Li (2003) distinguish resumption in argument RCs and adjunct RCs. In argument RCs (the authors specifically look at relativization of SBJ or DO), they state that there is movement with the gap strategy and that there is no movement with resumption. These authors argue that an RP saves a syntactic island from crashing when a SBJ or a DO is relativized. Examples (32)a and (32)b reproduce a SBJ extraction from an Adjunct Island and a DO extraction from a Complex NP Island, respectively. Both cases are rescued by an RP, following Aoun & Li (2003).

(32) (a). *wo* *xiang* *kan* *[na-ge [ni* *[yinwei* ***ta***$_i$ *bu* *hui lai]*
1SG want see DEM-Cl 2SG because 3SG not will come
hen shenqi de] *[xuesheng]*$_i$*]*
very angry DE student
'I want to see the student that you are angry because he would not come.'

(b). *wo* *xiang* *kan [na-ge* *[ni yaoqing [dai* ***ta***$_i$ *lai de*
1SG want see DEM-Cl you invite bring 3SG come DE
ren] *lai* *zher* *de]* *[xuesheng]*$_i$*]*
person come here DE student
'I want to see the student that you invited the person over that brought him over.'

(Aoun & Li, 2003, p. 170)

Based on the acceptability of sentences like (32), Aoun & Li (2003) propose that argument RCs with an RP do not involve movement, evidencing a base-generation strategy (see Chapter 2, section 2, for further discussion).

However, in the relativization of adjuncts, Aoun & Li claim that there is always movement, irrespective of the strategy involved (gap or resumption).

Aoun & Li suggest that certain *wh*-words may resume the head of the relative clause within it:

> *Weishenme* 'why' and *zenme* 'how' exhibit interesting behavior in Chinese relatives. They can occur ''resumptively'' within the relative clause when the head is *yuanyin/liyou* 'reason' for 'why', *fangfa* 'method'/*yangzi* 'manner' for 'how'. Other wh-words cannot be used this way.
>
> Aoun & Li, 2003, p. 182.

In other words, Aoun & Li (2003) assume that the *wh*-words *ruhe/zenme* and *weishenme* are RPs in sentences like (33):

(33) (a). ?*zhe jiu shi [[ta juede [ni ynggai*
DEM exactly be 3SG feel 2SG should
*ruhe/**zenme**$_i$ xiu che de fangfa$_i$]*
how fix car DE method
'This is the way$_i$ (how$_i$) he feels you should fix the car t_i.'

(b). *zhe jiu shi [[women yiwei [ta **weishenme**$_i$ mei lai]*
DEM exactly be 1PL thought 3SG why not com
de yuanyin$_i$]
DE reason
'This is the reason$_i$ why$_i$ we thought he did not come t_i.'

(Aoun & Li, 2003, p. 183)

These *wh*-words occurring "resumptively" cannot show up inside a syntactic island:

(34) (a). **zhe jiu shi [[[ruguo ta weishenme$_i$ shengqi] ni hui bu*
DEM exactly be if 3SG why angry 2SG will not
gaoxing de] yuanyin$_i$]
happy DE reason
'This is the reason that you will not be happy if he gets angry why.'

(b). **zhe jiu shi [[[ruguo ta zenme$_i$ xiu che] ni hui bu gaoxing*
DEM exactly be if 3SG how fix car 2SG will not happy
de] fangfa$_i$]
DE method
'This is the way that you will not be happy if he fixes cars how.'

(Aoun & Li, 2003, p. 183)

These structures are sensitive to extraction from islands, leading Aoun & Li to analyze them as involving movement.

However, as Wen (2020, p. 103) noted, there are reasons to be 'skeptical' of the treatment of *wh*-words RPs. Indeed, this would be exceptional in the languages of the world. McCloskey (2006, p. 97) notes that "RPs simply are (formally) pronouns. I know of no report of a language that uses a morphologically or lexically distinct series of pronouns in the resumptive function". Furthermore, in other adjunct RCs that involve an overt preposition, a regular pronoun occurs as a resumptive. As Wen (2020) asks, why would RPs be *wh*-words in some cases and regular pronouns in others?

At odds with Aoun & Li (2003), Pan (2016a, 2016b) states that when a relative clause is formed with elements extracted from islands, the sentence is always ungrammatical, regardless of whether a trace or an RP occupies the gap position. In other words, according to Pan (2016a, 2016b), inserting an RP to save a sentence from the violation of locality constraints is not available in the case of relativization in Chinese.

Pan provides several examples with different types of islands and extractions. The pairs of sentences in (35), (36) and (37) illustrate DO RCs formed with elements extracted from complex NP islands. The sentences in (38) exemplify a DO RC formed with an element extracted from an adjunct island. In (39), it is possible to see the relativization of an adjunct PP extracted from a sentential SBJ island. In all cases, Pan claims that both options, without the resumptive (option a.) and with the resumptive (option b.), are ungrammatical. When the resumptive is mandatory, as in the case of the possessive, the sentence is also ungrammatical, as in the extraction of a possessive from a complex NP island (40).

(35) (a). **Wo* *pengdao-le [Xiaoqian renshi yongbao-guo _$_j$]*
1SG meet-PST Xiaoqian know embrace-Exp
de *na-wei* *nü-tongxue* *de] Faguo yingxing$_j$* .
DE DEM-Cl female.student DE French movie.star
('I met the French movie star$_j$ [that Xiaoqian knows the female student [who embraced_$_j$]]).

(b). *Wo pengdao-le [Xiaoqian renshi yongbao-guo **ta**$_j$]
1SG meet-PST Xiaoqian know embrace-Exp 3SG
de na-wei nü-tongxue de] Faguo yingxing$_j$.
DE DEM-Cl female.student DE French movie.star
('I met the French movie star$_j$ [that Xiaoqian knows the female student [who embraced **him**$_j$]]).

(36) (a). *Zhe shi [wo jiandao-guo [tanlun-guo _$_j$]
DEM be 1SG meet-Exp talk-Exp
de na-ge nutongxue de zuojia$_j$
DE DEM-Cl female.student DE writer
('This is the writer$_j$ [whom I met the student [who talked about t$_j$]].')

(b). *Zhe shi [wo jiandao-guo [tanlun-guo **ta**$_j$]
DEM be 1SG meet-Exp talk-Exp 3SG
de na-ge nutongxue de zuojia$_j$
DE DEM-Cl female.student DE writer
('This is the writer$_j$ [whom I met the student [who talked about him$_j$]].')

(Pan, 2016a, pp. 35-36)

(37) (a). *[[$_{NP}$ [Mali qin-le ___$_j$ de] xiaoxi] chuan-bian-le
Mary kiss-Perf DE rumor spread-PST
quan yiyuan de] na-ge yisheng$_j$
entire hospital DE DEM-Cl doctor
('the doctor$_j$ [that [the rumor [that Mary kissed ___$_j$]] was spread everywhere in the hospital]')

(b). * [[$_{NP}$ [Mali qin-le **ta**$_j$ de] xiaoxi] chuan-bian-le
Mary kiss-Perf 3SG DE rumor spread-PST
quan yiyuan de] na-ge yisheng$_j$
entire hospital DE DEM-Cl doctor
('the doctor$_j$ [that [the rumor [that Mary kissed him$_j$]] was spread everywhere in the hospital]')

(Pan, 2016a, p. 38)

(38) (a). *[[*yinwei Mali qin-le* _$_j$] *zheng-ge xuexiao*
because Mary kiss-PST entire-Cl school
de nanlaoshi dou hen yumen de] *na-ge yisheng*$_j$
DE male-teacher all very unhappy DE DEM-Cl doctor
('the doctor$_j$ [that all of the male teachers of the school are very unhappy because Mary kissed _$_j$]]')

(b). *[[*yinwei Mali qin-le* ***ta***$_j$*] zheng-ge xuexiao de nanlaoshi*
because Mary kiss-Perf entire-Cl school DE male-teacher
dou hen yumen de na-ge yisheng$_j$
all very unhappy DE DEM-Cl doctor
('the doctor$_j$ [that all of the male teachers of the school are very unhappy because Mary kissed him$_j$]]')

(Pan, 2016a, p. 39)

(39) (a). **Wang yisheng* _$_j$ *du boshi shi zheng-ge*
Wang doctor _ study PhD make entire-Cl
yiyuan de qita yisheng dou hen jidu
hospital DE other doctors all very jealous
de na-ge guojia$_j$
DE DEM-Cl country
('the country$_j$ [in which [[that Doctor Wang had his Ph.D. __$_j$] makes the rest of the doctors in the entire hospital very jealous]]')

(b). **Wang yisheng zai nali*$_j$ *du boshi shi zheng-ge*
Wang doctor at there study PhD make entire-GE
yiyuan de qita yisheng dou hen jidu
hospital DE other doctors all very jealous
de na-ge guojia$_j$
DE DEM-Cl country
('the country$_j$ [in which [[that Doctor Wang had his PhD there$_j$] makes the rest of the doctors in the entire hospital very jealous]]')

(Pan, 2016a, p. 40)

(40) *Zhe shi [wo jiandao-le [maixia-le **ta$_j$**-de fangzi
DEM be 1SG meet-Perf buy-perf 3SG-Gen house
de] na-ge nütongxue de zuojia$_j$
DE DEM-Cl female.student DE writer
('This is the writer$_j$ that I met the female student who bought his$_j$ house')
(Pan, 2016a, p. 38)

For Wen (2020), gap and resumptive prepositional adjunct RCs do not behave alike regarding movement. Gap RCs show movement, while resumptive RCs do not. She bases her analysis on the data of RCs within *wh*-questions, particularly in the distribution of the *wh*-word *na (ge/xie)* 'which- Cl (SG/PL).' In gap RCs, whether referring to an argument or an adjunct, the *wh*-word *na (ge/xie)* may appear inside the relative clause, as shown in (41)a for argument gap RC, and (42)a for adjunct gap RC, or preceding the whole relative clause, as in (41)b and (42)b.

(41) (a). [$_{RC}$ *Mary yaoqing de* ***na-ge*** *ren] hui xian dao?*
Mary invite DE which-Sg person will earlier arrive

(b). ***Na-ge*** *[$_{RC}$ Mary yaoqing de ren] hui xian dao?*
which Mary invite DE person will earlier arrive
'Which person that Mary invited will arrive first?'

(42) (a). *Ni qu-guo [$_{RC}$ Mary shang-guo xue de* ***na-xie*** *chengshi]?*
2SG go-PST Mary go-PST study DE which-PL city

(b). *Ni qu-guo* ***na-xie*** *[$_{RC}$ Mary shang-guo xue de chengshi]?*
2SG go-PST which-PL Mary go-PST study DE city
'Which cities that Mary went to study before have you been to?'
(Wen, 2020, p. 107)

In adjunct resumptive RCs, *na-ge* cannot occur inside the RC but only preceding it:

(43) (a). **Ni yudao-le* *[$_{RC}$ Mary [$_{PP}$ he ta]* *yuehui de*
2SG encounter-PST Mary with 3SG meet DE
na-ge *ren]?*
which-SG person

(b). *Ni yudao-le* ***na-ge*** *[$_{RC}$ Mary [$_{PP}$ he ta]* *yuehui de*
2SG encounter-PST which-SG Mary with 3SG meet DE
ren]?
person

'Which person with whom Mary met did you encounter?'

(Wen, 2020, p. 107)

Wen advocates that gap RCs can take an internal *wh*-interrogative because "the head noun of the relative clause is originated with a *wh*- element. The presence of the *wh*-word is a kind of reemergence of the *wh*-element" (Wen, 2020, p. 108). Wen's scheme (Wen, 2020, p. 108) for gap adjunct RCs is reproduced in (44):

(44) Adjunct RC containing a gap

[which] Mary [t_{PP}] went to study DE [which cities]
Base-generated Derived

[which] Mary [t_{PP}] went to study DE [which cities]
Base-generated Derived

On the contrary, a resumptive relative clause is base generated. The base-generated head noun cannot take an internal *wh*-interrogative, but it can have an internal determiner, proving that the *wh*-interrogative and the determiner occupy different positions. (43)-a and (45) show this contrast:

(45) *Ni kandao-le* *[$_{RC}$ Mary [$_{PP}$ he ta]* *yuehui de* ***na***
you encounter-PST Mary with him meet DE DEM
ren]?
person

'You saw the person that Mary met with him.'

(Wen, 2020, p. 108)

The author's scheme of resumptive adjunct RCs is represented in (46):

(46) Adjunct RC containing a PP in situ

[which]	Mary [PP with him]	met	DE	person
Base-generated	Base-generated			Base-generated

The grammaticality of (45) shows that the demonstrative *na* can occur in Dº. However, as illustrated by (43)-a, Dº cannot be occupied by the *wh*-word. These examples are the basis of Wen's argumentation to consider that a non-movement operation derives PP-*in-situ* adjunct RCs.

Furthermore, the author's analysis is corroborated by the sensitivity of gap and resumptive adjunct RCs to islands. Resumptive adjunct relatives are not sensitive to island effects (47)a and (48)a, while gap adjunct relatives are (47)b and (48)b.

(47) (a). [[t_j [$_{PP}$ *zai* ***nar$_i$*** *] chifan de ren$_j$] dou hen you limao de na-ge*
in there dine DE people all very have manner DE DEM-Cl
canting$_i$] jintian mei kaimen.
restaurant today not open
'The restaurant where [[the people who dine there] all have a good manner] did not open today.'

(b). ??? [[t_j [$_{PP}$ P t_i] *chifan de ren$_j$] dou hen you limao de na-ge*
dine DE people all very have manner DE DEM-Cl
canting$_i$] jintian mei kaimen.
restaurant today not open
Intended: 'The restaurant where [[the people who dine *t*] all have a good manner] did not open today.'

(48) (a). [[t_j [$_{PP}$ *yi* ***ci$_i$*** *lai] xue gangqin* *de ren$_j$]* *dou hen*
accord-to this for learn piano DE people all very
chenggong de na-ge *fangfa$_i$] xiyin-le* *Lisa de zhuyi.*
successful DE DEM-Cl method attract-perf Lisa DE attention
'The method which [[the people who learned to play the piano with] are all very successful] attracts Lisa's attention.'

(b). [[t_j [$_{PP}$ P t_i] *xue gangqin* *de* *ren$_j$] dou hen chenggong*
learn piano DE people all very successful
de na-ge *fangfa$_i$] xiyin-le* *Lisa de zhuyi.*
DE DEM-Cl method attract-PST Lisa DE attention
'The method which [[the people who learned to play the piano *t*] are all very successful] attracts Lisa's attention.'

(Wen, 2020, p. 116[9])

Wen (2020) proposes that if the RP is a spelled-out trace, relativizing the PP would violate the Adjunct Island Constraint and the Subject Island Constraint . However, taking her judgments to be accurate, both sentences are grammatical with resumptive elements (*nar* 'there' in sentence (47) and *ci* 'this' in sentence (48)). Nevertheless, the NP cannot be extracted from the syntactic island in the gap counterparts, and the sentences are ungrammatical.

As shown in the previous paragraphs, the authors working on Chinese RCs are not unanimous regarding the ability of RPs to rescue syntactic islands[10]. The divergences may be due to regional differences, as Pan acknowledges[11] (Pan, 2016a). The different

[9] I have revised the glosses presented by Wen (2020) to sentences (47)-(48) in order to reflect the extractions described by the author.
[10] I have informally asked Chinese native speakers to judge the examples of RCs formed with extractions from islands present in the literature consulted (Aoun & Li, 2003; Pan, 2016; Wen, 2020), contrasting the same sentence with and without the RP. 17 speakers replied to my request. The sentences are considered ungrammatical by most of the speakers, with and without the resumptive. The extraction of the PP locative adjunct was the only sentence considered acceptable (both with RP and with a gap) (example 47 in the text). The examples given in the literature mostly illustrate the extraction of NP DO and SBJ. The only examples with PP are provided by Wen (examples 39, 47 and 48 in the text) and the judgments are not unanimous. Extractions from syntactic islands are usually hard to process, so it is not possible to draw conclusions from this informal collection of data.
[11] "We must also note that the result of these tests is different from that discussed in Aoun & Li (2003, p. 169), and such a difference could be due to different language regions and the personal preference of the different speakers." (Pan, 2016, p. 168, footnote 30)

judgments lead the authors to various analyses of Chinese prepositional RCs, which are presented in the following section.

7. Analyses

In the following subsections, I describe some of the existing proposals to analyze RCs in MC.

7.1. Ning (1993)[12]

Ning (1993) considers that RCs in Chinese consist of an operator-variable chain, which is compatible with an external head analysis (see Chapter 2, section 2.1). Ning analyses gap adjunct RCs (examples in (17) above, here repeated in (49), and adjunct RCs with an overt preposition (examples in (18) above, here repeated in (50)) as being derived by operator movement.

(49) Gap adjunct relative clauses

[Locative Adjunct Relative Clause]

(a). *Zhe jiu shi na-suo [$_{NP}$ [$_{IP}$ Lisa t xue-le Yuyannxue si nian] de daxue]*.
DEM exactly be DEM-Cl Lisa study-PST Linguistics four years DE university
'This is the university where Lisa studied Linguistics for four years.'

[Time Adjunct Relative Clause]

(b). *Zhe jiu shi na-ge [$_{NP}$ [$_{IP}$ Lisa t likai jia qushangxue] de yewan]*.
DEM exactly be DEM-Cl Lisa leave home go-to-school DE night
'This is the night that Lisa left home for school.'

[Instrumental Adjunct Relative Clause]

(c). *Zhe jiu shi na-gen [$_{NP}$ [$_{IP}$ Lisa t da laoshu] de gunzi]*.
DEM exactly be DEM-Cl Lisa beat mouse DE stick
'This is the stick which Lise beat mouse with.'

[12] Ning's (1993) data are reproduced from Wen (2020).

[Manner Adjunct Relative Clause]

(d). *Zhe jiu shi [$_{NP}$ [$_{IP}$ Lisa t kaocha yuangong] de fangshi].*
DEM exactly be Lisa inspect staff DE way
'This is the way that Lisa inspected staff.'

[Reason Adjunct Relative Clause]

(e). *Zhe jiu shi [$_{NP}$ [$_{IP}$ Lisa t lika xuexiao] de yuanyin].*
this exactly be Lisa leave school DE reason
'This is the reason why Lisa left school.'

(50) Adjunct RCswith preposition and RP

[Comitative Adjunct Relative Clause]

(a). *Zhe jiu shi [$_{NP}$ [$_{CP}$ wo *(gen ta) tiaowu de] guniang].*
this exactly be 1SG with 3SG dance DE girl
'This is the girl whom I danced with.'

[Goal Adjunct Relative Clause]

(b). *Zhe jiu shi [$_{NP}$ [$_{CP}$ wo *(dui ta) xiao-le-xiao de] na-ge ren].*
this exactly be 1SG to 3SG smile-ASP-smile DE DEM-Cl man
'This is the man whom I cast a smile to.'

[Ablative Adjunct Relative Clause]

(c). *Zhe jiu shi [$_{NP}$ [$_{CP}$ ta *(cong nar) lai de] na-ge xiaozhen].*
this exactly be 3SG from there come DE DEM-Cl town
'This is the town where he came from.'

(Ning, 1993, from Wen, 2020, pp. 95-96)

However, the analysis proposed for both types of adjunct RCs is not the same. For sake of exposition, I will not go deeper into Ning's analysis for gap adjunct RCs (including location, time, instrument, manner, and reason adjuncts) and only prepositional RCs with an overt preposition and an RP will be addressed.

In sentences like the ones in (50), Ning considers that RPs are not true variables. The preposition introducing the adjunct is mandatory because the verbs are intransitive (*tiaowu,* 'dance'; *xiao,* 'smile'; *lai,* 'come,' see (50)). The adjunct needs to be introduced by a preposition, and the complement of the preposition is mandatorily an RP. Prepositions prevent RPs from being bound by a relative operator. Instead, RPs should be considered as spelled-out traces left by operator movement. Thus, Ning analyses adjunct RCs with an overt PP as being derived by operator movement. In his proposal, the preposition is left by movement, and the RP that appears in the base position is equal to a trace left by operator movement.

However, according to Wen (2020, p. 101), Ning's analysis goes against the ban on preposition stranding of Chinese: "following the ban [on preposition stranding], we cannot strand a preposition and move the operator only although there is a spelled-out pronoun". In conformity with Wen, I will not consider Ning's analysis.

7.2. Aoun & Li (2003) / Huang et al. (2009)

Aoun & Li (2003) and Huang et al. (2009) proposed to analyze constructions with a gap / with an RP differently when an argument is relativized. Structures containing a gap (i.e., SBJ and DO relativization) are derived by head raising. NP arguments[13] with a resumptive (which is optional in SBJ and DO position) are base generated in the relativization, not involving movement.

(51)a reproduces Aoun & Li's (2003, pp. 189-190) proposal for gap NP relativization and (51)b presents their proposal for the relativization of arguments (specifically, SBJ and DO) involving an RP[14]:

[13] Aoun & Li (2003) argue that an NP can be generated as a syntactic argument in Chinese, grounding their claim on the analysis of *wh*-phrases in Chinese. In English, *wh*-words denote quantification and restriction. In Chinese, Aoun & Li (2003) argue that bare *wh*-words are generated as NPs, and not as DPs, obtaining their quantificational force from an external quantifier that is projected outside the DP. The authors analyze the apparent inconsistency of reconstruction effects in Chinese, stating that this inconsistency is caused by the nature of the moved element. When the moved element is headed by a quantifier, reconstruction is not possible. QPs in Chinese contain a number + classifier expression, a NumP, which is a projection larger than a NP. Thus, QPs occupy a higher position in the hierarchy.
In other languages, NPs cannot occupy an argument position. This is supported by the grammaticality contrast between sentences (i) and (ii) in English (Borsley, 1997):
(i) *Bill liked picture.
(ii) Bill liked the picture.

[14] Aoun & Li (2003) do not have a proposal for the relativization of PP arguments.

(51) NP relativization

(a). [[$_{CP}$[$_{IP}$ ... [t_i] ...]] [$_{Head}$ NP]$_i$]

(b). [[$_{CP}$ Op$_i$ [$_{IP}$ ...[pronoun$_i$]...]][$_{Head}$ NP]$_i$]

Regarding adjunct relativization, Aoun & Li (2003, p. 190)[15] assume that there is operator movement to Spec, CP, as illustrated in (52).

(52) [[$_{CP}$ Op$_i$ [$_{IP}$ ... [t_i] ...]] [$_{Head}$ NP]$_i$]

However, the examples provided by Aoun & Li containing RPs are all in the SBJ or DO position and no information is given on the relativization of PP arguments. Nevertheless, Aoun & Li (2003) focus on adjunct gap RCs (locative, time, instrumental, manner, and reason RCs) (see examples (49)), suggesting that operator movement occurs, given the sensitivity of adjunct RCs to the tests diagnosing movement. Furthermore, only operator movement is possible due to the categorial mismatch between the PP gap and the NP head.

Since the structures with an overt preposition are the focus of this dissertation and Aoun & Li's (2003) proposals are inconclusive, because they do not present an analysis for the relativization of PP arguments or a derivation for the relativization of PP adjuncts with an overt preposition, their analysis will not be considered here.

7.3. Pan (2016a and 2016b)

Pan (2016) presents an analysis of RCs based on Move, within the framework of Government and Binding, and on Agree, without necessarily involving Move, within the framework of the Minimalist Program[16]. Pan (2016) argues for the existence of movement in all RCs (with gap and resumptive), because resumption obeys island constraints and shows sensitivity to crossover effects. Additional tests also indicate that these structures are derived by movement (in particular, scope reconstruction, quantificational antecedent, condition C-effects, and anaphoric binding under reconstruction).

[15] See Aoun & Li (2003, pp. 172-186) for a more detailed discussion of their analysis.

[16] Pan argues that RPs cannot rescue RCs from islands. Following Pan (2016a, pp. 124-125), the fact that island effects are detected in RCs with an RP indicates that there is movement involved in the derivation in the framework of the Government and Binding Theory. However, in the Minimalist Program, Pan argues that the operation Agree applies and that "Agree can work alone to establish the relevant A'-dependencies without requiring any movement operation. Agree operates at the strict narrow syntax level phase by phase in a cyclic fashion, which is subject to locality constraints." (Pan, 2016a, pp. 124-125).

Therefore, Pan (2016) proposes a raising analysis, assuming that the relativized NP raises from its base argument position inside the relative clause to the Spec, CP position, a structure derived by A'-movement. According to Pan (2016a), RPs are not spelled-out traces in RCs. The derivation of a resumptive relative clause ((53)a) is presented in (53)b.

(53) (a). wo dui **tamen$_j$** hen bucuo [de [na-xie pengyou(men)$_j$]]
1SG to 3SG not bad DE DEM-PL friend(s)

(b).

$[_{DP}\ DP_j \quad [_{CP}\ C^o \qquad [_{TP}\ \ldots\ldots RP_j \ldots\ldots]]]$

(Pan, 2016a, p. 75)

Nevertheless, Pan's proposal raises some issues. First, it does not account for word order in Chinese, since the RP in Chinese RCs precedes the DP head in the linear structure, not the opposite, as predicted by the derivation in (53)b.

Second, it only works if RPs are spelled-out traces in RCs. However, if RPs are understood as spelled-out traces, they cannot integrate the numeration and are inserted post-syntactically. This is the only way to legitimate the derivation in (53)b. Otherwise, a categorial mismatch arises: how can the DP metamorphose into an RP (or vice versa) during the derivation?

Given the issues in Pan's proposal, it will not be adopted here to analyze prepositional RCs in Chinese with an overt preposition and a mandatory RP.

7.4. Wen (2020)

Looking at the differences in the behavior of RCs within *wh*-questions (this chapter, section 6), Wen (2020, pp. 106-110) proposes that adjunct RCs with a gap and an overt preposition should be analyzed differently. She suggests that gap RCs involve head raising in Chinese and that adjunct RCs with an overt preposition are based-generated. Since the head noun is base generated without the *wh*-element, adjunct relatives with an overt preposition cannot take an internal *wh*-interrogative.

Wen (2020) grounds her analysis of resumptive RCs in the lack of sensitivity of these structures to *wh*-movement. She illustrates it with the behavior of prepositional RCs within *wh*-questions and with the lack of sensitivity of resumptive adjunct RCs to syntactic islands (see section 7 of the current Chapter). The analysis of resumptive dependencies as not involving movement is attested in other languages that display resumption as a full aspect of the grammatical system, such as Irish, Hebrew, or Lebanese Arabic.

7.5. Analysis adopted

Different analyses of Chinese Prep RCs with an overt preposition and an RP were considered highlighting their weak points: Ning's (1993) proposal goes against the ban on preposition stranding; Aoun & Li's (2003) derivations seem inconclusive for the relativized PPs with an overt preposition; Pan's (2016) proposal does not show clearly how the derivation can operate.

Given that, I follow Wen's proposal for prepositional resumptive RCs in Chinese. I am assuming that the RP and the head noun are base generated, and that no movement is involved.

Although Wen does not present a feature description of the CP of PP-*in situ* resumptive RCs, I am assuming that C^{o} contains an uninterpretable, *Wh*-feature (*u*Wh). Following Pesetsky & Torrego (2007) "this type of C [uninterpretable and unvalued] is arguably the kind of element that supports successive-cyclic *wh*-movement" (Pesetsky & Torrego, 2007, p. 10). However, I am assuming that the *u*Wh feature in C^{o} resumptive RCs in Chinese is valued as [REL].

The assumption that Prep RCs with an overt preposition do not involve movement in Chinese has consequences for the present dissertation. In particular, it means that the learners need to reassemble the movement feature available in other constructions into prepositional RCs in EP, whenever the strategy used displays movement.

Huang (1982) proposed that even if there is no overt movement of constituents in Chinese syntax, the rules Move-*wh* and Focus (two instances of Move-α) apply at an abstract level, in the Logical Form (LF) component of grammar. In the interpretative component, the *wh*-word moves, leaving a trace that should be interpreted as a bound

variable[17]. Updating Huang's proposal in light of the MP, this means that, even if there is no visible movement operating in the construction of the syntactic structure, the movement may occur when the syntactic structure is spelled out at LF. Moreover, all the analyses above consider that some kind of movement operates in in Chinese RCs, even if they do not agree regarding the structures that involve it.

When acquiring prepositional RCs in EP, Chinese speakers need to reassemble the features involved in *wh*-movement in their L1 into the configurations that these constructions assume in EP. The learning task and the research questions guiding the research conducted here are presented in Chapter 6.

Before addressing the research questions, I briefly review previous works done on the L2 acquisition of prepositional RCs and *wh*-movement. What we have learned from previous research about this topic is of utmost importance to inform the research questions that guide the current dissertation.

[17] Huang (1982b, p. 385) proposed that object operators (in the NP category) were not constrained by Subjacency at LF, whereas PPs or APs were. In other words, he identified an asymmetry between adjunct and argument operator movement. Adjuncts would violate Subjacency constraints and arguments would not. Aoun & Li's (2003) analysis of RCs in Chinese reflects Huang's (1982) proposal, as shown in the text.

Chapter 5

Acquisition of Relative Clauses and *wh*-movement in Second Language Acquisition: state of the art

The present chapter presents an overview of different topics relevant for this dissertation. I start by mentioning the previous studies on the L2 acquisition of RCs in general, regardless of the syntactic function of the relativized object. To my knowledge, the L2 acquisition of RCs in European Portuguese has not been addressed yet. Given this, section 2 presents the primary research done on the L2 acquisition of RCs in other languages, regardless of the syntactic function of the relativized object.

This dissertation is focused on the L2 acquisition of prepositional RCs, which, to best of my belief, has not yet been addressed in EP. As such, section 3 tackles the studies that looked at the acquisition of prepositional RCs in other languages, considering the different relativization strategies, such as Pied-Piping, Resumption, and P-Chop.

Because *wh*-movement is present in structures other than RCs, such as *wh*-questions, comparatives, or cleft sentences, the main findings on the acquisition of *wh*-movement, not necessarily concerning the acquisition of RCs, are synthesized in section 4.

Section 5 is devoted to previous research on the acquisition of RCs in other L2s by native Chinese speakers. Looking at the patterns that Chinese speakers show in the acquisition of RCs in other languages allows us to identify eventual regularities related to the participants' native language.

The L1 acquisition of prepositional RCs in other languages and European Portuguese is also considered. Given that L1 acquisition is undoubtedly guided by Universal Grammar, identifying similarities or differences between L1 and L2 acquisition enriches the current research.

1. Previous studies on L2 acquisition of RCs

Several researchers investigated the L2 acquisition of RCs not only in English (see Cook, 1973; Doughty, 1991; Eckman *et al.*, 1988; Gass & Ard, 1980; Gass, 1979; Hamilton, 1994; Hawkins & Chan, 1997; Ioup & Kruse, 1977; Izumi, 2003; Pavesi, 1986; Schachter, 1973; Schumann, 1980; Wolfe-Quintero, 1992, among others) but also in other L2s, such as Chinese (e.g., Tarallo & Myhill, 1983; Xu, 2009), French (e.g., Hawkins,

1989), Japanese (Ozeki & Shirai, 2007; Tarallo & Myhill, 1983; Yabuki-Soh, 2007) Korean (e.g., O'Grady *et al.*, 2003), Spanish (e.g., Perpiñán, 2008, 2010) and Swedish (e.g., Hyltenstam, 1984)[1], among others.

A variety of experimental tasks were developed to study the L2 acquisition of RCs, such as picture description tasks, sentence joining tasks, online and off-line grammaticality judgment tasks, acceptability judgment tasks, and sentence elicitation tasks.

The literature concerning RCs and their acquisition is extensive. This section presents a brief overview of the main questions concerning the acquisition of RCs in L2.

1.1. Previous research to the Noun Phrase Accessibility Hierarchy

Before the NPAH, some studies on the L2 acquisition of RCs compared subjects from different linguistic backgrounds to study the role played by transfer from the native language (e.g., Cook, 1973; Ioup & Kruse, 1977; Schachter, 1973; Sheldon, 1974). For instance, Schachter's (1973) research makes an interesting claim about Chinese native speakers and RCs pertinent to the present dissertation. Schachter looked at the acquisition of RCs in English L2, considering the written production of Arabic, Chinese, Japanese, and Persian native speakers, analyzing 50 compositions for each group. She hypothesized that Chinese and Japanese, whose native languages have head-final RCs, would face more difficulties than Arabic and Persian since these participants' L1s exhibit head-initial RCs, like English, the L2. Schachter concluded that the challenges for Chinese and Japanese participants resulted in avoidance of the structure. Taking the avoidance of a structure as a signal of structural difficulty may be questionable (see, e.g., Ioup & Kruse, 1977, p. 161). However, it underscores the need for controlled tasks if the goal is to analyze the production of RCs, such as the oral production task developed in the present dissertation (see Chapters 6 and 7). Experimental tasks are even more necessary with groups that tend to avoid the structure in spontaneous production, as Schachter verified.

1.2. The Noun Phrase Accessibility Hierarchy

During the 1980s, much of the research on the acquisition of RCs adopted a typological approach based on the NPAH proposed by Keenan & Comrie (1977). According to this hierarchy, less embedded syntactic positions are easier to relativize.

[1] See Ellis (2008, pp. 562-575) for a comprehensive review.

Consequently, the object of a preposition (IO or OBL) would be more complex to relativize than a DO or a SBJ. The NPAH, presented in Chapter 2, is repeated in (1) for ease of reading.

(1) Noun Phrase Accessibility Hierarchy
Subject (SBJ) > Direct Object (DO)> Indirect Object (IO) > Oblique (OBL)> Genitive (Gen)> Object of Comparison (OComp)

(Adapted from Keenan & Comrie, 1977, p. 66)

Keenan & Comrie also stated that the possibility of relativizing more embedded positions in the hierarchy depends on the availability of relativization in less embedded functions. For example, a language cannot display IO relativization if DO relativization is not available. That is, the NPAH is an implicational hierarchy.

The fact that this is an implicational hierarchy presupposes a markedness relation among its categories. It constitutes an "associated theory of markedness" (Hawkins, 1989, p. 164) that could predict the order of acquisition of RCs in L2. The notion of "markedness" is noteworthy, given its importance in SLA studies of RCs in the last decades of the 20th century.

According to Gundel *et al.* (1986, p. 108), typological markedness can be defined as follows:

> A is typologically marked relative to B (and B is typologically unmarked relative to A) if and only if every language that has A also has B but not every language that has B also has A.

Following Greenberg (1963), simplicity/complexity, frequency, and distribution were the criteria to consider if a feature is marked or unmarked. Eckman (1977) suggests the "Markedness Differential Hypothesis" to explain how SLA accommodates markedness.

Besides claiming that the NPAH makes sound predictions about RC formation in diverse languages, Keenan and Comrie (1977) argue for its psychological validity, stating that it reflects ease of comprehension. Simply put, "the lower a position is on the [NPAH], the harder it is to understand RCs formed on that position" (Keenan & Comrie, 1977, p. 88). Experimental studies done with native children, such as Legum (1975), Brown (1971), or Hatch (1971), supported Keenan & Comrie's view, evidencing that subject RCs were processed/ produced more easily than object RCs.

Another implication of the NPAH concerns the use of RPs. Languages diverge regarding the syntactic positions that may exhibit a standard resumptive pronoun. Take the languages considered in the present dissertation: Portuguese only displays non-standard RPs, which can occur in all syntactic positions (Alexandre, 2000, p. 58), whereas Chinese has grammatical RPs in different syntactic positions, and they are mandatory in prepositional RCs (Pan, 2016a, pp. 292–293) (see Chapters 3 and 4, respectively).

According to the NPAH, grammatical RPs are more likely to appear in more embedded positions. That is, an implicational hierarchy is established in a reversed order (Hyltenstam, 1984, 1990, cited by Algady, 2013, and Perpiñán, 2010). For example, suppose a language has mandatory RPs in the DO position. In that case, it may have them in more embedded positions, such as OBL, GEN, or OComp, but does not necessarily have them higher up in the hierarchy. However, there are languages, like Vata, that only display RPs in the subject position, questioning the relevance of such an hierarchy (see Chapter 4, section 6.1.).

The predictions of the NPAH were tested and corroborated by several psycholinguistics studies. For instance, Ford (1983) tested the differences between parsing SBJ and DO RCs in English, concluding that DO relatives are harder to process. Gibson *et al.* (2005) present the results of two self-paced reading experiments indicating that object-extracted RCs were read more slowly than comparable subject-extracted RCs, among other findings. The psycholinguistics studies by Keenan & S. Hawkins (1987) and Wanner & Maratsos (1978) (cited by Xu, 2009, p. 165) also corroborate the NPAH.

Furthermore, a considerable number of studies in L2 acquisition tested the NPAH during the 80s, especially in languages where RCs are head-initial, like English or Portuguese. Some examples are Gass (1979), Tarallo & Myhill (1983), Eckman *et al.* (1988), Doughty (1988, 1991), and Hyltenstam (1984), among others, whose outcomes indicated that acquisition difficulty and orders are consistent with the NPAH.

Right after the appearance of the NPAH, one of the concerns of L2 acquisition studies on RCs was to verify if the L2 acquisition of RCs reflected the NPAH. Underlying this was the assumption that the L2ers' interlanguages are natural languages (Adjémian, 1976) and, thus, they are ruled by the same universal constraints that are valid for natural languages. Consequently, if the NPAH is valid cross and intra linguistically for the world's natural languages, it should also apply to interlanguage grammars. The studies developed under this framework adopted a relational approach to the order of acquisition

of RCs, based on the grammatical relation of the extraction site in the embedded sentence (Gass & Ard, 1980; Gass, 1979; Hyltenstam, 1984; Pavesi, 1986).

Gass (1979) was pioneer on extending the NPAH to SLA, predicting that 1) more accessible positions would be produced more frequently than less accessible ones and 2) "the more accessible positions should be produced with greater accuracy than the less accessible ones (i.e., they can be accessed with fewer errors)" (Gass, 1979, p. 339). Based on an acceptability judgment task, a task of sentence combination, and a free composition task applied to English L2ers with typologically different L1s, Gass (1979) concluded that the learners generally followed the NPAH, except for the genitive case. She hypothesized that this exception is due to the "increased prominence" of the genitive or an understanding of the genitive marker together with the following noun phrase as a unit, which resulted in its interpretation as the SBJ or DO of the verb. In this vein, Gass & Ard (1980) analyzed the acquisition of RCs in English L2 and concluded that sentences in which the subject of the lower clause was relativized were the least problematic.

However, more recently, several L2 acquisition studies focusing on East-Asian languages, such as Japanese, Korean, and Cantonese, have presented findings that are not consistent with the NPAH, questioning its universality (Jeon & Kim, 2007; Kanno, 2007; Ozeki & Shirai, 2007; Yip & Matthews, 2007, among others). The controversy relies mainly on the relative ease of subject versus direct object RCs. Given that the focus of the present dissertation are EP prepositional RCs acquired by Chinese speakers, and not the other way around, the discussion about the validity of the NPAH for head-final languages is not further developed (see Xu, 2009, 2011 for a more detailed discussion).

1.3. Linear-distance based hypotheses

Gass' (1979) approach to the NPAH in SLA was contested by, for instance, Tarallo & Myhill (1983). Tarallo & Myhill looked at native English speakers learning different second languages: Chinese, Japanese, Persian, German, and Portuguese. To assess the explanatory value of the NPAH in SLA, they included other variables in their study, such as different relativization strategies (resumption, P-Stranding, P-Chop, and PiP), and also the cases of deletion of the complementizer, given that this is a possibility in English. Tarallo & Myhill show that learners of head-initial languages are more accurate in their judgments of subject RCs than learners of head-final languages (Chinese and Japanese), who are more accurate at judging direct object RCs.

This is argued to happen because, in head-initial languages, the SBJ position of the embedded RC is closer to the head of the RC than the object. In contrast, in head-final languages, the DO is closer to the head of the relative than the SBJ, as illustrated in (2) and (3), where the gap is indicated by the underscore dash:

[Subject]

(2) (a). [*O* ***rapaz*** *que* *_ abraçou* *a* *Maria*]
DET.M.SG boy REL hug-PST.3SG DET.F.SG Mary
é *simpático.*
be-PRS.3SG nice
'The boy that hugged Mary is nice.'

(b). [*_ xihuan Xiaoming de* *na ge* ***ren***] *jiao* *Zhenni*.
like Xiaoming DE DEM-Cl person named Zhenni.
'The person that likes Xiaoming is named Jenny.'

[Direct Object]

(3) (a). [*O* ***rapaz*** *que* *a* *Maria abraçou _]*
DET.M.SG boy REL DET.F.SG Mary hug-PST.3SG
é *simpático.*
be-PRS.3SG nice.
'The boy that Mary hugged is nice'

(b). *[Xiaoming xihuan _ de* *na ge* ***ren]*** *jiao* *Zhenni*.
Xiaoming like DE DEM Cl person named Zhenni
'The person that Xiaoming likes is named Jenny.'

Considering the outcomes of their study, Tarallo & Myhill (1983, p. 57) suggest that the ease of acquisition verified in previous studies on head-initial languages may "be due to the proximity of the lower sentence subject to the head in a right-branching, subject-initial language". Thus, instead of analyzing the results as a reflex of the NPAH, Tarallo & Myhill hypothesize that the crucial property is the proximity of constituents in surface configurations. Therefore, the ease of acquisition of subject RCs in head-initial languages is due to the proximity of the subject of the embedded clause to the head of the relative clause.

This proposal, also referred to as the "linear distance" hypothesis, was further developed by Hawkins (1989). Without questioning the fact that L2ers from different L1 backgrounds tend to find some types of RC easier than others, Hawkins (1989) suggests that the systematicity found in acquisition of RCs does not result from learners' recourse to "functional primitives" like subject, direct object, etc.[2]. Instead, he believes that the surface configuration of RCs, namely the distance between the head and the *wh*-extraction site, guides the acquisition.

Consequently, Hawkins (1989) distances himself from the relational perspective adopted by the studies that the NPAH framed, arguing that the approach should be 'configurational'. The configurational account assumes that the learner's task is a 'parsing problem' that depends on the learner's ability "to manipulate different constituents of a surface structure configuration" (Hawkins, 1989, pp. 174-175). In other words, Hawkins sees it as a processing matter and not as a grammatical question. L2ers struggle with more embedded positions in head-initial languages because the head and the relativizer are more distant from the extraction site and not because they have inbuilt knowledge of the grammatical hierarchy of relativization described by Keenan & Comrie (1977).

1.4. Structural Distance Accounts

Hawkins (1999) offers a psycholinguistic approach to account for Keenan & Comrie's hierarchy, adopting filler-gap dependency and filler-gap domain notions. In psycholinguistics, the terms 'filler' and 'gap' refer to the moved element (in particular, the head of the RC) and its tail (the gap position), respectively. "Filler-gap dependencies are difficult structures to process, and they are characterized by a heightened processing load and a constant effort to relate the filler to its appropriate gap" (Hawkins,1999, p. 246).

Hawkins (1999, p. 248) proposes a definition for a filler-gap domain (FGD) that consists of "the smallest set of terminal and nonterminal nodes dominated by the mother of a filler [the head] and on a connected path that must be accessed for gap identification and processing". Exemplifying, in a SBJ relativization, the FGD takes a minimum of five

[2] In a subsequent article, Comrie (2007, p. 304) regrets that "some unfortunate formulations" in the 1977 article were interpreted as claiming that grammatical relations determine accessibility to relativization, since he believes that other factors can intervene, i.e., "any linguistic principle must be seen in its interaction with other linguistic principles – and that there is no claim that the grammatical positions (which are for the most part grammatical relations) are the primitives that drive accessibility."

nodes; the relativization of a DO requires at least seven positions. Relativization of IO, objects of preposition, and GEN NP in a subject position require nine nodes (genitive in object position demands eleven nodes). In other words, the relativization of IO, oblique objects, and possessive-SBJ require equivalent processing effort. Significantly, the linear ordering of the syntactic elements does not affect the relative ranking of positions. Rankings will be maintained whether the language is head-initial or final.

Recall that the NPAH predicts two reversed accessibility hierarchies to RCs and RPs, here repeated in (4) and (5):

(4) Noun Phrase Accessibility Hierarchy

SBJ > DO> IO > OBL> GEN> OCOMP

(5) Resumptive Pronouns Accessibility Hierarchy

OCOMP> GEN> OBL> IO> DO> SBJ

Following Hawkins (1999), the hierarchy of relativization and resumption is inverted due to processing. Despite being harder to process, gaps appear in higher positions because they have "the advantage of economy of expression" and require less form processing. When the structural complexity increases, it is necessary to explicitly sign the dependency via RPs (Hawkins, 1999, pp. 259-260). In more embedded positions, the prediction is that pronouns are preferred over gaps since the size of the processing domain of gaps keeps increasing with embedding.

The linear distance hypothesis and the structural distance hypothesis make similar predictions about the order of acquisition of head-initial RCs. However, the underlying reasons that determine it are different, given that the linear distance hypothesis is grounded on the linear distribution of words in the sentence. In contrast, the structural distance hypothesis claims that computational operations on hierarchical syntactic representations guide the acquisition. The depth of the embedding of the gap is defined by the number of nodes intervening between the gap and the RC head.

A psycholinguistic approach to the acquisition of RCs is developed, among others, by Xu (2009, 2011). Xu studies the acquisition of RCs by L2ers of Chinese, exploring (in)consistencies between their ILGs and the NPAH. Xu (2009) argues that the acquisition of Chinese RCs is generally consistent with the NPAH: the scores for SBJ and DO RCs were higher than those obtained for the other syntactic positions. The fact that

SBJ and DO RCs do not present significant differences is interpreted as a "ceiling effect" (Xu, 2011, p. 71) since the hierarchy does not put aside grammars where SBJ and DO RCs emerge at the same time and before other types of RCs (Eckman, 2007, p. 325, quoted by Xu, 2011). As the relativized object goes down in the hierarchy, the learners tend to rely more on the resumptive strategy and avoid the gap strategy, as predicted by the NPAH. Xu's (2009) outcomes on the processing tasks also supported the structural distance hypothesis, given that SBJ RCs appeared to be easier than DO RCs, confirming the prediction that bigger FGDs are harder to process.

In this section, I have attempted to frame the investigation on the L2 acquisition of RCs and the main issues that it raised. The research on the acquisition of prepositional RCs is addressed in the following section.

2. Acquisition of prepositional RCs

Relativizing the object of a preposition may be accomplished through different relativization strategies, namely Pied-Piping, Resumption, P-Chopping and Preposition Stranding. The NPAH predicts that the oblique position is harder to relativize than subject or object functions, but it does not make predictions regarding the order of acquisition of the different strategies.

The strategies relevant for Portuguese and Chinese were described in Chapters 3 and 4, respectively. For the moment, it is enough to recall that EP prepositional RCs may be formed with Pied-Piping (obligatorily moving preposition along with the relative pronoun), but also with non-standard P-Chop (omitting the preposition) and non-standard resumption. Resumptive RCs are analyzed as a binding chain without movement (Alexandre, 2000, p. 75). These strategies are illustrated in (6)a-c, respectively.

(6)

[Pied-Piping]

(a). *Foi* *um* ***debate***$_i$ *[[*$_{OBL}$ ***a que]***
be-PST.3SG DET.Indf.M.SG debate to REL
valeu a pena *assistir* t_i*]*.
be.worth-PST.3SG watch

[P-Chop]

(b). *Foi* *um* *debate$_i$* *[[$_{OBL}$* ***Ø*** ***que]***
be-PST.3SG DET.Indf.M.SG debate REL
valeu a pena *assistir t$_i$]*.
be.worth-PST.3SG watch

[Resumption]

(c). *Foi* *um* *debate$_i$* *[[$_{OBL}$* ***que]***
be-PST.3SG DET.IDF.M.SG debate REL
va*leu a pena* *assistir* ***a*** ***ele$_i$]]***.
be.worth-PST.3SG watch to 3SG

'It was a debate that was worth watching.'

Chinese only displays resumption to relativize the object of a preposition:

(7)

[Resumption]

[wo *[$_{OBL}$ dui* *ta$_i$]* *hen* *bucuo* *de]* *na-wei* *pengyou$_i$*
1SG to 3SG very not.bad DE DEM-Cl friend
'the friend to whom I am very kind.'

Preposition-stranding is another relativization strategy available for prepositional RCs that has received a lot of attention in L2 acquisition studies. PS is very productive in English and Scandinavian languages, but not in Chinese nor Portuguese[3]. It consists of leaving the preposition stranded in the original position instead of dragging it along with the moved element:

[3] Kenedy refers the use of P-Stranding in Brazilian Portuguese with heavier prepositions, such as *sobre* 'about' or *contra* 'against' (the example is from Kenedy, 2008, p. 95):

(i) *O* *autor* *que$_i$* *o* *professor falou*
DET.M.SG author REL DET.M.SG teacher speak-PST.3Sg
sobre t$_i$ *na* *última* *aula.*
about in-DET.F.SG last lesson
'The author that the teacher talked about last lesson'.

Nevertheless, to my knowledge, this use is not reported in European Portuguese.

(8)

[Preposition Stranding]

The person [who$_i$ I talked **to** t_i] last week.

The first SLA studies developed on the acquisition of prepositional RCs looked especially at the acquisition of English as an L2. Therefore, the researchers focused on the acquisition of PS, comparing it with PiP (see the following sub-section).

2.1. Pied Piping and Preposition Stranding in the framework of markedness

At the end of the 20th century, most studies looked at the acquisition of prepositional RCs considering the markedness theory. These studies assumed Riemsdijk's (1978) claim that PS is more marked than PiP. In English, the two most productive strategies of relativization of OBL objects are PS and PiP. Despite the prevalence of PS over PiP in English, PS was considered more marked than PiP for two reasons. The first is a typological reason, since PS is only attested in a small group of Indo-European languages, not covering the whole Indo-European family (for instance, Romance languages do not allow PS). The second reason is theoretical, because the *wh*-phrase is extracted from the PP. According to Riemsdijk (1978), most PPs are islands out of which extraction is impossible, and the PP is a bounding node. Thus, the changes which affect the PP with PS are the marked ones, while PiP, which moves the entire constituent (preposition and *wh*-phrase), is not exceptional.

In the GG framework, in particular, considering that core grammar is made of unmarked rules and that the periphery is made of marked ones, Mazurkewich (1985) shows that, when acquiring English L2 dative *wh*-questions, native French speakers (a language that uses PiP but not PS) and native Inuktitut speakers (an Inuit Eskimo language that has no prepositions), the learners of French acquired PiP first, while the learners of Inuktitut produced more PS than PiP in the early stages. She attributes this difference to the participants' level of exposure to English since the Inuktitut participants were instructed in English, and the French speakers were educated in French and received English lessons on the side.

Bardovi-Harlig (1987) is also interested in the acquisition of marked PS and its unmarked counterpart, PiP, and replicates Mazurkewich's (1985) study, extending it to RCs. Interestingly, her findings show that the participants started with the "no-prep"

strategy (the equivalent to the strategy here referred to as 'P-Chop'), then acquired PS and finally PiP. These results led her to propose the following developmental order: (1) No-Prep > (2) PS > (3) PiP (Bardovi-Herlig, 1987, p. 383). She also observes that PiP develops earlier in *wh*-questions than in RCs.

Bardovi-Herlig's (1987) findings show again that the marked option (PS) was acquired before the unmarked one, as in Marzurkewich's (1984) study (with Inuktitut speakers). She attributes the prevalence of PS over PiP to its salience (i.e., frequency) in the input.

She ends up concluding that the markedness theory prevails as long as other factors do not intervene. In this case, Bardovi-Herlig considers that the salience of the structure in the input determines the order of acquisition. Hence, her results constitute an apparent counterexample to such a theory.

Adjémian & Liceras (1984), as described in Perpiñán (2010, p. 95 and following), also study the L2 acquisition of PS and PiP to test the markedness theory but consider more language combinations. They look at native English speakers learning L2 French or L2 Spanish, and at native French speakers learning L2 English or L2 Spanish. They predict that English native speakers do not transfer the marked PS to the L2s (regardless of French or Spanish) because of its markedness. However, French native speakers are expected to transfer the unmarked PiP strategy available in their L1 into the L2s. The authors claim that their results confirm these predictions, given that 75% of the English native speakers correct the cases of ungrammatical PS in French or Spanish. However, Perpiñán (2010, p. 95) argues that, even if the remaining 25% of acceptance of PS is not addressed by Adjémian & Liceras (1984), they indicate that marked options can transfer into the L2 (as the works of Mazurkewich, 1985, and Bardovi-Harlig, 1987, also show).

Liceras (1986) presents another study on the acquisition of restrictive RCs in L2 Spanish by native English speakers with instruction in French. Liceras expects that the marked rules from the L1 (PS, in this case) do not transfer into the L2. Nevertheless, PS does transfer in the beginners' group, in the translation task and the GJT, but it disappears in the outcomes of intermediate and advanced learners. She concludes that this indicates that the L2 learners do not include marked structures in L2 acquisition.

In the next sections, I will consider the research made on the acquisition of resumption (3.2.) and P-Chop (3.3.).

2.2. L2 acquisition of Resumption

The NPAH predicts a hierarchy for the distribution of RPs reversed in relation to the order of RCs (see (4) and (5) in the previous section). The presence of RPs is also implicational. For instance, if a language has RPs in the OBL position, it may have them in more embedded positions but does not necessarily have them higher up in the hierarchy. Accordingly, Hyltenstam (1984, 1990, cited by Algady, 2013, and Perpiñán, 2010) proposes that if a resumptive pronoun is deleted in a particular position in the hierarchy, it must be deleted in all positions higher (to the left) in the hierarchy. Hyltenstam assumes that typological markedness predicts what L2 learners will find difficult to acquire. Since typologically there are more languages with RPs than gaps, gap RCs are considered more marked than resumptive RCs, regardless of the syntactic position of the relativized element.

Before proceeding, it is important to recall that, in Chinese, RPs are optional in SBJ and DO RCs, but are mandatory in the relativization of the object of certain prepositions[4]:

(9) *Bao'an* *xiang* *gan* ***ta/__*** *chu* *xuexiao de* *na-ge*
guard want chase 3M.SG out school DE DEM-Cl
xiao *liumang* *bu-jian-le.*
small hooligan disappear-PST
'The hooligan$_j$ that the guard wanted to chase (him$_j$) out of the school has disappeared.'

(Pan, 2016b, p. 4)

Portuguese does not exhibit standard RPs. However, in non-standard EP, RPs are attested in all syntactic positions, inside and outside syntactic islands (Alexandre, 2000, p. 58).

At the end of the 20th century, different studies showed that learners from typologically distinct native languages tend to retain RPs in the perception and production of RCs (C. Doughty, 1991; C. J. Doughty, 1988; Eckman *et al.*, 1988; Ioup & Kruse, 1977; Schachter, 1973; Tarallo & Myhill, 1983, etc.).

[4] The distribution of resumptive pronouns in European Portuguese and Mandarin Chinese is detailed in Chapters 3 and 4, respectively.

Hyltenstam (1984,1990, cited in Algaday, 2013, and Perpiñán, 2010) explores the status of the resumptive pronoun versus the gap by studying the acquisition of L2 Swedish by native speakers of four distinct languages: Spanish, Finish, Greek and Persian. Spanish and Finish do not display standard RPs, but Greek and Persian do, although to different degrees. The outcomes show that all subjects produce RPs when uttering RCs and that the pronouns are deleted "roughly in the order predicted by the NPAH, although the ordering is not perfect" (Hyltenstam, 1984, p. 47). With these results, the author concludes that even if the learners have (marked) gap RCs in their native languages, they all preferred using RPs in their ILGs.

Pavesi (1986) obtains similar results when considering Italian learners of L2 English in formal and informal environments. Even if none of these two languages displays RPs in the standard varieties, their ILGs show more cases of resumptive RCs than gap RCs. Besides, the author claims that the participants respect the implicational hierarchy of the NPAH.

Hawkins & Chan (1997) study the acquisition of RCs in L2 English by Chinese and French native speakers, providing evidence that the NPAH alone cannot explain the use of resumptives in SLA. They show that French speakers from different proficiency levels practically paired with native English speakers, correctly rejecting ungrammatical resumptive RCs. The Chinese participants improved in assessing ungrammatical sentences with RPs as their level advanced. These authors interpreted the improvement of the Chinese learners as an ability to accommodate the L2 input that was overrepresenting their internal ILGs. In other words, they assume that the Chinese speakers' improvement is not due to the acquisition of the uninterpretable functional feature that rules *wh*-movement, but to the recourse to other grammatical mechanisms that have similar outcomes. More specifically, advanced Chinese participants achieve near-target results because they front the *wh*-phrase as a topic and not because they have acquired *wh*-movement.

These results were taken to support the Failed Functional Features Hypothesis, according to which, after the critical period, L2ers cannot acquire functional features in the L2 if those are not available in the L1 (see Chapter 1, section 4). These findings go against the idea that unmarked structures are preferred, given that Chinese speakers have a native unmarked language and develop into a marked ILG.

To sum up, the studies that tested the acquisition of RPs, considering the NPAH and a markedness approach to L2 acquisition, provide different outcomes. On the one

hand, researchers such as Hyltenstam (1984, 1990) and Pavesi (1986) report the relevance of the NPAH universals with results attesting the unmarked use of resumptives even by speakers that have marked native languages. On the other hand, studies such as Hawkins & Chan (1997) indicate that typologically unmarked options are not necessarily acquired first.

2.3. Preposition-Chopping

Research reporting that L2 learners drop the preposition with *wh*-questions and RCs requiring mandatory PPs was first developed by Mazurkewich (1985) and Bardovi-Harlig (1987), as presented before. However, the researchers did not give this fact special attention. For instance, Bardovi-Harlig interprets the "no-prep" results as a grammatical developmental stage and does not go deeper into the reasons that may have motivated them (see previous section).

2.3.1. Wild grammars (Klein, 1993)

Klein (1993) was the first to dedicate her attention to the "deletability" of the preposition in RCs and *wh*-questions by L2 learners that were aware of the semantic-selection (s-selection) properties of the verbs tested. She named it as "null prep".

Sentence (10)a shows a declarative sentence where the matrix verb selects for a mandatory preposition (in bold); (10)b is its ungrammatical counterpart without the preposition. Examples (11) illustrate the possibilities available in English for relativization and questions (preposition stranding in a. and c. and PiP in b. and d.). The sentences in (12) show occurrences of a "null prep" question and a "null prep" relative clause, like the ones produced by the L2ers in Klein's study.

(10) (a). The student is worrying **about** the exam.
(b). *The student is worrying the exam.

(11) (a). Which exam is the student worrying **about**?
(b). **About** which exam is the student worrying?
(c). Here's the exam that the student is worrying **about**.
(d). Here's the exam **about** which the student is worrying.

(12) (a). *Which exam is the student worrying?

(b). *Here's the exam that the student is worrying.

Klein's (1993) study shows that participants who do not accept the omission of the preposition in declarative sentences often admit its deletion in RCs or interrogatives. Beginners are the most prone to this pattern, although these outcomes are also visible with intermediate speakers and, to a lesser extent, with advanced learners. Some of the participants' L1s allow P-Chop with RCs, but others do not. So, Klein concludes that the acceptance of the deletion of the preposition in RCs and *wh*-questions by the participants in her study is a developmental phenomenon independent of the L1. Another relevant finding from her research is that the participants show similar acceptance rates of P-Chop RCs with a complementizer and a relative pronoun (cf. Klein, 1993, p. 113). These results go against the findings of Tarallo & Myhill (1983) for Brazilian Portuguese, where a complementizer preferentially introduced P-Chop RCs.

Later, Klein (1995) recognizes and describes the existence of the "null-prep" phenomenon in natural languages cross-linguistically with RCs but not with *wh*-questions. This pattern occurs in colloquial Portuguese, colloquial Puerto Rican, Venezuelan Spanish, colloquial Italian, Catalan, Montreal French, and Quebécois, 17th French, Roviana, and Haitian Creole. The absence of null prep with *wh*-questions is a relevant point for her proposal that I will return to below.

Furthermore, she claims that certain aspects of the natural languages with omission of the preposition in RCs suggest that these constructions are not derived by movement. In particular, she notes that "null prep" RCs are in complementary distribution with resumptive RCs in natural languages, and resumptives are typically associated with the lack of movement.

Besides, following Klein, RCs with the omission of the preposition are mainly introduced by complementizers instead of relative pronouns, which also seems to indicate that they do not involve movement since relative pronouns are characteristic of movement. Thus, Klein suggests that these sentences include a null resumptive PP (hence the designation "null prep") that alternates with an overt PP. She further explains the absence of P-Chop sentences in *wh*-questions or movement RCs in English as violating the Empty Category Principle (ECP). Since the ECP states that an empty category needs to be governed by a lexical governor or a local antecedent, the null preposition would not properly govern the empty category resulting from *wh*-movement.

Moreover, Klein claims that P-Chop is not attested in questions in natural languages, even among the languages in which it occurs in RCs. Thus, considering such differences between ILGs and natural languages, she concludes that the ECP is violated on the way to building the L2, and "null prep" in ILGs are instances of wild grammars.

Jourdain (1996) inquires into the phenomenon of omission of the preposition among L2 learners of French. Her main goal is to understand if P-Chop is a language-specific phenomenon of English. Jourdain finds similar results to the ones reported by Klein (1993), but to a lesser extent: learners of French L2 exhibit "null prep", in particular with the prepositions *à, de, avec,* and *pour*.

Nonetheless, the data from L1 acquisition argue against Klein's (1993) idea that P-Chop in *wh*-questions and RCs in ILGs is an instance of a wild grammar. The P-Chop phenomenon has been attested in several L1 acquisition studies. Hildebrand (1987), cited by Perpiñán (2010), identifies P-Chop in questions and RCs among native children acquiring L1 English and notices that P-Chop tends to decrease with older speakers. She attributes this to the fact that children are avoiding stranding (a similar explanation is provided for L2 by Klein, 2001, as described in subsection 2.3.3. of the current chapter). She suggests that children perceive the preposition as having a less relevant "grammatical role" than other grammatical categories, yielding the drop of the preposition. P-Chop is also attested in L1 French by Labelle (1996, 1990), L1 Spanish by Pérez-Léroux (1995), and L1 European Portuguese by Vasconcelos (1991), Valente (2008) and Fontes (2009), all referred in section 6 of the current chapter.

2.3.2. Binding construals (Dekydtspotter, Sprouse & Anderson, 1998)

Dekydtspotter *et al.* (1998) challenge Klein's assumption that P-Chop cannot be found in structures that involve movement in natural languages. Dekydtspotter *et al.* argue that there are instances of preposition deletion in *wh*-questions in Yoruba, as well as in popular French (see (13)a-(14)a, for an interrogative with the preposition, and (13)b-(14)b, for the counterpart omitting it, in Yoruba and French, respectively):

(13) (a). *Tani ó fún tani* ***ní*** *kíni?*
who 3SG give who *ní* what
'Who gave what to who?'

(b). *Kíni* *Adé* *fún* *Táiwò?*
What Adé give Táiwò
'What did Adé give Táiwò?'

(14) (a). ***De*** *quoi* *est-ce* *qu'il* *a*
Of what be-PRS.3.SG what-3SG have-PRS.3.SG
besoin?
need

(b). *Qu' est-ce* *qu'il* *a* *besoin?*
what be-PRS.3.SG what-3SG have-PRS.3.SG need
'What does he need?'

(Adapted from Dekydtspotter *et al.*, 1998, pp. 352-353)

Dekydtspotter *et al.* (1998) propose that the preposition omission is an instance of a broader phenomenon that leads the L2ers to produce binding construals even when the target language requires *wh*-movement. Besides, they claim, *contra* Klein (1993), that there are instances of P-Chop in questions in natural language (as in (13)b and (14)b, above). Moreover, supported by a study developed with learners of L2 French on the extraction constraints on nominal constructions, these researchers argue that L2ers interpret interrogative and cleft sentences in French as non-movement constructions, where the null element is an A'-bound *pro* and not a variable of the moved element.

Therefore, Dekydtspotter *et al.* claim that P-Chop RCs and questions integrate a more significant phenomenon of computational economy found in ILGs. More specifically, the authors argue that P-Chop does not constitute a movement chain (16), but a binding construal (15), where a base-generated operator binds a null *pro* (Cinque, 1990; Rizzi, 1990:

[binding construal]

(15) $[_{CP}\ Op_i\ [_{IP}.....[_{PP}\ pro_i].....]]$

[movement chain]

(16) $[_{CP}\ Op_i\ [_{IP}.....[_{PP}\ t_i].....]]$

(Adapted from Dekydtspotter *et al.*, 1998, p. 348)

The categorial mismatch between the *wh*-word (DP) and the gap (PP) is accounted for by the notion of preposition incorporation (Baker, 1988). An empty category cannot be licensed in the complement position of a preposition since the functional governor, the preposition, intervenes, blocking the government from the lexical V-head. However, Dekydtspotter *et al.* assume that the preposition moves out of the PP and incorporates into the VP. Thus, the head-licensing condition on object *pro* can be met, given that the VP complex that results from incorporating the preposition subcategorizes a DP and not a PP.

Baker (1988, p. 236) predicts that preposition incorporation is not possible with adjuncts, contrary to arguments, since "the adjunct phrase itself will be a barrier to government between the position of the verb and the head position inside the adjunct". Besides, Baker predicts that preposition incorporation can only occur with specific thematic roles associated with the relevant PP, such as dative/goal, instrumental, and some locatives (specifically, inner locatives).

Thus, Dekydtspotter *et al.* argue that an analysis that involves preposition incorporation explains, for instance, Jourdain's (1996, p. 179) data, namely, the fact that non-native speakers of French accept the omission of the prepositions *à* and *de* more easily than the omissions of *pour* and *avec*, both in RCs and questions. This asymmetry suggests that P-Chop can be constrained by the thematic role associated with the prepositional phrase.

Klein (1993, p. 111) registers a similar contrast among arguments introduced by *for* and adjuncts headed by *with* in interrogatives.

According to Dekydtspotter *et al.* (1998), this asymmetry is explained if we analyze *wh*-questions with P-Chop as an A'-binding chain with an empty category NP licensed by a VP with the preposition incorporated.

However, we should not forget that neither Jourdain nor Klein found a similar contrast between PP gaps in argument and adjunct positions with RCs. Thus, according to Dekydtspotter *et al.*, P-Chop RCs can be explained with an A'-binding chain without preposition incorporation, since the analysis of the null operator by L2 learners in RCs can be either as a PP or a DP, assuming that the learners are treating the relativizers as complementizers and not as relative pronouns.

Dekydtspotter *et al.*'s (1998) analysis of P-Chop *wh*-questions/ RCs as binding construals (with or without preposition incorporation) is quite appealing since it is more economical, following the reasoning of the Minimalist Program. A binding chain with an

empty category only implies Merge, and a movement construction means Merge and Move (Chomsky, 1995)[5].

Nevertheless, the data for RCs in European Portuguese do not seem to support a non-movement analysis. P-Chop RCs obey Subjacency, license parasitic gaps, and show crossover effects, as discussed in Chapter 3, section 1.3.1. Similar conclusions are made for Greek by Varlokosta & Armon-Lotem (1998, p. 2), who argue that RCs introduced by a complementizer (including RCs with omission of the preposition) in Greek involve movement, given that they license parasitic gaps and show weak crossover effects.

2.3.3. P-Chop as incomplete *wh*-movement acquisition (Klein, 2001)

In response to Dekydtspotter *et al.* (1998), Klein (2001) revisits and changes her proposal of "null-prep" as an instance of wild grammars (Klein, 1993).

Klein (2001) departs from Dekydtspotter *et al.*'s approach, claiming that two of the arguments that ground it are not valid. In particular, she states that the French *de* in (14), above, is semantically vacuous and does not exhibit the syntactic behavior of a preposition, but it works, instead, as a copular-like functional head (as argued by Kayne, 1993, 1994; Hulk, 1996; Español-Echeverría, 1997; Den Dikken, 1998, among others), as in (17):

(17)	*Elle*	*a*	*deux*	*enfants*	*de*	*malades*.
	3SG	have-PRS.3.SG	two	children	of	sick

'She has two sick children.'

(Hulk, 1996, cited by Klein 2001, p. 44)

As for the examples from Yoruba (in (13) above), Klein recalls that the status of the preposition *ní* is subject to debate and that it cannot be taken as "compelling evidence for null prep questions in natural language data" (Klein, 2001, p. 47).

Furthermore, against an analysis that does not involve movement, Klein adds the examples from Greek by Varlokosta & Armon-Lotem (1998) of the sensitivity to Subjacency of P-Chop RCs, a classic argument in favor of the existence of movement.

[5] In most recent versions of the Minimalist Program, cases involving Movement in the Government & Binding framework can be explained with Agree (without Move), since both obey locality conditions in the same way and both originate island effects and intervention effects (Pan, 2016a, pp. 80-81).

Against the idea of preposition incorporation used by Dekydtspotter *et al.* (1998) to justify that "null-prep" constitutes a binding construal, Klein (2001) recalls the data from Mazurkewich (1985), showing L2ers accepting the omission of the preposition with dative questions. In some cases, Klein argues, two prepositions may be absent: the dative and the oblique. For example, in (18), two prepositions are missing: the dative preposition and the head of the second PP 'in the library.'

(18) Which library did John give Mary the book?

(Klein, 2001, p. 49)

Dekydtspotter *et al.*'s hypothesis assumes that, in such a case, two prepositions are incorporated into the verb, which, following Klein, is impossible under PI. Thus, Klein claims that Dekydtspotter *et al.* would have to predict that (18) "be excluded from L2 grammars" (Klein, 2001, p. 49).

Following Klein, another issue with Dekydtspotter *et al.*'s analysis is the requirement that preposition incorporation can only be found with PPs in arguments and not in adjuncts to ensure a UG-compatible process (Baker, 1988). Against this requirement, Klein recalls that Klein & Casco (1998, 1999), investigating the acceptability of P-Chop in different constructions from L2 learners of English with diverse linguistic backgrounds, show that L2ers accept P-Chop with adjuncts along with arguments.

Furthermore, Klein (2001) states that the data from L1 acquisition do not support an analysis of "null-prep" without movement in the early stages of L2 acquisition: "why would L2 learners evidence a null prep grammar while L1 learners do not appear to do so"? (Klein, 2001, p. 57). As noted by Perpiñán (2010, p. 105), it seems that Klein was not aware of Hildebrand's (1987) research, who finds the omission of the preposition in questions and RCs in English child language.

Instead, Klein (2001) proposes that "null-prep" in ILGs results from operator movement, an option L2ers resort to before acquiring *wh*-movement. She explains this 'incomplete' acquisition of *wh*-movement due to a preconception that L2ers show against Preposition Stranding in English. The L2ers identify *wh*-movement in PS constructions, but they are biased against PS "particularly because prepositions are generally very weak and clitic-like in most languages and are prohibited from separating from their objects" (Klein, 2001, p. 59). Klein does not consider the fact that previous studies on PS have

shown that the learners prefer PS over PiP, even if PS is considered a more marked option (see Mazurkewich, 1985; Bardovi-Harlig, 1987, described in section 3.1. of the current Chapter). The tendency to avoid PS would lead the L2ers to P-Chop constructions, justifying the nonoccurrence of such structures in both adult and child native speakers of English (not considering Hildebrand, 1987).

Under Klein's (2001) analysis, the PP of a P-Chop interrogative comprises a null preposition and a big PRO as its complement, acting as an empty operator. The movement of features is preferred to the movement of an overt category. Besides, PRO is the most minimal object (Chomsky, 1995). The preposition heading the PRO operator must be null ($P_{Ø}$), given that an overt preposition would go against the PRO theorem, which specifies that PRO should not be governed. The null prep $P_{Ø}$ licenses the PRO complement, assigning it null case. Such an analysis places L2ers within UG limits, contrary to Klein's (1993) first proposal.

The "null prep" analysis of an interrogative clause, before and after Spell-out, as proposed by Klein (2001, p. 60), is represented in (19):

(19) Which bus are the children waiting?

(a). $[_{CP}$ wh $[_{C}$ $[_{FocP}$ $[_{Foc}$ $[_{PP}$ $P_{Ø}$ OP]]]]]

(b). $[_{CP}$ wh_i $[_{C}$ $[_{FocP}$ $[_{PP}$ $P_{Ø}$ $OP]_i$ $[_{Foc}$... $[_{PP}$ $t_i]]]]]$

In (19), the *wh*-phrase generates in Spec, CP, assuming that this is what happens in the L2 before the acquisition of *wh*-movement. The $P_{Ø}$ is pied-piped along with the OP in a movement triggered by the *wh*-phrase to check its features. The landing site for this PiP movement is a FocusP position within CP, in line with the split-CP structure proposed by Rizzi (1990).

In a nutshell, Klein (2001) suggests that "null-prep" is a language-specific phenomenon of L2 English and results from the avoidance of preposition stranding by L2 English learners on their way to acquiring *wh*-movement. It results from the recourse by L2ers to the PiP strategy, but covertly, before they acquire PS.

And what about the cases where English speakers are acquiring non-stranding languages, such as L2 Spanish or L2 French (for instance, as reported by Jourdain, 1996), do they omit the preposition? Klein claims that, in this case, the English learners prefer to drop/cut the preposition and to move the null operator, given their little experience

with PiP and the absence of evidence of preposition stranding in the L2s. Nevertheless, she predicts that the cases of P-Chop with non-stranding L2s would be less expressive.

When preposition stranding is not present in either the L1 or the L2, the prediction is that P-Chop grammars would not be evidenced. In contrast, higher degrees of "null-prep" are expected in languages that display preposition stranding (Klein, 2001, p. 64).

Both Dekydtspotter *et al.* (1998) and Klein (2001) look for more economical solutions for the omission of the preposition in RCs and interrogatives in the ILG of L2ers. Dekydtspotter *et al.* propose a non-movement analysis that results from economy principles of Merge over Move, and Klein (2001) suggests that null prep implies the covert movement of features and not the movement of an overt and heavier constituent. As discussed and presented in the section dedicated to analyzing P-Chop RCs in EP (see Chapter 3), the economy explanation to justify these structures is taken to a different level by Kenedy (2007), who states that PiP is anti-natural, resulting from formal instruction. In contrast, P-Chop would be the most natural option among natural languages. Thus, P-Chop could result from L2 learners' acquisition of RCs as constrained by the UG, changing into PiP as an effect of formal instruction. Nevertheless, Kenedy's account does not explain why P-Chop precedes Preposition Stranding, given that these are both "natural" constructions in the computational system. Moreover, it does not justify the preference of native speakers to use P-Chop with arguments instead of adjuncts (Santos, 2014; Duarte & Brito, 2003; Rinke & Assmann, 2017)[6].

Finally, this section could not end without the mention of Perpiñán's studies on the omission of the preposition in the interlanguage of L2ers that most inspired the present work and the construction of the experimental design.

2.3.4. P-Chop as systematic developmental stage (Perpiñán, 2008, 2010)

Perpiñán (2008) studied the acquisition of prepositional RCs with two groups of L2 Spanish learners: early bilinguals (heritage speakers of Spanish) (*n*=20) and late bilinguals (native English speakers who started learning Spanish after puberty) (*n*=22). She included a group of 13 native Spanish speakers as a control group. The experimental design had a grammaticality judgment task composed of 50 sentences (40 targets + 10 fillers), involving grammatical PiP RCs, ungrammatical sentences, and distractors. This task also tested resumptive and null-prep RCs, which the author classifies as

[6] See Chapter 3 for a more detailed presentation of Kenedy's (2007) proposal.

"substandard," differing "from ungrammatical ones because the ungrammatical ones can be found in neither a formal or written context nor in oral discourse" (Perpiñán, 2008, p. 110). Her experimental design included a sentence combining task as well, in which the subjects had to rewrite two independent sentences by transforming them into one, using a relative clause.

Globally, the results showed patterns of acceptance within groups, except for the null-prep RCs. The intuitions of the two experimental groups were not as robust as the ones from native speakers; however, heritage speakers were closer to the native group, except in the conditions of PS and P-Chop. Indeed, the native group completely rejected PS in Spanish, which is found neither with early nor with late bilinguals. Furthermore, the native group judged the prepositional sentences where the preposition was omitted as ungrammatical. In contrast, the L2 group accepted them as grammatical, and the heritage speakers did not show clear intuitions about them. The written production task displayed similar results, with L2 learners showing high rates of P-Chop sentences and low production of PiP and the natives doing the reverse: high production of PiP and low P-Chop.

Perpiñán (2008) claims that the data from the L2 acquisition of questions cannot be transposed to RCs. She recalls that RCs are acquired later than questions in native acquisition and that they are only mastered at school age (6-10) (Guasti & Cardinaletti, 2003). Besides, RCs are more complex, given that they are interpreted as predicates (type <e, t>), and they presuppose a double case assignment to the same referent. Bearing this in mind, she claims that P-Chop should be considered a natural option in the world's languages, which systematically appears in developing grammars as a default construction. When the complementizer *que* introduces them, they involve the movement of an empty operator, like in the native grammar.

However, since the participants in Perpiñán's (2008) study had English as their dominant language, she could not exclude Klein's proposal that P-Chop cases resulted from an initial transfer of PS from English, followed by the avoidance of such a marked strategy with the deletion of the preposition. Perpiñán later developed her research on the acquisition of RCs in L2 Spanish but including two groups of participants: native speakers of English (with PS) and native speakers of Arabic (without PS). Besides, to test the economy explanations that attribute the avoidance of PiP to its computational complexity, she included processing data to analyze the real-time parsing of these structures.

Perpiñán's (2010) experimental design inspired the one developed in this dissertation (see Chapter 6). It included an oral production task, an online self-paced grammaticality judgment task, and an online self-paced reading comprehension task. Perpiñán tested six prepositional verbs that select three different prepositions, *hablar de* (to talk about), *depender de* (to depend on), *pensar en* (to think about), *confiar en* (to rely on), *soñar con* (to dream about), *contar con* (to count on). The prospective participants for the study were submitted to a pre-test to ensure that they knew that the experimental verbs selected a PP. The fact that the learners were aware that the verbs selected a PP complement was a concern in Klein's (1993) experiment that is also considered in the current dissertation.

The oral production task developed in Perpiñán (2010) was closely replicated in the current research, with the necessary changes (see Chapter 6). Participants were presented with a series of images on a computer screen and a sentence describing each picture. The researcher read out loud the information that was written on the screen. The following slide presented a zoom of the previous image with a question to answer. The answer should start as indicated by the researcher (and the beginning for each answer was written on the screen) to ensure that the extracted constituent was the intended. Participants were asked to answer as fast as they could so that a more implicit knowledge was elicited.

The participants were more accurate in the oral production of DO RCs than oblique RCs. Regarding DO RCs, native Spanish (94.2% accuracy rate) performed better than English learners (81.7% accuracy rate) or Arabic (68.3% accuracy rate); besides, natives always produced grammatical responses (contrary to L2ers).

In the case of prepositional RCs, accuracy rates dropped. Natives produced PiP (the only target strategy in Spanish) 89.2% of the time; the English learners presented it 56.3% of the cases and the Arabic learners in 34.9% of the sentences. Interestingly, and contrary to what was expected, participants in the three groups produced sentences omitting the preposition. The omission of the preposition was residual among native speakers (4.2%), but it reached 19.8% among English learners and 16.7% among Arabic L2ers. PiP was the strategy most produced by all groups, but the occurrence of P-Chop RCs was somewhat unexpected since it could not have been transferred from either of the native languages. Furthermore, the inclusion of the Arabic participants enables us to exclude the hypothesis presented by Klein (2001), according to which the omission of the preposition resulted from the incomplete acquisition of *wh*-movement combined with a

bias of the English speakers towards the PS property, given that Arabic does not display PS. The lack of knowledge of *wh*-movement cannot explain P-Chop since these learners were able to transfer the *wh*-movement property from their native languages.

Dekydtspotter *et al.*'s (1998) hypothesis assumed that the P-Chop phenomenon results from an economical derivation, with the application of Merge instead of Merge and Move. To test this hypothesis, Perpiñán (2010) ran an online grammaticality judgment task (GJT) to analyze intuitional and grammatical data and real-time processing information.

In the GJT, Perpiñán included 84 sentences followed by a yes/no question. Of these, 24 were experimental items, six for each experimental condition (PiP, Resumption, Null-Prep/P-Chop, P-Stranding). 18 sentences out of these 84 tested the Subjacency condition, presenting syntactic islands (see Chapter 3 of the current dissertation, section 1.4.). The remaining 42 were distractors.

The results of Perpiñán's (2010) GJT showed that native speakers accepted grammatical PiP and rejected ungrammatical P-Chop and PS. Their judgments of the sentences in the resumptive conditions were not as straightforward as expected since they were predicted to be grammatical in Spanish. Still, natives tended to classify them as ungrammatical. The L2ers did not have robust intuitions about the relativization constructions, showing similar acceptance rates in the four conditions tested. Overall, the results were in line with the ones obtained in the production task, with slight differences.

The analysis of reaction times showed that PiP was appropriately processed by all groups, against the idea that P-Chop resulted from economy principles in the derivation, as suggested by Dekydtspotter *et al.* (1998).

The results obtained with RCs formed with extractions from syntactic islands indicated that native speakers diverge from L2ers in the P-Chop and resumptive conditions, rejecting RCs formed with extractions from islands more assertively in these two cases. Generally, the PiP island was the most accepted and less ungrammatical (possibly due to a task effect). The fact that native Spanish speakers rejected resumptive islands was unexpected since RPs allegedly rescue island configurations (Ross, 1967; Shlonsky, 1992; Suñer, 1998) (see Chapter 3).

Finally, to test if L2 learners violated the universal principle of recoverability of deletion with P-Chop RCs, Perpiñán elaborated a self-paced reading comprehension task. The lack of preposition in P-Chop RCs was considered a loss of information, for instance,

in Brazilian Portuguese (Tarallo, 1983, p. 222). Besides, Klein (1993) argued that P-Chop occurred because certain universal grammar principles were lacking in L2 acquisition.

The rationale underlying the self-paced reading comprehension task was the following: if participants were deleting the preposition, jeopardizing the interpretation of the sentence, they were going against a UG principle, the principle of Recoverability of Deletion (Chomsky, 1981). This principle states that an element can only be deleted if a structurally related phrase fully determines it. If participants deleted the preposition regardless of its recoverability, this would favor an analysis of P-Chop as an instance of a rogue grammar (as proposed by Klein, 1993).

Participants were presented with 96 items followed by a yes/no comprehension question (18 Prep RCs with PiP + 6 Prep resumptive RCs + 12 gap DO RCs + 6 DO resumptive RCs + 6 RCs with P-Chop + 24 SBJ RCs distractors + 24 pure fillers).

The overall results indicate that L2 learners have comprehension accuracy results quite close to those of native speakers, meaning, according to Perpiñán, that "convergence at the comprehension level is possible" between native and non-native speakers (Perpiñán, 2010, p. 196). Besides, L2ers did not present problems in interpreting RCs with the omission of the preposition, but native speakers had better scores in sentences with a pied-piped preposition. Native speakers understand sentences that involve PiP better, indicating that the preposition contributes to the overall meaning of the sentence among native speakers but bears no semantic contribution for L2ers. Perpiñán concludes that L2ers' interpretation of RCs is not affected by the strategy used.

Considering these results, Perpiñán suggests that prepositions are a lexical category in the native grammar, which, together with the verb, form a compound lexical item composed by V + Prep. However, in non-native grammars, some prepositions are treated as a functional category, with no particular meaning attached, explaining why prepositions are acquired late. For instance, the "Bottleneck hypothesis" (Slabakova, 2007) predicts that functional morphology is the hardest module to acquire. The Feature Reassembly Hypothesis (Lardiere, 2008, 2009), presented in Chapter 1, section 5, makes similar predictions. Second language speakers need to learn how to associate the prepositions (functional elements) with the verbs, and the syntactic implications of this association. In other words, the acquisition of prepositional RCs requires a process of mapping or even reassembly, depending on the native language (Perpiñán, 2010, pp.197-198).

The author suggests that P-Chop RCs involve a base-generated complementizer and an empty operator moved from the argument position to Spec, CP. As for knowing if the preposition moves or not with this null operator, she claims that, for intermediate learners, prepositions with weak semantic weight could be an "optional feature," particularly in A-bar positions. Given that the absence of the preposition does not seem to affect the interpretation of the sentence when compared with the PiP counterpart, these L2ers producing P-Chop "never selected the preposition from the functional lexicon and then, the preposition never entered into the derivation" (Perpiñán, 2010, p. 210).

To sum up, Perpiñán (2010) concludes, *contra* Klein (1993), that the omission of the preposition does not evidence a "wild grammar" but is a "systematical developmental stage" of the interlanguage that L2ers (and first language learners) go through during the acquisition process of oblique RCs (Perpiñán, 2010, p. 183). P-Chop results from the optionality of the preposition, which happens when the DP is in an A-bar position and if the preposition is not necessary to the overall meaning of the sentence. Thus, the Case of the DP is not assigned by the preposition, but it is assigned by default. As a result, P-Chop is a structure found in the interlanguage grammars that fits the UG constraints, against what Klein (1993) first suggested (but revised in 2001).

Formal practice and the explicit teaching of language may contribute to overcoming such a stage, and this optionality may disappear and be replaced with PiP. Against Dekydtspotter *et al.* (1998), she states that P-Chop does not result from applying economy principles to language acquisition, mainly because P-Chop RCs involve *wh*-movement, as indicated by the island results. Instead, it results from applying universal principles, such as the principle of Recoverability of Deletion, which suggests that UG constrains ILGs.

As I have attempted to illustrate in the current section, the debate on the L2 acquisition of prepositional RCs was approached within several theoretical frameworks, considering the different relativization strategies.

The next section presents the debate about the L2 acquisition of *wh*-movement by speakers of an L1 that does not display it overtly. The studies addressing this topic, mostly developed in the last two decades of the 20th century, reached significant variation in their results. I believe that this research informs the current dissertation, which addresses the acquisition of a structure involving *wh*-movement, in the L2, by native speakers of a language that does not display it overtly.

3. L2 acquisition and constraints on *wh*-movement

At the end of the 20th century, the debate on SLA was focused on the characterization of the interlanguage grammar and the access of L2ers to UG after the critical period (see Chapter 1 for a more detailed state of the art).

Within this debate, the Subjacency constraints that regulate *wh*-movement (Chomsky, 1986) have been widely studied (Bley-Vroman *et al.*, 1988; Bley-Vroman, 1990; Johnson & Newport, 1991; Martohardjono, 1993; White & Juffs, 1998, among others). The underlying rationale is that if native speakers of a language without *wh*-movement recognize the violations to Subjacency, tested with island configurations, this constitutes evidence that they are accessing UG, as islands and the constraints that regulate them are not present in the direct L2 input nor in their native language.

Many studies developed in SLA in the last two decades of the 20th century focused on the acquisition of an L2 with *wh*-movement by speakers of a native language without *wh*-movement (Bley-Vroman, 1990; Hawkins & Chan, 1997; Johnson & Newport, 1991; Li, 1998; Schachter, 1989, 1990; White & Juffs, 1998).

These studies took the Subjacency condition as a universal restriction. At the same time, they assumed the existence of a universal parameter for *wh*-movement, marked positively in some languages and negatively in others. Significantly, all violations to Subjacency were equally considered, without distinguishing between weak and strong islands.

Overall, the research showed that the performance of L2ers on Subjacency violations was less accurate than in grammatical sentences and less accurate than the performance of native speakers. However, the results on Subjacency guided the researchers in different directions regarding access to the UG.

The rates of acceptance or rejection of extractions from syntactic islands were examined in a wide range of L2 research to argue for (Epstein *et al.*, 1996; Martohardjono, 1993; White & Juffs, 1998) or against (Johnson & Newport, 1991; Schachter, 1989, 1990) the access of non-native speakers to UG.

The difficulties of Chinese speakers towards recognizing Subjacency violations led Johnson & Newport (1991) and Hawkins & Chan (1997) to argue for the lack of full access to UG in adult second language acquisition. Subjacency violations were actually at the basis for the Fundamental Difference Hypothesis on Second Language Acquisition (Bley-Vroman, 1990; Johnson & Newport, 1991) and for the Failed Functional Hypothesis (Hawkins & Chan, 1997).

On a different note, White & Juffs (1998) claimed that Chinese speakers could accurately judge the violations to Subjacency, holding that UG constrains interlanguage grammars. In-between, more moderate proposals did not rule out access to UG but admitted that it worked in some attenuated form in L2 adult acquisition (Bley-Vroman *et al.*, 1988).

Significantly, these studies looked at different island configurations (weak and strong). In favor or against the ability to recognize the violations to Subjacency, the variation in the outcomes seems to be due to the fact that L2ers do not treat all island violations equally (Belikova & White, 2009). Indeed, they seem more accurate in recognizing strong islands than weak islands (Martohardjono, 1993).

The differences in L2ers' sensitivity to the types of islands indicate that speakers are sensitive to degrees of grammaticality, even if they do not receive any clue about the difference between weak and strong islands in their input. Furthermore, weak islands involve the same mechanisms as strong islands, so speakers should not struggle to identify weak islands in most of the cases studied.

Huang (1982b) attempted to unify some of the original island constraints with the Condition on Extraction Domain (CED). This condition distinguishes the domains from which extractions may occur, namely complements, governed by a lexical head that assigns them a thematic role, from non-complements, which are not lexically governed and do not allow for extractions. In other words, the CED establishes that subjects and adjuncts are the only domains from which it is not possible to extract an element.

Within the MP, the CED was revised as a universal constraint that prevents movement from non-complements[7] (Horvath & Siloni, 2003; Müller, 2007; Nunes & Uriagereka, 2000; Sabel, 2002), accounting for the grammatical asymmetry between weak and strong islands. In this new version, subjects and adjuncts are universally syntactic islands, whereas *wh*-islands are subject to parametrization.

If UG guides L2 acquisition, the CED is immediately available to the speaker as soon as the feature configuration of the CP is set to allow for *wh*-movement. Hence, the L2ers should be able to recognize the ungrammaticality of strong island violations. However, it is not expectable that minor Subjacency violations are identified at the same

[7] The revised CED states that *wh*-movement cannot take place out of a structural non-complement (from Belikova & White, 2009, p. 211). The formulation "non-complement" accounts for the fact that extractions from VPs and IPs are allowed, even if they are not theta-marked, because these are complements of I and C, respectively.

level since they depend on the parametrization of the target grammar rather than on universal principles.

The lack of consistency in the rejection of weak islands made Belikova & White (2009) question the real validity of these structures to argue for or against UG access. Islands indeed present a scenario of poverty of stimulus that constitutes a sound basis for testing UG access. Still, it is also true that the developments in linguistic theory have shown that they are regulated by computational principles going beyond *wh*-movement. Belikova & White's (2009) findings are corroborated by subsequent studies, such as Perpiñán (2020).

More recently, different studies on L2 acquisition have tackled whether L2 learners can use their knowledge of syntax in real-time by studying the processing of *wh*-dependencies and island constraints (Aldwayan *et al.*, 2010; Johnson *et al.*, 2016; Omaki & Schulz, 2011). They question the alleged difference between natives and non-natives in language processing, namely the claim that L2 learners can only construct shallow representations, in that they do not make use of abstract syntactic knowledge in parsing but rely on lexical-semantic knowledge and pragmatic notions, such as plausibility (as argued in the Shallow Structure Hypothesis, Clahsen & Felser, 2006). For instance, building on the work of Stowe (1986), Aldwayan *et al.* (2006) looked at Najdi Arabic learners of English to see whether they use syntactic knowledge in their processing of *wh*-movement or whether they process *wh*-dependencies incrementally. They analyzed if L2 learners, like native speakers, would attempt to resolve *wh*-dependencies only in licensed grammatical positions. They ran a self-paced reading task with Najdi Arabic learners of English (n = 40) and a control group of English speakers (n = 40) and concluded that non-native processing is guided by syntactic constraints, like native processing.

The Shallow Structure Hypothesis was also challenged by Omaki & Schulz (2011). They compared native Spanish learners of L2 English regarding the relative clause island constraint in the construction of filler-gap dependencies. Running off-line and on-line tasks, they concluded that the L2 group and the native group showed evidence of application of the relative clause island constraint.

Kim *et al.* (2015) looked at the use of island constraints in the processing of English *wh*-questions by Spanish and Korean learners of L2 English. They tested the influence of the native language on the L2 learners' online sensitivity to island constraints in the L2. Both groups of learners showed knowledge of the island constraint in English,

but the results were not precisely the same with Korean and Spanish speakers. Whereas Spanish speakers were close to the natives by not keeping a filler-gap dependency active in island configurations, Korean speakers seemed to posit a gap when processing a *wh*-dependency. Based on these findings, they suggest that L1 properties may influence the online processing of L2 sentences.

Perpiñán's (2020) study deserves special attention, given the similarities that it presents with the current research. She investigates whether L2 learners are aware of the limits of *wh*-movement by focusing on RPs in island configurations and hypothesizing that comprehension of island configurations goes beyond *wh*-movement. This study is also mentioned in section 3.3.4 of this chapter, given that it integrates a larger experimental design developed by Perpiñán (2010). The researcher looks at an understudied language combination, considering native speakers of languages that have *wh*-movement, namely English and Arabic, acquiring a language that also has *wh*-movement, L2 Spanish. Besides, given that Arabic has grammatical conventional RPs, she considers that resumptive islands are essential to investigate the nature of grammaticality judgments of island configurations in the L1 and the L2.

Perpiñán (2020) bases her findings on a self-paced grammaticality judgment task and a written production task. The initial group of participants included 116 non-native speakers and 20 Spanish native speakers. The non-native speakers were tested to check the subcategorization knowledge of the experimental prepositional verbs (*hablar de* 'to talk about'; *depender de* 'to depend on'; *pensar en* 'to think about'; *confiar en* 'to rely on'; *soñar con* 'to dream about'; *contar con* 'to count on'). After the pre-test, only 42 non-native learners proceeded with the experiment (21 English native speakers and 21 Arabic native speakers).

With the written production task, Perpiñán intended to check the productivity of the participants' *wh*-movement structures. The results showed that non-native Spanish speakers had more difficulties producing prepositional RCs than native speakers. Still, even though PiP was the most productive strategy in all groups, Perpiñán also identified RCs produced with the P-Chop strategy among non-native speakers.

In the self-paced grammaticality judgment task, Perpiñán included RCs formed with extractions from island configurations. She selected three types of extraction: PiP, P-Chop, and extraction with a resumptive pronoun in the island configuration. As the previous literature showed variation in the results with weak islands, only strong islands were tested (*if*-clauses). In the current dissertation, the same three types of stimuli were

included in the self-paced reading acceptability judgment task, also with strong islands, as developed in Chapter 6.

The outcomes of this task showed that native speakers do not accept island configurations. Native speakers distinguish the three islands, preferring the PiP (gapped) condition, which was generally accepted more easily than the other two. In contrast, non-native speakers do not have robust intuitions about them, considering them acceptable 40-45% of the time. These results are revealing because they are at odds with what has been reported in the theoretical literature regarding the ability of RPs to rescue islands.

Perpinán's research corroborates the findings of other experimental studies with native speakers, such as McDaniel & Cowart (1999), Heestand *et al.* (2011), Polinsky *et al.* (2013), and Alexopoulou & Keller (2007, 2013). All these report that extractions from islands were judged unacceptable, regardless of the presence of a resumptive pronoun. In other words, the gapped version with PiP was not assessed differently from the resumptive version. Perpiñán interprets these results as "a clear indication that islands, with gaps or RPs, are not a purely syntactic phenomenon" (Perpiñán, 2020, p. 395). Consequently, their use to determine the access to UG is a debatable method, in the vein of Belikova & White's (2009) conclusions.

In this section, I have presented the main findings on the acquisition of *wh*-movement, and the controversies that the sensitivity to extractions from islands raise, as a means to diagnose the acquisition of *wh*-movement.

In the following section, I will look at the research conducted on the acquisition of RCs by Chinese native speakers. The identification of regularities in the acquisition of RCs in different L2s may indicate the influence of the native language, Chinese.

4. Acquisition of RCs by Chinese speakers

The acquisition of RCs in other L2s by Chinese speakers was tackled in studies that include L2ers from different native languages (Flynn, 1989; Gass, 1979; Hawkins & Chan, 1997; Schachter, 1973, among others) but is also approached in works that look exclusively at Chinese native speakers (Lardiere, 2008; Li, 1992; Xiaorong, 2007; Yip & Matthews, 1991, among others). Most of these studies investigate the acquisition of RCs under the light of the Noun Phrase Accessibility Hierarchy (NPAH) (Keenan & Comrie, 1977), focusing on the difficulty in the acquisition of RCs according to their syntactic

position. Chinese speakers' avoidance of RCs, specifically in the more embedded functions, is also underscored (see Schachter, 1973; Yip & Matthews, 1991).

Hawkins & Chan (1997) looked at the acquisition of English RCs by Chinese and French native speakers. This study is mentioned throughout the current dissertation, given that, like Portuguese, English displays movement of an overt *wh*-pronoun in RCs. Besides, in RCs, English RPs are intrusive, as in Portuguese, and not grammatical, as in Chinese.

Hawkins & Chan (1997) tested L1 speakers of Cantonese at three proficiency levels in English and compared them with native speakers, using a Grammaticality Judgement Task[8]. As their exposure to the L2 increased, the participants improved their performance in recognizing grammatical RCs and rejecting ungrammatical RPs. Nonetheless, more advanced learners performed worse than beginners in identifying and correcting violations to the Subjacency condition. The authors interpret this result as a transference of L1 properties. Subjacency violations lacked a resumptive pronoun; RPs are mandatory in Chinese prepositional clauses. So, the participants assessed them as ungrammatical. The same Chinese beginners accepted ungrammatical resumptives in simple RCs (i.e., without extraction from syntactic islands) and judged grammatical RCs at chance level. As Chinese presents RPs in RCs (mandatory when a preposition is involved), Hawkins & Chan (1997) claim that the Chinese beginners have rejected violations to Subjacency because they were directly transferring the native language properties into the L2.

Advanced learners accurately rejected overt RPs (90% of the cases) and judged grammatical RCs primarily as OK (79% acceptance rate). However, according to Hawkins & Chan, this does not mean that they have acquired *wh*-movement. These target results were judged to be apparent as they were contradicted by the fact that the advanced learners could not recognize the violations to Subjacency. Hawkins & Chan argue that, in the advanced learners' ILG, a *wh*-phrase merges with relative C and binds an obligatory null resumptive pronoun in the embedded clause. Such an analysis is justified because advanced learners did not acquire the uninterpretable functional feature that triggers the movement of the *wh*-operator to the specifier of CP. Consequently, they analyze the gap

[8] 101 sentences were included, divided in four types: 1) sentences displaying grammatical and ungrammatical use of *wh*-operators and complementizer; 2) simple relative clauses with ungrammatical resumptive pronouns; 3) ungrammatical violations of the Subjacency condition (*wh*-islands and complex NPs). The results relating to the constraint on double filled CP are not mentioned here, since these are not directly related to the subject that I am addressing.

as a null resumptive pronoun, *pro*. According to these researchers, this study is one example where the performance does not necessarily reflect the linguistic competence of the L2ers. Despite advanced learners were able to recognize correct RCs, rejecting ungrammatical RPs, the fact that advanced learners were not sensitive to subjacency effects is judged by the researchers as an indicator that the features setting the relative CP were not acquired (Hawkins & Chan, 1997; Hawkins, 2005).

Lardiere (2008) assumes that adjunct RCs in Chinese display *wh*-movement. So, despite all the aspects that distinguish RCs in Chinese from RCs in English, there are some similarities between them that the learners can identify in L2 acquisition. As Lardiere (2008, p. 20) puts it: "Oversimplifying, it would appear that for a native Chinese speaker acquiring English, the properties of adjunct relatives in Chinese must be extended to all relatives in English." Her data show about 120 RCs in the production of Patty, the subject of Lardiere's case study, including subject, object, and oblique RCs. According to Lardiere, Patty acquired operator movement since she correctly used preposition stranding in English in a context where resumption would be expected in Chinese.

According to the Feature Reassembly Hypothesis (Lardiere, 2008 and ff.)[9], in the early stages of acquisition, L2 speakers map for morpho-lexical correspondences between the L1 and the L2, identifying the similarities between the functional meanings of the lexical items in the target L2 and their L1. Once the initial mapping is established and there are no more correspondences available, the FRH predicts that the L2 speakers may *acquire* new features not available in the L1, *abandon* distinctive features relevant in the L1 but not necessary in the L2, and *assemble* features existing in the L1 into new lexical items or new bundles in the L2. The acquisition of movement by Patty constitutes an example of the ability to assemble the operator movement features available in other relative structures in the L1 into the acquisition of RCs in the L2.

The studies of Hawkins & Chan (1997) and Lardiere (2008) show that advanced Chinese speakers can correctly judge and produce RCs in English, but these outcomes lead the authors to opposite conclusions. Hawkins & Chan (1997) state that there are specific functional properties that L2 learners cannot acquire, specifically *wh*-movement. On the contrary, Lardiere (2008) claims that Chinese native speakers can successfully reassemble the features of their native language to acquire operator movement in the L2.

[9] See Chapter 1 for an overview of Lardiere's Feature Reassembly Hypothesis.

The current chapter could not finish without mentioning the main findings on the L1 acquisition of prepositional RCs, in European Portuguese and in other languages, which are presented in the following section 6. Under a generative perspective, there is no doubt that children access UG to acquire their native languages. As such, eventual similarities in L1 and L2 acquisition of RCs provide clues for the (lack of) access of non-native speakers to Universal Grammar during the acquisition process.

5. L1 Acquisition of Prepositional Relative Clauses

5.1. In other languages

Prepositional RCs with PiP in EP L1 are acquired late and evolve along with instruction (Fontes, 2009; Valente, 2008; Vasconcelos, 1996). The late acquisition of PiP was observed in EP and other languages (see Guasti & Cardinaletti, 2003, for Italian; Labelle, 1990, 1996, for French; McDaniel *et al.*, 1998 for English; Pérez-Leroux, 1995, for Spanish, among others).

McDaniel *et al.* (1998) looked at the acquisition of prepositional and genitive RCs in L1 English. In English, PiP is mandatory with genitive RCs (20), but not with prepositional RCs, which allow for preposition stranding (21):

(20) (a). the robber whose rope Dorothy is swinging.
(b). * the robber whose Dorothy is swinging rope.

(21) the robber who Dorothy talked to.

McDaniel *et al.* (1998, p. 308)

The study included 115 American children, aged 3;5 to 11;11, and 20 adults in the control group. The results showed that children prefer PS to form prepositional RCs (over 95% of the time). With genitive RCs, PiP (the mandatory strategy) occurred only in 15% of the cases, with other alternatives replacing it, such as resumptives, connector *that's*, deletion of the genitive marker, and different less systematic responses. In a nutshell, the tendency to avoid PiP led the authors to consider that PS is the most natural option in English. PiP is a prescriptive artifact that results from instruction and does not truly reflect the real grammar.

Labelle (1990, 1996) ran elicited production tasks to check if French children mastered *wh*-movement. Although she did not look specifically at the acquisition of prepositional RCs, the data gathered with prepositional RCs showed that the children in her experience avoided PiP, producing fundamentally P-Chop RCs and resumptive RCs.

Pérez-Leroux (1995) ran an elicited production experiment to check the productivity of the resumptive strategy among Spanish children. The outcomes of this experience showed that the youngsters avoid PiP and tend to produce resumptive or P-Chop RCs instead.

The acquisition of prepositional RCs by French and Italian children was also investigated by Guasti & Cardinaletti (2003). The authors ran two elicited production experiments with Italian and French children (30 Italian-speaking children with ages from 5;1 to 10;0 and 18 French-speaking children with ages from 4;5 to 7;3). They observed that all children in the study produced relatives lacking the required relative pronoun and containing resumptive pronouns (Guasti & Cardinaletti, 2003, p. 70). Guasti & Cardinaletti do not claim that the absence of PiP implies lack of *wh*-movement. Instead, they argue that several Romance languages have two varieties of RCs. PiP are conventional relatives, and the others are non-standard relatives. In the former, a relative pronoun introduces the relative clause, pied-piping the preposition with it. In the latter, the relative clause is introduced by a complementizer and generally contains a resumptive pronoun. The authors underscore that resumptive RCs are a natural option in spoken colloquial language, used by adult speakers, irrespective of their level of instruction. As such, they constitute "the most natural option in children's grammar". As argued by McDaniel *et al.* (1998), the authors claim that PiP in RCs emerges during the school years and may be the result of explicit teaching.

5.2. In European Portuguese

Although, to my knowledge, there are no works developed on the acquisition of RCs in L2 Portuguese, several works approach the L1 acquisition of RCs in European Portuguese (Costa *et al.*, 2011; Costa & Lobo, 2009; Fontes, 2009; Valente, 2008; Vasconcelos, 1991). As Costa et al.'s (2011) and Costa & Lobo's (2009) research considered only subject and object RCs, it will not be described here.

Vasconcelos' (1991) research on the L1 acquisition of RCs in EP is relevant for the present dissertation. The author tested the production and comprehension of RCs with

children between 3 and 8;6 years old. She included SBJ and DO RCs in the comprehension test. In the production task (an elicited imitation task), she added prepositional RCs (IO and OBL locative), like (22) and (23):

(22) *O professor a quem a menina*
DET.M.SG teacher to REL DET.F.SG girl
deu o livro é careca.
give-PST.3.SG DET.M.SG book be-PRS.3.SG bold
'The teacher to whom the girl gave the book is bold.'

(23) *A mesa onde o professor pôs*
DET.F.SG table REL DET.M.SG teacher put-PST.3SG
o livro tem gavetas.
DET.M.SG book have-PRS.3SG drawers
'The table where the teacher put the book has drawers.'

(both from Vasconcelos, 1991, p. 275)

Significantly, the participants found several grammatical ways to avoid RCs in all syntactic positions. Sentences (24)-(32) illustrate these alternatives (a. presents the target RCs and b. and c. the choices of EP-speaking children). In some cases, children omitted the relative clause, as illustrated in (24)b. Children also replaced the target with other structures, such as independent sentences, juxtaposed or coordinated (25); prepositional or adjectival phrases ((26) and (27)); causal subordinated sentences (28); filling the gap of the relative clause with an NP (29); separating the relative clause from its head (30); producing ungrammatical structures that cannot be found in Portuguese (31)-(32)[10].

[target]

(24) (a). *O menino que o gato arranhou*
DET.M.SG boy REL DET.M.SG cat scratch-PST.3SG
gritou.
scream-PST.3SG
'The boy that the cat scratched screamed.'

[10] This classification of the sentences follows the authors proposal. However, sentence (32)c in the text is grammatical.

[production]

(b). *O* *menino* *gritou.*
DET.M.SG boy scream-PST.3SG
'The boy screamed.'

[target]

(25) (a). *O* *cão* *mordeu* *a* *menina*
DET.M.SG dog bite-PST.3SG DET.F.SG girl
que *tem* *caracóis.*
REL have-PRS.3SG curly-hair
'The dog bit the girl that has curly hair.'

[production]

(b). *A* *menina tem* *caracóis*
DET.F.SG girl have-PRS.3SG curly-hair
o *cão* *mordeu* *a* *menina*.
DET.M.SG dog bite-PST.3SG DET.F.SG girl
'The girl has curly hair the dog bit the girl.'

(c). *A* *menina tem* *caracóis* *e*
DET.F.SG girl have-PRS.3SG curly-hair and
o *cão* *mordeu* *a* *menina.*
DET.M.SG dog bite-PST.3SG DET.F.SG girl
'The girl has curly hair, and the dog bit the girl.'

[target]

(26) (a). *O* *cão* *que* *tem* *orelhas compridas*
DET.M.SG dog REL have-PRS.3SG ears long
mordeu *a* *menina.*
bite-PST.3SG DET.F.SG girl
'The dog that has long ears bit the girl.'

[production]

(b). *O* *cão* *das* *orelhas compridas*
DET.M.SG dog of-DET.F.PL ears long
mordeu *a* *menina.*
bite-PST.3SG DET.F.SG girl
'The dog of the long ears bit the girl.'

(c). *O* *cão* *com* *orelhas compridas* *mordeu*
DET.M.SG dog with ears long bite-PST.3SG
a *menina.*
DET.F.SG girl
'The dog with long ears bit the girl.'

[target]

(27) (a). *A* *cadeira onde* *o* *menino pôs*
DET.F.SG chair REL DET.M.SG boy put-PST.3SG
o *gato* *é* *alta.*
DET.M.SG cat be-PRS.3SG tall
'The chair where the boy put the cat is tall.'

[production]

(b). *O* *menino* *pôs* *o* *gato*
DET.M.SG boy put-PST.3SG DET.M.SG cat
em cima da *cadeira alta.*
in top of-DET.F.SG chair tall
'The boy put the cat in top of the tall chair.'

[target]

(28) (a). *A* *senhora beijou* *o* *menino que*
DET.F.SG lady kiss-PST.3SG DET.M.SG boy REL
o *cão* *mordeu.*
DET.M.SG dog bite-PST.3SG
'The lady kissed the boy that the dog bit.'

[production]

(b). *Ela* *deu* *um* *beijinho* *porque*
3SG give-PST.3SG DET.INDF.M kiss because
o *cão* *mordeu.*
DET.M.SG dog bite-PST.3SG
'She gave a kiss because the dog bit.'

[target]

(29) (a). *A* *senhora beijou* *a* *menina*
DET.F.SG lady kiss-PST.3SG DET.F.SG girl
que *o* *cão* *mordeu.*
REL DET.M.SG dog bit-PST.3.SG
'The lady kissed the girl that the dog bit.'

[production]

(b). *A* *mãe* *beijou* *a* *menina*
DET.F.SG mother kiss-PST.3SG DET.F.SG girl
que *o* *cão* *mordeu* *a* *menina.*
REL DET.M.SG dog bit-PST.3.SG DET.F.SG girl
'The mother kissed the girl that the dog bit the girl.'

[target]

(30) (a). *O* *gato* *que* *tem* *olhos verdes*
DET.M.SG cat REL have-PRS.3.SG eyes green
arranhou *a* *velha.*
scratch-PST.3SG DET.F.SG old-lady
'The cat that has green eyes scratched the old lady.'

[production]

(b). *O* *gato* *arranhou* *a* *velha*
DET.M.SG cat scratch-PST.3SG DET.F.SG old-lady
que *tem* *olhos* *verdes.*
REL have-PRS.3.SG eyes green
'The cat scratched the lady that has green eyes.'

[target]

(31) (a). *A* *menina* *que* *o* *cão*
DET.F.SG girl REL DET.M.SG dog
mordeu *chorou.*
bite.PST.3SG cry-PST.3SG
'The girl that the dog bit cried.'

[production]

(b). *O* *cão* *que* *mordeu* *a* *menina*
DET.M.SG dog REL bite.PST.3SG DET.F.SG girl
a *menina* *chorou.*
DET.F.SG girl cry-PST.3SG
'The dog that bit the girl the girl cried.'

[target]

(32) (a). *O* *menino* *que* *o* *gato* *arranhou*
DET.M.SG boy REL DET.M.SG cat scratch-PST.3SG
gritou.
scream-PST.3SG
'The boy that the cat scratched screamed.'

[production]

(b). *O* *menino* *que* *o* *gato* *arranhou*
DET.M.SG boy REL DET.M.SG cat scratch-PST.3SG
ele *gritou.*
3M.SG scream-PST.3SG
'The boy that the cat scratched he screamed.'

(c). *O* *menino* *gritou* *que* *o*
DET.M.SG boy scream-PST.3SG REL DET.M.SG
gato *arranhou.*
cat scratch-PST.3SG
'The boy screamed that the cat scratched.'

(d). *O* *gato* *que* *arranhou* *o* *menino*
DET.M.SG cat that scratch DET.M.SG boy
ele *gritou.*
3M.SG scream-PST.3SG
'The cat that scratched the boy he screamed.'

(all from Vasconcelos, 1996, pp. 327-328)

Furthermore, Vasconcelos noted that children struggle more with prepositional RCs. Children never reproduced PiP prepositional RCs; instead, they replaced them with

P-chop RCs or resumptive RCs, as illustrated in (33)b and (34)b, respectively (again, the sentences in a. present the target and in b. the utterances of EP-speaking children):

[target]

(33) (a). *O* *menino a* *quem* *a* *velha*
DET.M.SG boy to REL DET.F.SG old-lady
deu *o* *gato* *tem* *calças azuis.*
give-PST.3SG DET.M.SG cat have-PRS.3SG trousers blue
'The boy to whom the old lady gave the cat has blue trousers.'

[production]

(b). *O* *menino que* *a* *velha*
DET.M.SG boy REL DET.F.SG old-lady
deu *o* *gato* *tem* *calças azuis.*
give-PST.3SG DET.M.SG cat have-PRS.3SG trousers blue
'The boy that the old lady gave the cat has blue trousers.'

[target]

(34) (a). *O* *professor* *a quem* *o*
DET.M.SG teacher to REL DET.M.SG
menino deu *o* *livro* *é* *careca.*
boy give-PST.3SG DET.M.SG book be-PRS.3SG bold
'The teacher to whom the kid gave the book is bald.'

[production]

(b). *O* *professor* *que* *o* *menino*
DET.M.SG teacher REL DET.M.SG boy
lhe *deu* *o* *livro* *é* *careca.*
Cl give-PST.3SG DET.M.SG book be-PRS.3SG bold
'The teacher that the kid gave him the book is bald.'

(both from Vasconcelos, 1991, p. 198)

Considering the growing importance that non-standard strategies have taken in the oral and written production of RCs in European Portuguese, Fontes (2009) and Valente (2008) looked at the production and comprehension of RCs among native EP students. Fontes studied children between 10 and 12 years old, and Valente looked at adolescents aged between 14 and 18.

Both studies included written production tasks and grammaticality judgment tasks. These showed that the acceptance and use of PiP increased with instruction. The acceptability rates of PiP RCs improved progressively: 4th grade (10 years old), 78.2%; 6th grade (11-12 years old), 81.1%; 9th grade (14-15 years old), 91.2%, and 12th grade (17-18 years old), 91.9%. The production rates of pied-piped RCs also rose gradually: 39.7% in the 4th grade, 52.4% in the 6th grade, 77.8% in the 9th grade, and 84.9% in the 12th grade.

Valente (2008) and Fontes (2009) identify an effect of progression in the use of PiP associated with schooling. Besides, they claim that PiP is the most productive relativization strategy. These studies also show that, among the non-standard strategies available, P-Chop is preferred. Fontes (2009, p. 169) attributes this preference to the reduced complexity of the structure. In her analysis, P-Chop RCs do not involve *wh*-movement, and the deletion of the relativized constituent operates in PF. For this reason, it is preferred by native speakers.

As is clear from the current chapter, there is still a lot to unravel regarding the acquisition of prepositional RCs in L1 and L2. The current dissertation attempts to fill in this gap by looking at two languages that adopt different strategies to relativize the object of an overt preposition. Furthermore, European Portuguese prepositional RCs are challenging, given that non-conventional P-Chop is particularly productive among natives, adding a layer to the input.

The next chapter introduces the experimental design developed for the present dissertation, including the methodology and the description of the tasks, which were built considering the research here described.

Chapter 6

Learning Task, Research Questions, and Methodology

The current chapter starts by synthetizing the theoretical assumptions made about prepositional RCs in the L2, EP (Chapter 3), and in the native language, Mandarin Chinese (Chapter 4). Considering the properties of these constructions in the L1 and the L2, it then describes the learnability task for the Chinese-speaking learners of EP that participated in this study (section 1). The research questions that guided the current research are presented in section 2.

Section 3 describes the main findings and conclusions of the pilot study. The methodology adopted in the final experimental design is detailed in section 4, where I explain the motivations behind the selection of the experimental items, providing further details about the linguistic questionnaire and the pre-test that preceded the experiment. Sections 5 and 6 present additional information about the participants and the degree of exposure to the language. Section 7 describes the materials created for each of the three tasks that composed the final experiment (one oral production task and two self-paced reading acceptability judgment tasks). Finally, the procedure followed in the implementation of the experimental design is explained in section 8.

1. Learning Task

We are looking at a scenario involving learners whose native language (Mandarin Chinese[1]) displays prepositional RCs with grammatical and mandatory resumptives when the preposition is overt. For the reasons exposed in Chapter 4, I am not considering the relativization of adjuncts with a gap in Chinese (location, time, instrumental, manner, and reason). I am only bearing in mind the cases where the preposition is overt, requiring a mandatory RP, regardless of the status of the relativized PP (adjunct or argument). In these cases, I am following Wen (2020), assuming no movement is involved when a PP is relativized with an overt preposition and an RP. Operator movement is present in relativizing arguments and adjuncts with a gap (see Chapter 4).

[1] I refer to Mandarin Chinese as the L1, although some participants had Cantonese as their native language. All participants in this study spoke Mandarin Chinese as a native language or as the majority language acquired very early in life. Furthermore, the properties of prepositional relative clauses appear to be sufficiently similar in Mandarin Chinese and other varieties, including Cantonese (Hawkins & Chan, 1997; Lardiere, 2008; Matthews & Yip, 1994; Yip & Matthews, 2017). Hence, I predict no differences in the acquisition process modulated by the Chinese variety of the learner.

The target language (EP) shows movement in the standard strategy (PiP) and non-standard P-Chop. EP has non-standard resumptive RCs not involving movement (Chapter 3).

Resumption is described for both languages, but it is not equivalent in the L1 and the L2. It is the only option available to relativize a PP with an overt preposition in MC, and it is fully grammatical, being a syntactic device. In non-standard EP, resumption occurs outside and inside islands. As Polinsky *et al.* (2013) proposed for English, RPs in EP are possibly a "(co)reference tracking device," "a way for speakers to maintain coreference and add more information without breaking the production chain"[2] (id., p. 357). Table 1 summarizes these properties.

Table 1

Relativization strategies in Mandarin Chinese and EP prepositional RCs

Relativization Strategy	Mandarin Chinese		EP	
	status	movement	status	movement
Resumption	standard	no	non-standard	no
Pied-Piping	N.A.		standard	yes
P-Chop	N.A.		non-standard	yes

Chinese does not have relative pronouns, and the relativizer is the complementizer DE (的). In RCs with an overt preposition and an RP, Cº does not hold any feature that triggers movement. The RP is syntactically determined (i.e., it is not discursive, as I am assuming for Portuguese). Therefore, when acquiring prepositional RCs in EP, Chinese native speakers need to integrate a grammar that displays more options than their native grammar. Table 2 sketches these differences.

[2] As noted by the authors, the understanding that the production of RPs is motivated by performance pressures, whenever the syntactic structure does not allow the speaker to create a syntactic dependency between a given antecedent in the discourse and the upcoming position of the relevant argument, is equivalent to Shlonsky's "last resort" view. That is, speakers use resumption when they have no other way to save the derivation from crashing.

Table 2

Closer look at relativization in Mandarin Chinese and EP

		Mandarin Chinese	EP
Relativizer	Complementizer	*yes*	*yes*
	Relative pronoun	***no***	***yes***
Rel. Strategies	Standard	*yes*	*yes*
	Non-standard	***no***	***yes***
Wh-movement	In other structures	*yes*	*yes*
	In prepositional RCs	***no***	***yes***

In Chapter 3, I have described the three relativization strategies available in EP, and I have proposed a configuration of the relative CP for each one of them. Table 3 presents the main properties of each relativization strategy.

Table 3

Properties of the three relativization strategies available in EP

Relativization strategy	***Wh*-movement**	**Moved element**	**Relativizer**	**C° configuration**	**Operation required**
Pied-Piping	yes	PP	Wh-elements	*u*Wh[ ], *i*Cat[DET]	*assembly*
P-Chop	yes	DP	[que *e*]	*u*Wh[ ], *i*Cat[DET]	*assembly*
Resumption	no	-	*que* generated in C°	*que*, *u*Wh[REL], *u*Cat[DET]	*mapping*

In Chinese, I have assumed that the relative CP in resumptive RCs with an overt preposition holds a *u*Wh[REL] feature.

When acquiring prepositional RCs in EP, Chinese learners need to recognize that (not necessarily in this order):

1) word order in Chinese and EP is different, switching from head-final RCs into head-initial RCs;

2) there are several *wh*-phrases in EP, with different semantic properties, and a correspondence has to be established between the *wh*-forms and their meaning;

3) different strategies to relativize a PP are available in EP, and learners need to relate these strategies to the only strategy that is available in MC, i.e., resumption;

4) the different relativization strategies in Portuguese do not have the same status, given that PiP is standard and P-Chop and Resumption are non-standard;

5) PiP and P-Chop involve syntactic movement, while Resumption does not;

6) PiP requires the fronting of the preposition along with the *wh*-phrase, and the different relativizers available in Portuguese are found only with this strategy.

Finally, acknowledging this, learners need to:

- acquire the morphological features of the *wh*-phrases and associate them to their semantic properties (exemplifying, they need to understand that the relativizer *quem* requires a [+human] head);
- acquire the features that set the relative CP in the different relativization strategies in Portuguese, namely understanding that PiP is the only standard strategy available in EP, but that there are two alternatives (P-Chop and Resumption);
- assemble the features that trigger *wh*-movement in other structures in Chinese into the features that are bundled together into the relative C in the PiP and the P-Chop strategies.

However, we should not neglect that, most likely, PiP is the predominant structure in the direct input available in the classroom. The exposure to explicit input may facilitate acquiring the relevant structures in the reassembly stage. Bearing this in mind, I will present the research questions that guided this dissertation in the following sub-section.

2. Research questions and hypotheses

Considering the properties of prepositional RCs in Mandarin Chinese (L1) and EP (L2) described in the previous chapters, and with the general aim of investigating how

Chinese-speaking learners of EP acquire prepositional RCs, the specific research questions guiding the current dissertation are organized in three main topics: 1) Initial transfer/ Mapping; 2) Developmental Paths/ Reassembly; 3) Islands. Arguments vs. adjuncts. The research questions (RQs) and the hypotheses that follow them are formulated according to the FRH (Lardiere, 2008, ff.), which builds on the FT/FAH (Schwartz & Sprouse, 1996).

1- Initial Transfer / Mapping

The first specific research question concerns the ability of Chinese speakers to map the properties of oblique RCs from the L1 into the L2.

> **RQ1**: Do Chinese-speaking learners of EP initially map the properties of prepositional RCs from their L1 onto the target language and therefore start by adopting resumption as the default strategy?

To RQ1, following the FRH, I present the following hypotheses:

- **H1:** Intermediate speakers will produce and accept more resumptive RCs than advanced learners, since these only involve mapping;
- **H2**: At the intermediate level of proficiency, resumption will prevail above the other strategies, which involve movement, since it requires a less complex operation (mapping).

2 – Developmental paths/ Reassembly

As I am assuming that prepositional RCs do not display movement in Chinese, contrary to EP, the second research question concerns the *wh*-movement feature, which demands a process of reconfiguration of features from the L1 into the L2.

> **RQ2.**
>
> a) Are Chinese-speaking learners of EP able to select the *wh*-movement feature from other L1 relative structures (i.e., gap or adjunct RCs) and reassemble it into the relative C of prepositional RCs in the L2? Specifically, do they produce and accept RCs with PiP and P-Chop in EP?

b) If both groups produce and accept PiP and P-Chop, is there a difference between intermediate and advanced speakers?

- **H3:**

a) Following the FRH, if Chinese L2 learners of EP can reassemble the features of *wh*-movement, I expect them to produce and accept PiP and P-Chop in prepositional RCs in EP;

b) Intermediate learners will have lowers rates of production and acceptance of these strategies than advanced learners.

Prepositional RCs in EP may be produced with three relativization strategies, entailing a different configuration of the relative CP in each case. I predicted that Chinese-speaking learners of EP start by acquiring RCs with strategies that are structurally closer to their native language, i.e., resumptive RCs[3]. Resumptive RCs do not entail movement in EP, so Chinese L2ers may map the features of the resumptive relative Cº in Chinese into EP.

On the other hand, P-Chop RCs in EP involve *wh*-movement, but they are produced with a relativizer *que*, which is semantically less specified than the relativizers involved in PiP. This strategy involves the reassembly of *wh*-movement features and the acquisition of only one underspecified relativizer *que*.

P-Chop in EP L1 occurs more frequently with arguments than adjuncts (Santos, 2014; Duarte & Brito, 2003; Rinke & Aßmann, 2017) (see Chapter 3). In L2 acquisition of *wh*-questions, researchers found similar results, indicating that the drop of the preposition occurred more frequently with arguments than adjuncts (Jourdain, 1996; Klein, 1993) (see Chapter 5). Thus, there is an asymmetry between arguments and adjuncts in the use of P-Chop that must be taken into account.

Moreover, following Perpiñán (2010), P-Chop constitutes a developmental stage of L2 acquisition, during which the participants do not select the preposition from the lexicon (Chapter 5). So, we need to consider the existence of two forms of P-Chop with a different nature: the native non-standard strategy and developmental P-Chop. P-Chop as a developmental stage does not distinguish between argument and adjunct PPs. P-chop in EP L1 does.

[3] See section 1 of the current chapter.

PiP RCs are introduced by a *wh*-element that must be fronted along with the preposition. PiP is the strategy that shares fewer properties with prepositional RCs in Chinese, because it may involve different *wh*-elements and requires movement of the preposition along with the wh-phrase. Thus, PiP involves the reassembly of *wh*-movement features that force the movement of the *wh*-phrase and the preposition, and the acquisition of different relativizers with distinct semantic features.

Considering the above, I formulate research questions 3 and 4 and hypotheses 4, 5 and 6:

RQ3. Can we identify a sequence in the acquisition of the three relativization strategies (expectedly, resumptive RCs, P-Chop and PiP)?

RQ4. Is there an asymmetry in the use and acceptance of P-Chop with arguments and adjuncts by the L2ers?

- **H4:** Both intermediate and advanced learners produce and accept P-Chop over PiP;
- **H5:** The intermediate learners will display mainly "developmental" P-Chop (Perpiñán, 2010) and so we expect that will produce and accept P-Chop with both arguments and adjuncts.
- **H6:** The advanced learners will display mainly native P-Chop and so we expect that they will have higher rates of production and acceptance of P-Chop with arguments than with adjuncts.

3- Islands. Arguments vs. adjuncts.

Assuming that syntactic islands are a diagnostic for the knowledge of *wh*-movement, the sensitivity of Chinese L1 learners of EP L2 to island configurations may indicate the acquisition of *wh*-movement. Research question 5 addresses island configurations:

RQ5. Are Chinese-speaking learners of EP sensitive to island configurations, showing acquisition of *wh*-movement? More specifically, when extracting the head of RCs within syntactic islands, do Chinese participants rate them higher if rescued by an RP than if produced with PiP or P-Chop?

- **H7**: Following the FRH, Chinese learners may acquire the uninterpretable features that trigger *wh*-movement and they will behave target-like in recognizing the ungrammaticality of syntactic islands (advanced learners will be more proficient than intermediate learners in recognizing ungrammaticality, because they are at a more advanced developmental stage).
- **H8**: Following the FRH, island configurations with RPs are rated higher than island configurations formed with PiP and P-Chop by Chinese learners.

Huang (1982b) noticed that extracting an adjunct from a *wh*-island originated worse results than extracting a complement from an equivalent domain. In the literature, it is assumed that it is less acceptable to extract an adverbial expression, as in (1), than a *wh*-object, as in (2) from an embedded clause across another *wh*-element (see Chomsky, 1986; Huang, 1982b; Lasnik & Saito, 1984, 1992; Poole, 2011; Rizzi, 1990, among others):

(1) *[The manner]$_i$ in which John asked [what to phrase _$_i$] is complex.

(2) [The problem]$_i$ that John asked [how to phrase _$_i$] is complex.

(adapted from Szabolcsi, 2006, p. 494)

In both cases, the Subjacency condition is violated (Chomsky, 1973, 1986). However, adjunct extraction is considered worse because it violates the Empty Category Principle (ECP). Such asymmetry in the extraction of adjuncts vs. complements is visible in weak islands but not in strong islands (Boeckx, 2008, p. 157). Contrary to weak islands (extraction of adjuncts and arguments in (1) and (2), respectively), strong islands disallow the extraction from adjuncts and arguments, as (3) illustrates for the DO of *kiss*.

(3) *I saw [the girl]$_i$ that John arrived [after Bill kissed _$_i$].

(Müller, 2019, p. 17.)

RQ4 refers to the existence of contrasts between arguments and adjuncts in the use and acceptance of P-Chop outside island configurations. RQ6 considers the existence of these contrasts within extractions from islands and in the three strategies: PiP, P-Chop and Resumption, in order to check if learners reflect the native behavior regarding arguments/ adjuncts. To avoid overcomplexifying the task by introducing new vocabulary, I have maintained the same lexical items in the task testing sensitivity to syntactic islands. In this vein, I present RQ6:

> **RQ6.** Do Chinese participants rate argument RCs within a syntactic island worse than adjunct RCs?

Considering this, hypothesis 9 is formulated:

- **H9:** Given that only strong islands were tested, I predict no significant asymmetry between arguments and adjuncts.

Regarding initial transfer (H1 and H2), the RDH, like the FRH, predicts that learners are likely to produce and accept resumption, given that resumption is available in the L1 and it does not involve the acquisition of new functional features.

However, the predictions made by the FRH and by the RDH differ with respect to some of the research questions. If we consider H3, the predictions made by RDH are equivalent to those made by FRH, but these entail different assumptions. Following the RDH, learners may produce and accept PiP and P-Chop, but this does not necessarily indicate that they have acquired the functional features that determine wh-movement. They may achieve a near target performance, but they resort to other mechanisms (in a 'missing feature despite appearances' situation, Hawkins, 2005, p. 125).

Regarding H4, H5 e H6, assuming that P-Chop RCs are less complex than PiP RCS, I believe that the predictions made by the RDH are the same as the ones made by the FRH.

The predictions made by the RDH differ from the FRH in H7. Looking at the implicit knowledge of wh-movement features, the RDH anticipates that the learners cannot recognize the violations to syntactic islands, because the functional features that determine wh-movement in the L2 are not accessible, given that they were not acquired

in the L1. Finally, according to the RDH (specifically the FFH), it is possible that intermediate learners rate islands rescued by RPs higher (H8), because Chinese displays resumption (considering, in particular Hawkins & Chan, 1997).

Before presenting the final experimental design developed to answer these research questions, I will briefly describe the pilot study that preceded it and the learning that came from it.

3. Pilot Study

A pilot study preceded the experiment presented in this dissertation. The pilot study was run in 2018 and involved 15 EP native speakers and 15 Chinese participants of B1-level. It included a pre-test, an oral production task, and a written production task, targeting prepositional and DO RCs.

Before enrolling in the pilot study, the prospective participants (selected according to their mother tongue and proficiency level) filled in a cloze test individually (built in the LearnClick platform). The goal of the cloze test was to assess if the L2ers knew that the tested verbs demand the preposition *a* 'to', *com* 'with', *em* 'in' or *de* 'of/from'. The combination of verb + preposition included in the cloze test of the pilot study were: *chegar a* 'arrive (to)'; *ir a* 'go (to); *comunicar com* 'communicate (with)'; *concordar com* 'agree (with)'; *falar com* 'talk (to)'; *precisar de* 'need (of)'; *gostar de* 'like (of)'; *participar em* 'participate (in)'; *pôr em* 'put (in)'; *viver em* 'live (in)'. The cloze test included 35 items (10 experimental and 25 distractors).

The model of the oral production task developed for the pilot study was followed in the final experimental design, and it is presented in greater detail in section 5 of the current Chapter. In a nutshell, RCs were elicited through questions with guided answers. The participants started by seeing a slide with a scenario on a computer screen, with a sentence describing it. The sentence was written on the screen and read out loud by the researcher. The first image was repeated in the following slide, along with a zoom and a question eliciting the RC. The beginning of the answer was written, guiding the speakers to produce a RC. To tap a more implicit response, the participants were instructed to complete the sentence orally as fast as possible with the information given. An example of a pair of slides is given in Figure 1.

Figure 1

Example of item eliciting a prepositional RC in the pilot study's oral production task

Slide 1 (Introducing the situation) *Slide 2 (Eliciting a prepositional RC)*



[slide 1]

O	*José*	*gosta*	*de um carro*
DET.M.SG	José	like-PRS.3SG	of one car

'José likes a car'

[slide 2]

O	*José*	*gosta*	*de um carro*
DET.M.SG	José	like-PRS.3SG	of one car

'José likes a car'

Que	carro	é	este?
Which	car	be-PRS.3SG	DEM

'Which car is this?'

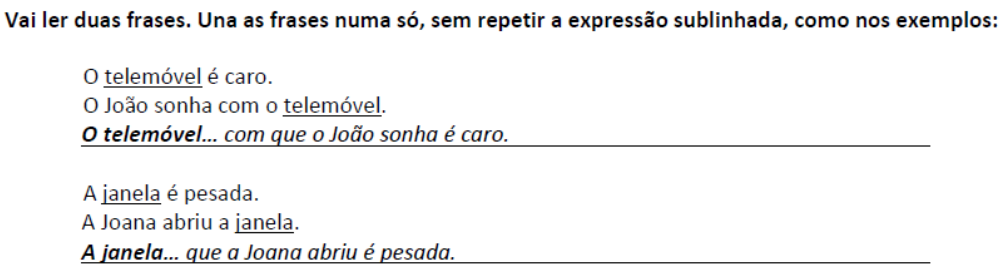
Este	é	o	carro...	(de)	que	o	José gosta.
DEM	be-PRS.3SG	DET.M.SG	car	of	REL	DET.M.SG	J. like-PRS.3SG

'This is the car... that José likes.'

In the written production task, participants were instructed to combine two sentences which shared one element, as Fig. 2 illustrates. The instructions were in Portuguese.

Figure 2

Example of item from the written production task run in the pilot study (the target answer is underlined)



'You are going to read two sentences. Put the two sentences together, without repeating the underlined expression, as in the examples.'

The meaning of the sentence had to be the same, but the shared element could not be repeated. Contrary to what happened with the oral production task, there was no time limit to complete the task. Again, one example of each type of structure was provided. The written production task was applied after the oral task so that the reasoning involved in the written test did not interfere with the oral production[4].

The pre-test and the oral production task models were followed in the final experimental design of this dissertation, with the necessary adaptations. The written production task run in the pilot study was replaced by two SPR-AJTs described in section 7.2. of the current Chapter. In the written production task, the participants had time to think and plan their answers, meaning that this task taps into explicit knowledge of the structure, the knowledge that the participants are likely to show when they have time to access the grammar rules they were taught. However, my intention with the final experimental design was to tap into implicit knowledge, and therefore I have chosen to do this through the SPR-AJTs.

The pilot study highlighted the necessity of adjusting the oral production task, namely, including distractors. The inclusion of distractors means that the oral production task will be longer, but they introduce different syntactic structures (copular verbs), distracting the participants' attention from RCs to provide more reliable results. Besides,

[4] The Pilot Test, including the cloze test, the oral production task and the written production task are presented in Appendix J.

the pilot study underscored the need to avoid coordination structures in the introductory sentences that described the images since these provided biased results in the pilot[5].

The pilot study also evidenced the necessity of adjusting the test items. The pilot included four prepositions (*em* 'in,' *de* 'from', *com* 'with', and *a* 'to') that were narrowed to two (*em* 'in' and *de* 'from') in the final experiment. The decision of limiting the prepositions tested to two was motivated by the fact that *em* and *de* are selected in much more contexts than other prepositions (Santos, 2014).

Furthermore, the preposition *a* 'to' was removed from the final experimental design because it may be problematic in this study, as it assigns dative Case in EP. Chinese has a double object construction (NP-NP, with no preposition) alternative to the dative construction (NP-to-NP). For this reason, dative verbs and preposition *a* were kept out to avoid cases of preposition dropping that could result from the mapping of the participants' native double object construction.

The preposition *com* 'with', which integrated the pilot, was not considered in the experiment due to its semantic meaning of [company], preventing it from occurring in more functional contexts.

The progress of the research also evidenced the pertinence of contrasting argument and adjunct prepositional RCs. Such contrasts were not considered in the pilot.

The results of the pilot study indicated that Chinese learners and EP natives had a similar performance showing a ceiling effect on the written production of DO RCs. Chinese L2 learners produced fewer target structures than EP native speakers in oral production but reached accuracy rates over 70%.

DO RCs were first considered as experimental items in the experimental design, and I was interested in looking at the animacy effects and its interaction with resumptives, including [+animate] and [-animate] heads. However, at a certain point, the decision was made to restrict the object of analysis to prepositional RCs, and for this reason, DO RCs

[5] One of the conclusions drawn from the pilot was that, if the contextual sentence of an oral production item provides additional information on the relativized DP, the participants tend to include it in their answer. Several items that provided a coordination in the context sentence had unexpected results, as in *A Kate e a Angela foram passear e comeram gelados.* 'Kate and Angela went for a walk and ate ice-creams'. The question was *Que gelados são estes?* 'What ice-creams are these?' and the target was a direct object RC: *Estes são os gelados que a Kate e a Angela comeram*. 'These are the ice-creams that Kate and Angela ate'. Many Chinese participants of the pilot study recovered the information from the context sentence and coordinated it, producing non-target answers, such as **Estes são os gelados que elas foram passear e comeram.* 'These are the ice-creams that they went for a walk and ate'.

appear in the final experimental design as a control condition, as a baseline indicating that learners can produce and understand RCs.

Interestingly, the pilot showed that Chinese participants were producing more PiP RCs according to the standard target than EP native speakers. In other words, the pilot study evidenced the relevance of P-Chop for native speakers with specific verbs (namely, *gostar de* 'like' and *precisar de* 'need'). It also showed that Chinese participants are not necessarily behaving like native speakers but rather following the prescriptive norm or what has been taught in class.

4. Methodology of the Final Experimental Design

The final experimental design of this dissertation includes three tasks: an oral production task, and two SPR-AJTs. These were preceded by a pre-test. In this section, I will provide details about the three tasks.

4.1. Selection of experimental items

The experimental combinations of verb + preposition included exclusively the prepositions *de* 'from, of' and *em* 'in'; only experimental verbs compatible with *de* and *em* were chosen. These prepositions were selected given their frequency in EP.

The choice of two prepositions meant the elimination of two prepositions used in the pilot study (see previous section). Despite this reduction, a new variable was added, looking for the contrast between relativized argument and adjunct PPs. Data from EP native speakers show that functional prepositions which introduce arguments are omitted more often than prepositions that introduce adjuncts (Santos, 2014; Duarte & Brito, 2003; Rinke & Assmann, 2017 – see Chapter 3). Besides, researchers identified that the drop of the preposition occurred more frequently with arguments than adjuncts in the L2 acquisition of *wh*-questions (Jourdain, 1996; Klein, 1993 – see Chapter 5). Thus, the expectation was that EP native speakers produced more RCs with P-Chop with arguments than adjuncts. Still, I intended to verify if learners converged with the target grammar regarding the relativization strategies adopted for arguments and adjuncts.

Additionally, adjunct prepositional RCs are said to involve movement in Chinese (Aoun & Li, 2003; Li, 2002; Ning, 1993, among others). If that is the case, adjunct RCs will share more features in the L1 and the L2, and the operations involved in the acquisition would be less complex (entailing mapping instead of reassembling). As

discussed in Chapter 4, the structure of adjunct and argument RC in Chinese is not consensual. Including adjunct and argument RCs in the experimental task allows us to identify contrasts in the acquisition resulting from mapping different feature configurations in the native language.

The initial intention was to include EP verbs with a comparable argument grid in Chinese, with at least one argument introduced by a mandatory preposition. The assumption was that the learner's task is facilitated if the verbs tested share the same subcategorization properties in the native and the second language (even if the prepositions are not the same), following Perpiñán (2010, p. 115). However, this goal was hard to accomplish. As exposed in Chapter 4, to my knowledge, the literature written in English about the thematic grid of Chinese verbs is not abundant. Moreover, the role of prepositions in Chinese is not consensual, and scholars do not agree regarding the existence of argument PPs in Chinese.

Since the similarity with the L1 was hard to follow as a criterion, the verbs were selected according to their high frequency in EP and the textbooks and course syllabus of Portuguese as a Foreign Language. The experimental verbs are presented in Table 4.

Table 4

Experimental verbs selected for the prepositional context

Type of relativized constituent	**Preposition**	
	de	em
Argument	*gostar* 'like', *precisar* 'need'	*participar* 'participate', *pensar* 'think'
Adjunct	*gritar* 'scream', *telefonar* 'call'	*trabalhar* 'work', *estudar* 'study'

The prepositions do not have the same semantic/ functional value in all the combinations tested. In the argument combinations *gostar de* 'like,' *precisar de'* need,' and *pensar em* 'think,' the preposition has a strict functional value, deprived of semantic meaning. With *participar em* 'participate', that also selects an argument, *em* has a functional or a locative stative meaning. With adjunct PPs, the preposition expresses a locative origin meaning (*gritar de* 'scream from' and *telefonar de* 'call from') or a locative stative value (*trabalhar em'* work in' and *estudar em* 'study in').

Considering the different roles played by the preposition selected by each verb, different standard and non-standard relativization strategies are available in EP. PiP and resumption are available in all contexts, but PiP with *onde* is only possible when the preposition bears a semantic locative meaning, abstract or concrete (it is available in the relativization of all adjuncts tested, but only with one experimental argument - *participar* 'participate'). Table 5 summarizes these differences.

Table 5

Possible combinations of relativizer and preposition for the experimental verbs

Relativizer(s)		***que*** ***o (a) qual***		***onde***	
Prepositions		**de**	**em**	**de**	**Ø**
Verb selecting an argument PP	*gostar*	yes	-	-	-
	precisar	yes	-	-	-
	pensar	-	yes	-	-
	participar	-	yes	-	yes
Verb selecting an adjunct PP	*gritar*	yes	-	yes	yes
	telefonar	yes	-	yes	yes
	trabalhar	-	yes	-	yes
	estudar	-	yes	-	yes

4.2. Consent form and anonymous socio-linguistic questionnaire

The collection of the data was authorized by the University Ethics Committee for Research and a consent form describing the experiment and its implications was signed by each participant (Appendix B – Part 3).

The sociolinguistic questionnaire was different for EP native (control group) and Chinese L2 participants (experimental group) (see Appendixes B – Parts 1 and 2). Native speakers needed to answer mainly biographic questions. In contrast, non-native speakers had to provide information about their contact with the L2, following other linguistic questionnaires designed for L2 studies, such as Carrol et al., 2017 and Slabakova, 2015 (see Appendix B). All participants filled in the linguistic questionnaire in the first meeting (face-to-face or online).

4.3. Pre-test

All participants performed a pre-test on an online platform (Learnclick) to ensure that they knew the argument grid of the prepositional verbs tested (see Appendix C). The pre-test consisted of a cloze test including the eight experimental prepositional verbs and 14 fillers. The participants could choose one of four options to fill in the blanks of the cloze test. In the case of the experimental verbs, I always provided an option with a null preposition. Participants who were unaware that all the experimental items required a preposition did not proceed with the study. 118 Chinese speakers performed the pre-test, but only 74 met the requirements to continue (63% of the initial pool). Two of these 74 were later discarded from the analysis as they did not complete the three tasks of the experimental design.

5. Participants in the final experimental design

The three tasks were performed by a group of Chinese learners of EP (n = 72). Additionally, a group of native speakers of EP (n = 30) acted as the study control group. Thus, a total of 102 participants (N = 102) completed the experiment.

The native EP speakers from the control group (28 females and 2 males) were mainly college students at the School of Arts and Humanities of the University of Lisbon (mean age = 24.71, SD = 18.15). The few cases that were not college students were adult graduates. All spoke English as a foreign language, learned early at school (with one exception). Most EP natives spoke another foreign language, such as French, Spanish or German.

The Chinese participants (61 female and 11 male) were or had been students of Portuguese as a Foreign Language (mean age = 19.32, SD = 3.79). Thirty-nine participants were Mandarin Chinese native speakers, 18 spoke Cantonese as L1, 11 reported having Mandarin and Cantonese as their native languages, and four referred to other Chinese dialects as their native language. Regardless of the native dialect of Chinese indicated, all participants were exposed to Mandarin Chinese very early in life through school[6]. Given that the structural properties of prepositional RCs are similar in Mandarin Chinese and Cantonese, the Cantonese native speakers were included in the study.

The linguistic background questionnaire showed that most participants (36 + 12) studied Portuguese formally for more than two years. Seventeen enrolled in Portuguese

[6] See footnote 1 above and Appendix A, Table 1, *Dominant language at school (Chinese participants)*.

lessons for between one and two years, and eight were studying Portuguese for less than one year (cf. Table 2, Appendix A).

Chinese learners were distributed into two groups: intermediate (B1-B2 levels of the Common European Framework of Reference for Languages – CEFR) and advanced (C1-C2 levels according to CEFR). The selection of participants was planned before the COVID-19 pandemic. The participants would be recruited exclusively from the ongoing courses at the Institute of Portuguese Language and Culture at the School of Arts and Humanities of the University of Lisbon. Participants did not need to perform a proficiency test because the Institute already formally tested the proficiency level.

The Covid-19 pandemic forced many students from the Institute to go back to their hometowns. Many of them were not willing or did not have the means to participate in the online experiment.

Other Chinese participants were invited to participate in the final experiment, namely, my former Portuguese students or students who had already concluded their studies in the Portuguese language or were learning Portuguese abroad. In the end, even though these were not the ideal nor the intended conditions, the restrictions imposed by the Covid-19 pandemic forced me to include learners in different contexts: out of the 72 participants who took part in the experiment, 52 were in Portugal, 9 in Macau, and 11 in mainland China. These 11, who were at the intermediate level, had never had an immersion experience in Portugal. All Chinese participants were learning or had learned EP formally. Therefore, not all participants were in linguistic immersion when the experiment was performed, given the restrictions imposed by the pandemic.

The 52 participants who were still having lessons at the time of the experiment (in Portugal or abroad) were assigned the level they were taking as their proficiency level since the courses were already nearing the end. For the 20 subjects that were not having lessons at the time of the experiment, the level of the last certificate obtained was considered their proficiency level (see Table 3 of Appendix A).

Each group was composed of 36 participants. The data analysis carried out by level showed no significant differences between the results of B1 and B2 subjects nor between the outcomes of participants from C1 and C2, supporting the criteria adopted to place the non-native participants in each group (intermediate/ advanced).

6. Assessing Language Exposure and Use

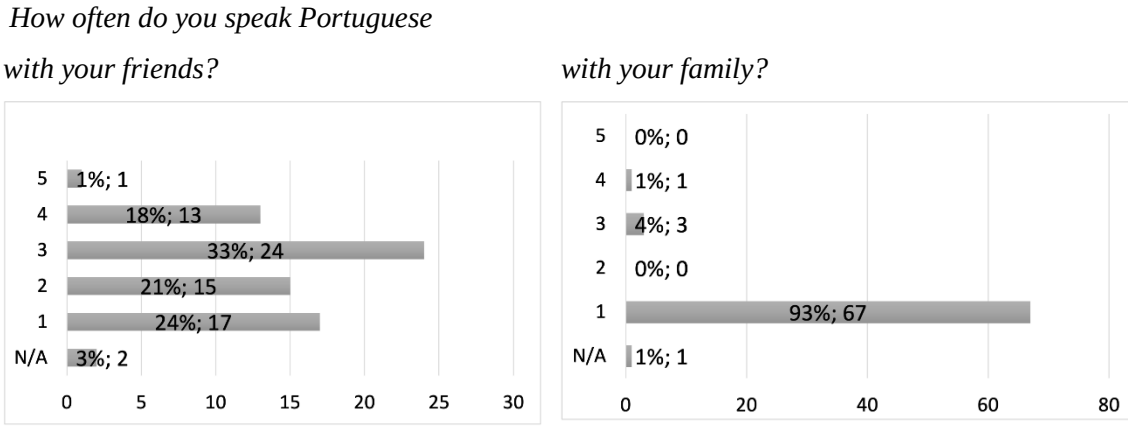
Although it is impossible to measure the amount of input to which the participants are exposed, the linguistic questionnaire attempted to assess how often the subjects spoke, wrote, listened, and read contents in Portuguese (in line with Carrol *et al.* 2017 and Slabakova, 2015). To answer each question, the participants needed to circle one of five options: 1 (rarely) –2 (less than once a week) – 3 (once or twice a week) – 4 (almost every day) – 5 (every day).

Regarding oral production (Figure 3), it is found that most of the subjects do not use Portuguese in the family context. With friends, most admitted to using Portuguese once or twice a week or less. 13 out of the 72 participants (18%) acknowledge speaking in EP with their friends almost every day, and only one participant said that s/he does it every day.

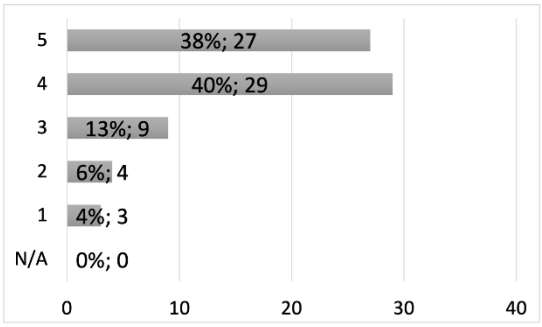
Only 23 learners admit to speaking Portuguese on a regular basis (options 4 and 5) in shops/ public places. The preferred context to speak Portuguese is the university/ workplace.

Figure 3

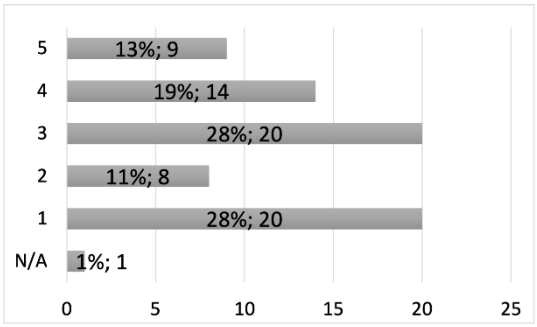
Assessing language exposure (oral production)



at the university/workplace?



in shops/ public places?



Notes:
5 = every day
4 = almost every day
3 = once or twice a week
2 = less than once a week
1 = rarely
N/A (Didn't reply)

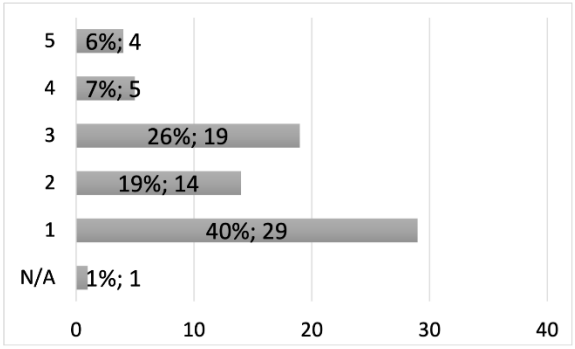
The second group of questions targeted written production (cf. Figure 4). The preferred context to write in Portuguese is also the university/ workplace. Some subjects use the written modality with their friends, although the majority (43, 59%) chose options 1 and 2, admitting that they wrote in Portuguese rarely or less than once a week. Participants do not write to their families in Portuguese. In shops/ public places, the large majority also does not write in Portuguese, possibly because this modality is not that frequent in such context.

Figure 4

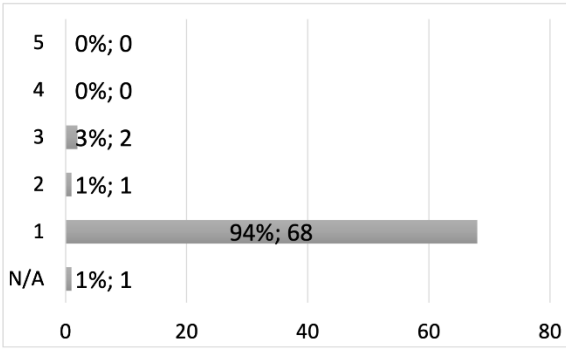
Assessing language exposure (written production)

How often do you write in Portuguese

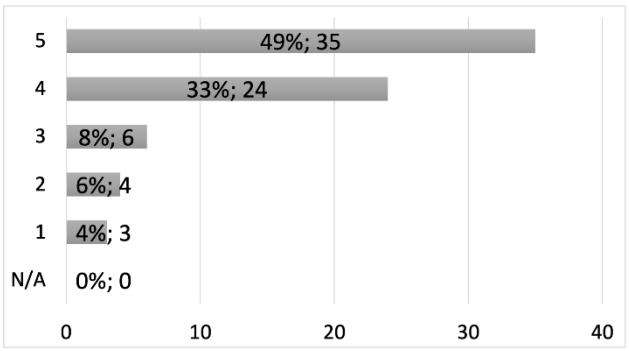
to your friends?



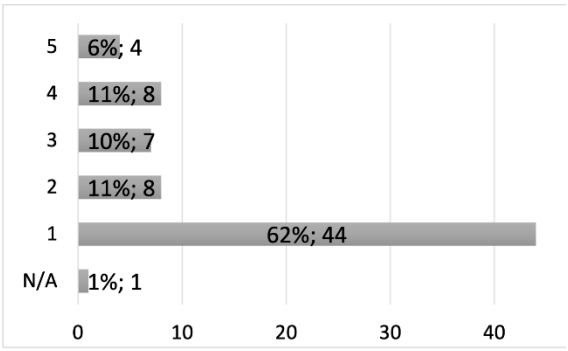
to your family?



at the university/workplace?



in shops/ public places?



Notes:
5 = every day
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1 = rarely
N/A (Didn't reply)

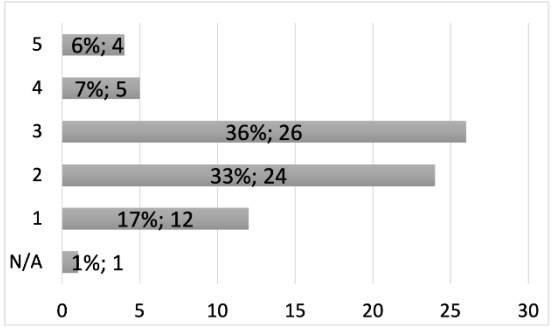
The third group of questions looked at the auditory input that the participants received. The results show that the participants are split between those who admit contacting with aural input (more or less) frequently (choosing options 5, 4, or 3) and those who seldom receive input in Portuguese (selecting options 1 or 2) (cf. Figure 5). Once again, the academic/ working environment is the only exception since almost three fourths of the participants (52,73%) said they had contact with Portuguese regularly in meetings, conferences, or lessons, choosing options 3-5.

Figure 5

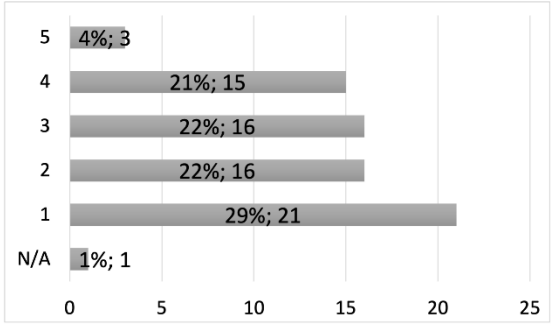
Assessing language exposure (aural input)

How often

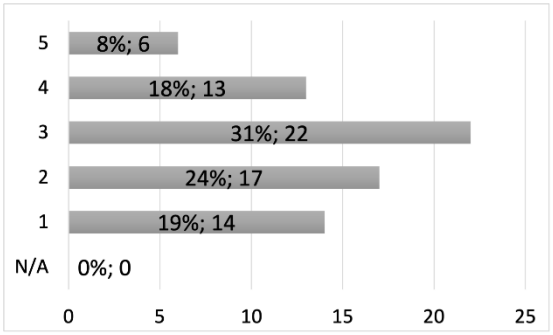
do you watch T.V. shows or movies in Portuguese?



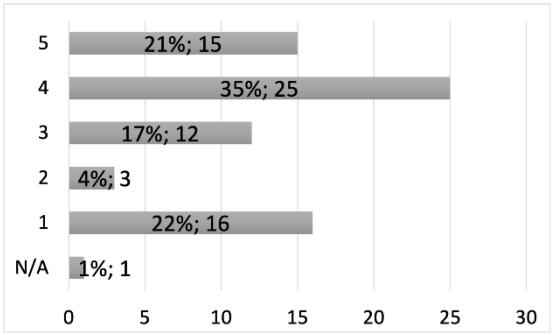
do you listen to music in Portuguese?



do you listen to podcasts/ radio shows in Portuguese?



do you watch or participate in meetings/ conferences/ lessons in Portuguese?



Notes:
5 = every day
4 = almost every day
3 = once or twice a week
2 = less than once a week
1 = rarely
N/A (Didn't reply)

Finally, the last set of questions inquired into the frequency with which the subjects had contact with written materials in Portuguese.

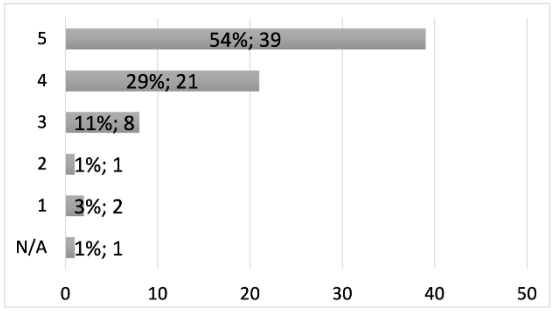
The overall results in Figure 6 show that the workplace/ university was the most favorable context to have contact with the Portuguese language for 60 participants (39 every day, 21 almost every day). The great majority (70%) admitted not reading Portuguese books often, choosing options 1 and 2. Regarding the Internet, thirty-eight subjects (53%) answered that they read Portuguese contents online frequently, selecting 4 and 5; the remaining 34 (47%) admitted they only read Portuguese contents sporadically.

Figure 6

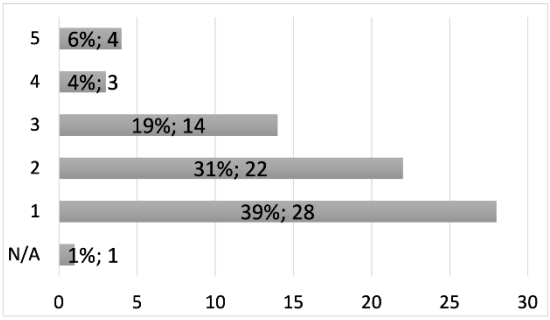
Assessing language exposure (written input)

How often do you read in Portuguese...

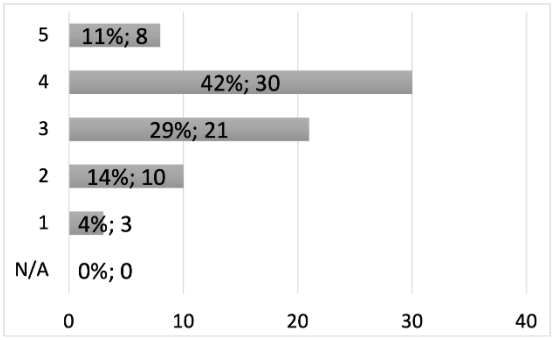
...at your workplace/ university (e-mails, papers, etc.)?



...books (fiction and non-fiction)?



papers and materials available on Internet?



Notes:

5 = every day
4 = almost every day
3 = once or twice a week
2 = less than once a week
1 = rarely
N/A (Didn't reply)

Subjects have a similar perception of their behavior in the oral and written modalities. They do not use oral or written Portuguese with their family, and only part of them uses it with their friends. The same happens with the university/ workplace since the distribution is similar: 56 participants (78%) admit speaking Portuguese frequently when studying or working, and 60 (83%) claim that they write in Portuguese often in the same context. The only contrast occurs in shops, probably because speaking is more common than writing in a shop or a café. Possibly, the restrictions on public gatherings that were in place when part of the subjects were interviewed also played a role since part of the questionnaire was applied during the lockdown period.

The academic/work environment is also where more subjects admitted having contact habitually with aural and written input in Portuguese.

To conclude, most of the Chinese participants in the study acknowledged using Portuguese in a context related to learning or to their professional activities, which tends to favor the exposure and the use of more formal language.

7. Materials

7.1. Oral Production Task

The purpose of this task was to understand whether participants knew how to form RCs in EP, and to check whether they preferred to produce RCs with movement (PiP or P-Chop) or without it (Resumption). The procedure was similar to the pilot study's oral production task (see section 4 above). Participants were presented with a scenario on a computer screen and some information describing each image. Following the procedure from Perpiñán (2013), the information was written on the screen and read aloud by the researcher. The following slide consisted of a zoom of the previous image with a question that participants needed to answer. The beginning of each answer was provided to ensure that the extracted constituent for each sentence was the target one. Presenting the information orally and in writing ensured that the Chinese participants did not have problems recalling the information required to construct the RC. To tap a more implicit response, the participants were instructed to complete the sentence orally as fast as possible with the information provided.

The experimental items included eight target items requiring prepositional RCs (four arguments and four adjuncts). Eight control items targeting DO RCs (with animate and non-animate heads) were also included. As previously referred, initially the task design considered DO RCs as experimental items, looking at animacy effects; however, the object of study was restricted to prepositional RCs. DO RCs are analyzed as control items showing that learners have acquired RCs. The oral production task integrated an additional set of eighteen fillers with unrelated structures. In total, there were 34 items (8 prepositional RCs [experimental items] + 8 DO control RCs + 18 pure fillers), corresponding to 68 slides (2 slides for item). Scenarios were randomized into two list orders (same items in each list but different orders). Half of the participants completed the task in order A and the other half in order B to avoid biased results. Figure 7 shows

an experimental scenario targeting prepositional RCs. The complete set of items is available in Appendix D, part 1.

Figure 7

Example of item eliciting a prepositional RC in the oral production task

Slide 1 (Introducing the situation)



Slide 2 (Eliciting a Prepositional RC)



[slide 1]

A	*cantora*	*participou*	*num*	*espetáculo*
DET.F.SG	singer	participate-PST.3SG	in-DET.M.INDF.SG	show

'The singer participated at a show.'

[slide 2]

A	*cantora*	*participou*	*num*	*espetáculo*
DET.F.SG	singer	participate-PST.3SG	in-DET.M.INDF.SG	show

'The singer participated at a show.'

Que	espetáculo	é	este?
Which	show	be-PRS.3SG	DEM

'Which show is this?'

Este	é	o	espetáculo...	(em) que /onde	a	cantora
DEM	be-PRS.3SG	DET.M.SG	show	in- REL	DET.F.SG	singer

participa.

participate.

'This is the show... (in) which/where the singer participates.'

Sentences were coded according to the relativization strategy produced by the participants in DO RCs (gap or other) and prepositional RCs (PiP, P-Chop, Resumption, Locative, or others), to provide non-parametric statistics to these data (namely Chi square

tests[7]). The participants were anonymized, and a numeric code was given to each participant, indicating the native language (EP/MC). The sentences were classified according to the relativization strategy, regardless of the verb tense used, agreement errors, inversion of the subject or lexical inaccuracies[8].

A logistic mixed-effects regression model predicting the use of P-Chop in the oral production task was also developed, resorting to R[9]. The results are presented in the following chapter.

7.2. Self-Paced Reading Acceptability Judgment Tasks

The purpose of the two Self-Paced Reading Acceptability Judgment Tasks (SPR-AJT) was to tap into the implicit interlanguage grammar.

The SPR-AJT tasks were implemented with a time limit: the segments appeared like a row of dashes, and participants pressed the space button on the keyboard to reveal each next word of the sentence. However, after 300ms, if the participants had not moved to the next word, the word would disappear automatically, being replaced by the following segment. This solution allows the participants to create their reading path (permitting different paces for natives and non-natives). Still, it includes time pressure, which is considered necessary to tap into the implicit knowledge of these structures. Both SPR-AJT were run on PsychoPy v3.2.3[10].

Participants read each sentence on a non-cumulative, word-by-word display on a computer screen. After the last word disappeared, a screen with a sliding bar showed up, and the participants were asked to rate the sentence. On the left end of the sliding bar, there was a 0 ('very bad') below and, on the other end, the number 1 ('very good'). Participants were aware that this line was continuous and could rate the sentence by using the trackpad in the computer at any point of the scale. Participants read the instructions and practiced with four trials before the experiment started. Instructions were provided in Portuguese and Chinese[11] for non-native participants.

[7] The Chi-Square tests presented were calculated with JASP, version 0.14.

[8] For instance, even if the target sentence for the following test item was *este é o telemóvel de que a Inês precisa* 'this is the mobile phone that Inês needs', I have classified as PiP RC answers such as *este é o telemóvel de que a Inês precisava/ precisou* etc. 'this is the mobile phone that Inês needed'.

[9] R version 4.1.0 (2021-05-18), Platform: x86_64-w64-mingw32/x64 (64-bit), running under: Windows 10 x64 (build 19042).

[10] I thank Paula Luegi for her help in the implementation of the experiment on PsychoPy.

[11] I thank Chao Zhou the translation into Mandarin Chinese.

Each SPR-AJT had 100 sentences, pseudorandomized in 10 blocks so that no sentence from the same condition nor the same verb would appear consecutively. Participants could take a break between each block if needed. The same procedure was followed in both tasks.

7.2.1. Self-Paced Reading Acceptability Judgment Task (Relativization Strategies)

The first self-paced reading acceptability judgment task (SPR-AJT Relativization Strategies) tested the participants' acceptance of the different relativization strategies, standard (PiP) and non-standard (resumption and P-Chop).

As in the oral production task, the experimental items included prepositional RCs. DO RCs were included as control, as a baseline proving that the participants have acquired RCs. Prepositional RCs were tested in each relativization strategy (PiP, P-Chop, and resumption). Four items tested argument PPs (4 verbs x 3 strategies), and four tested adjunct PPs (4 verbs x 3 strategies). Thus, there were 12 experimental prepositional argument RCs and 12 prepositional adjunct RCs (n = 24). I tested the same combinations Verb + Prep as in the oral production task. Additionally, the task included 16 DO RCs as a control, and 60 fillers, 20 grammatical, and 40 ungrammatical. The number of grammatical/ ungrammatical items is not the same, in order to balance the totality of (un)grammatical items in the task. Considering that PiP (with prepositional RCs) and Gap (with DO RCs) are the grammatical standard strategies available in EP, 16 experimental items are grammatical. Adding these to the 20 grammatical fillers, we obtain a distribution of 36 grammatical items vs. 64 ungrammatical[12]. The sum of prepositional RCs (24), DO RCs (16) and fillers (60) equaled 100 sentences. The distribution of prepositional RCs and DO RCs is presented on Table 6.

[12] However, RCs produced with P-Chopping with arguments tend to be accepted by native speakers and, as so, can integrate the group of grammatical items, which means that the distribution is 40 grammatical items and 60 ungrammatical.

Table 6

Distribution of experimental items, control items and fillers in the SPR-AJT focused on relativization strategies

Prepositional RCs (Experimental Items)	Relativization strategies	Type of PP		Total
		Argument	Adjunct	
	PiP	4	4	8
	P-Chop	4	4	8
	Resumption	4	4	8
	Total	12	12	**24**
DO RCs (Control Items)	Relativization strategy	Animacy of the head		Total
		[+] animate head	[-] animate head	
	Gap	4	4	8
	Resumption	4	4	8
	Total	8	8	**16**
Fillers		Grammatical	Ungrammatical	Total
		20	40	**60**

Sentences (4)-(6) exemplify experimental items with PiP (4), P-Chop (5) and resumption (6), in argument (a) and adjunct positions (b). The complete list of items can be consulted in Appendix D – part 2.

[Pied-Piping]

(4) (a). *O* *filme* ***em*** ***que*** *a aluna* *pensou*
DET.M.SG movie in REL DET.F.SG think-PST.3.SG
é *interessante.*
be-PRS.3.SG interesting
'The movie in which the student thought is interesting.'

(b). *A* *janela* ***de*** ***onde*** *o* *avô*
DET.F.SG window from REL DET.M.SG grandfather
gritou *é* *muito* *alta.*
scream-PST.3.SG be-PRS.3.SG very high
'The window from where grandfather screamed is very high.'

[P-Chop]

(5) (a). *A* *mota* ***Ø*** ***que*** *o* *rapaz*
DET.F.SG motorcycle REL DET.M.SG boy
gosta *é* *grande.*
like-PRS.3.SG be-PRS.3SG big
Lit.: 'The motorcycle that the boy likes is big.'

(b). *O* *café* ***Ø*** ***que*** *a* *rapariga*
DET.M.SG coffee-shop REL DET.F.SG girl
trabalha *tem* *muitos* *clientes.*
work-PRS.3.SG have-PRS.3.SG many clients
Lit.: 'The coffee shop that the girl works has many clients.'

[Resumption]

(6) (a). *O* *computador* ***que*** *a* *menina*
DET.M.SG computer REL DET.F.SG girl
precisa ***dele*** *é* *caro.*
need-PRS.3.SG from-it be-PRS.3SG expensive
Lit.: 'The computer that the girl needs it is expensive.'

(b). *O* *café* ***que*** *a* *rapariga*
DET.M.SG coffee-shop REL DET.F.SG girl
trabalha ***nele*** *tem* *muitos* *clientes.*
work-PRS.3.SG on-it has-PRS.3.SG many customers
Lit.: 'The coffee-shop that the girl works on *it* has a lot of costumers.'

7.2.2. Self-Paced Reading Acceptability Judgment Task (Island Configurations)

The second self-paced reading acceptability judgment task (SPR-AJT Island Configurations) examined how participants judge RCs formed out of extractions from syntactic islands. I have only included adjunct islands (temporal, conditional, causal, and concessive clauses) as these are consensually classified as strong islands. I have left weak islands in order to avoid biased results (cf. Belikova and White, 2009). Furthermore,

given that RPs are assumed to rescue island violations, I expect a stronger amelioration effect in strong islands; as Polinsky *et al.* (2013, p. 350) put it: "if resumption helped remedy island violations, one might imagine that strong islands would be the first place to look for stimuli with RPs to be rated higher than stimuli with gaps."

As in the previous tasks, I have included DO and prepositional RCs, but DO RCs are included as a control (total of 16 items). Six conditions tackled prepositional RCs (total of 24 items). The 24 prepositional RCs were split between arguments and adjuncts in the three relativization strategies (PiP, P-Chop, and resumption) for each case (4 arguments x 3 relativization strategies + 4 adjuncts x 3 relativization strategies).

Although I have chosen to include exclusively adjunct adverbial islands, I have maintained the asymmetry between arguments and adjuncts as a variable in prepositional RCs. Keeping the asymmetry argument/ adjunct allows us to compare the results of both tasks and opens the possibility of finding relevant asymmetries in extractions from strong islands.

Besides the 40 RCs (prepositional experimental RCs and DO control RCs formed from extractions from island configurations), the task contained 60 fillers (20 control grammatical RCs in non-island syntactic configurations[13] and 40 adverbial clauses – 30 grammatical and 10 ungrammatical) in a total of 100 sentences. Half the sentences were expected to be ungrammatical (10 fillers and the 40 island configurations) and half were expected to be grammatical (all of them fillers)[14]. This distribution is schematized on Table 7.

Table 7

Distribution of experimental items in the SPR-AJT focused on island configurations

	Relativization strategies	Type of PP		Total
		Argument	Adjunct	
Prepositional RCs (Experimental)	PiP	4	4	8
	P-Chop	4	4	8
	Resumption	4	4	8
	Total	12	12	**24**

[13] These sentences were included to verify if participants accepted standard relative clauses outside island configurations.

[14] However, accepting that resumptives improve extractions from island configurations in EP, we have a distribution of 34 ungrammatical items, 16 acceptable items (islands with resumptives) and 50 grammatical items.

DO RCs (Control within island configurations)	Relativization strategy	Animacy of the head		Total
		[+] animate head	[-] animate head	
	Gap	4	4	8
	Resumption	4	4	8
	Total	8	8	**16**
Fillers		Grammatical	Ungrammatical	
	Control RCs	20		20
	Adverbial sentences	30	10	40
	Total	50	10	**60**

Pied-piped RCs, P-Chop RCs, and resumptive RCs formed through extraction from syntactic island are illustrated in (7)-(9), respectively (extraction of arguments in a. and adjuncts in b.) (the grammaticality judgements of these sentences are according to what is said in the Portuguese literature). The complete list of sentences is available on Appendix D – part 3.

[Pied-Piping]

(7) (a). **O* *concerto* ***em que*** *a* *rapariga*
DET.M.SG concert in REL DET.F.SG girl
comprou *bilhetes* *porque* *a* *cantora*
buy-PST.3SG tickets because DET.F.SG singer
participa *é* *caro.*
participate-PRS.3SG be-PRS.3SG expensive

Lit.: '*The concert ***in which*** the girl bought tickets because the singer participates is expensive.'

(b). **A* *loja* ***em que*** *a* *rapariga* *vai*
DET.F.SG shop in REL DET.F.SG girl go-PRS.3SG
ao *centro* *enquanto* *as* *amigas* *trabalham*
to-DET.M.SG center while DET.F.PL friends work-PRS.3Pl
é *gira.*
be-PRS.3SG cute

Lit.: '*The shop in which the girl goes to the center while the friends work is nice.'

[P-Chop]

(8) (a). *A casa **que** a amiga vai vender
DET.F.SG house REL DET.F.SG friend go-PRS-3SG sell
o apartamento porque o namorado
DET.M.SG flat because DET.M.SG boyfriend
gosta é linda.
like-PRS.3SG be-PRS.3SG beautiful

Lit.: '*The house that the friend is going to sell the flat because the boyfriend likes is beautiful.'

(b). *A escola **que** a aluna conheceu
DET.F.SG school REL DET.F.SG student meet-PST.3SG
o rapaz enquanto ele estudava
DET.M.SG boy while 3SG study-PST.3SG
é antiga.
be-PRS.3SG old

Lit.: '*The school that the student met the boy while he studied is old.'

[Resumption]

(9) (a).?O concerto **que** a rapariga
DET.M.SG concert REL DET.F.SG girl
comprou bilhetes porque a cantora
buy-PST.3SG tickets because DET.F.SG singer
participa **nele** é caro
participate-PRS.3SG in it be-PRS.3SG expensive

Lit.: 'The concert ***that*** the girl bought tickets because the singer participates ***in it*** is expensive.'

(b). O hospital **que** a senhora encontrou
DET.M.SG hospital REL DET.F.SG lady find-PST.3SG
a Maria enquanto telefonava **de** **lá**
DET.F.SG Maria while call-PST.3SG from there
é organizado.
be-PRS.3SG organized

Lit.: 'The hospital that the lady found Maria while she called ***from there*** is organized.'

The procedure is described in the following section.

8. Procedure

The experiment was conducted in two face-to-face meetings of around 45-55 minutes, each held at least 24 hours apart. In the first part of the first meeting, participants completed the oral production task (see section 7.1 above) and the SPR-AJT in non-island configurations (see 7.2.1.1). On the second day, participants performed the second SPR-AJT targeting extractions from islands (see 7.2.1.2). All in-person meetings took place in a quiet room.

These steps were followed uniformly with 47 participants until the occurrence of the COVID-19 pandemic. Due to the restrictions to in-person meetings, the experiment had to be adapted, and the SPR-AJTs were completed on PsychoPy accessed remotely. The procedure was identical, but through Zoom meetings. As for the online tasks, participants had remote access to the researcher's computer. This affected 54 Chinese-speaking participants and one Portuguese speaker. I made sure the remote access did not significantly alter the acceptability results, but I cannot guarantee that the reaction times were not affected; for this reason, I am not considering them in my analysis.

The data were analyzed with R[15], using a mixed-effect logistic regression fit with the lme4 package (version 1.1-27.1, Bates et al., 2014). As the nature of the percentage rating data could not be analyzed as continuous data, the data was binarized to be either 0 or 1, with the cutoff being based on the distribution of the data for each experimental task. For each model, random intercepts were included for participant and item were included to account for repeated measures. A model containing these two predictors as well as language background was fit which also included all potential interactions. The contribution of interactions was tested by comparing nested models with the likelihood ratio test. The final models reported here all provided significantly improved fits over reduced models. In keeping with recommended statistical practices, all experimental conditions were kept in all models regardless of their contribution to model fit.

The results of the experimental design are presented in Chapter 7 and discussed in Chapter 8.

[15] R version 4.1.0 (2021-05-18), Platform: x86_64-w64-mingw32/x64 (64-bit), running under: Windows 10 x64 (build 19042).

Chapter 7

Results

The results of the three tasks involved in the experimental design of this dissertation are presented in the current chapter. It starts by providing the findings of the oral production task, in section 1, separating the results obtained with the relativization of arguments (1.1.) from those that concerned the relativization of adjuncts (1.2.). A statistical model predicting the production of P-Chop is also presented (1.3.).

In section 2, the results of the SPR-AJTs are described. First, I present the results of the SPR-AJT that tackles the relativization strategies (2.1.), conducting an analysis between groups and within groups. Afterward, in section 2.2., I provide the results of the SPR-AJT that looked at island configurations.

1. Oral production task

The oral production task rendered a total of 3468 sentences (816 experimental items, 816 DO control RCs and 1836 pure fillers). Each participant produced 34 sentences, 8 experimental items, 8 control DO RCs, and 18 fillers.

DO RCs did not present difficulty for any group, with equivalent percentages of target structures across groups (see Table 1).

Table 1

Results obtained in the production of DO RCs in the oral production task

	Native EP (*n*=30)		Advanced Chinese Learners (*n*=36)		Intermediate Chinese Learners (*n*=36)	
	%	n	%	n	%	n
Target DO RC	92%	220	93%	267	89%	257
Others	8%	20	7%	21	11%	31
Total	100%	240	100%	288	100%	288

Although DO RCs are out of the scope of the present dissertation, these serve as a baseline confirming that Chinese speakers could produce RCs.

A total of 816 sentences were produced in the prepositional scenario, 288 by each group of Chinese participants (total = 576) and 240 by the native speakers (8 by each

participant). This means that 408 prepositional RCs were produced in the relativization of arguments, and other 408 in the relativization of adjuncts. The overall results for the oral production of prepositional RCs are presented in Table 2, considering the differences between the verbs that select an argument and a functional preposition (*gostar de, precisar de, pensar em, participar em*) and the verbs that select an adjunct and a semantic preposition (*gritar de, telefonar de, trabalhar em, estudar em*), for each group (natives, advanced, intermediate).

Table 2

Strategies produced by the three groups in the relativization of arguments and adjuncts

		Arguments					*Adjuncts*				
		PiP	**Locative**	**P-Chop**	**Others**	**Total**	**PiP**	**Locative**	**P-Chop**	**Others**	**Total**
Native EP	n	54	2	53	11	**120**	42	58	7	13	**120**
(*n = 30)*	%	45%	2%	44%	9%	**100%**	35%	48%	6%	11%	**100%**
Adv. Chinese learners (*n = 36*)	n	103	2	33	6	**144**	81	34	21	8	**144**
	%	72%	1%	23%	4%	**100%**	56%	24%	15%	6%	**100%**
Int.Chinese learners (*n = 36*)	n	75	2	46	21	**144**	63	29	44	8	**144**
	%	52%	1%	32%	15%	**100%**	44%	20%	31%	6%	**100%**

The first remarkable aspect is that neither the Chinese learners nor the native speakers produced resumptive prepositional RCs, in any context. There were only two isolated utterances involving resumption.[1] The results for each type of relative clause are described in detail in the following subsections.

[1] One native speaker produced a resumptive construction with *participar* (i) and using a synonym of the head (*concerto* 'concert' for *espetáculo* 'show'), and one Chinese participant uttered a sentence with *gritar* (ii), but with the repetition of the DP instead of the resumptive pronoun:

(i) *Este* *é* *o* *espetáculo* *que*
DEM.M.SG be-PRS.3.SG DET.M.SG show REL
a *cantora* *participou* *num*
DET.F.SG singer participate-PST.3.SG at.DET.INDF.M.SG
concerto.
concert
Lit.: 'This is the show that the singer participated at a concert.'

(EP#27)

(ii) *Este* *é* *o* *jardim* *que*
Dem.M.F be-PRS.3.SG DET.M.SG garden REL
a *Nádia* *grita* *de* *um*

1.1. Relativization of arguments

Looking at the verbs that select an argument, PiP was the strategy more frequently adopted by advanced L2 speakers (72%), contrasting with the native speakers (45%). Although PiP is the standard strategy to relativize PPs in EP, natives adopted other strategies with arguments, particularly the P-Chop strategy (44%). A χ^2 test comparing PiP, P-Chop, Locative and Other strategies within the native control group indicates that this difference in the production of these strategies is significant (χ^2 (3) =75.000, p<.001). Intermediate learners alternate among PiP (52%), P-Chop (32%), and other solutions to avoid the RC (15%). A χ^2 test comparing the production of these strategies with arguments by intermediate speakers indicates that these differences are relevant (χ^2 (3) =83.389, p.<.001). The same test was performed, comparing the production of PiP, Locative strategy, P-Chop and Other strategies among advanced speakers, showing that the differences are significant (χ^2 (3) = 182.056, p<.001).

Concerning the relativization of arguments, a χ^2 test taking PiP as a dominant variable indicates that the three groups differed statistically in the production of that strategy ($\chi^2(2) = 8.858$, $p < .012$), Cramer's V = 0.2)[2]. Likewise, a χ^2 test taking P-Chop as dominant variable indicated that the three groups differed significantly in the production of P-Chop ($\chi^2(2) = 9.299$, $p < .010$, Cramer's V .27). The locative strategy was not manipulated as a dominant variable in an equivalent Chi-square test with arguments because it was an option for only one verb (*participar* 'participate').

Furthermore, Chinese learners diverged from native EP by producing more types of sentences, including ungrammatical sentences (gathered in the column "others"). Among the productions of Chinese speakers in the relativization of PP arguments are the utterance of a possessive structure (1), an adjective (2) or a descriptive expression (3) instead of the RC, the deletion of the relativizer (4) and cleft constructions (5).

DET.F.SG Nádia scream-PRS.3SG from DET.INDF.M.SG *jardim.*
garden
Lit.: 'This is the garden that Nádia screams from a garden.'

(MC#04)

Given that these were single occurrences, they were grouped under the category "others".

[2] The Chi-square test (χ^2) measures the difference between the observed and expected frequencies of the outcomes of a set of events or variables. Cramér's V is an effect size measurement for the chi-square test of independence. It measures how strongly two categorical fields are associated. Cramér' V is considered small if = 0.10, medium if = 0.30, and large if = 0.50.

(1) *Este* *é* *o* *carro* *do* *José.*
DEM.M.SG be-PRS.3.SG DET.M.SG car of- DET.M.SG José
'This is the car of José.'
(MC#33, Advanced; MC#01, MC#04 and MC#13, Intermediate)

(2) *Este* *é* *o* *carro* *preto.*
DEM.M.SG be-PRS.3.SG DET.M.SG car black
'This is the black car.'
(MC#50, Intermediate)

(3) **Estes* *são* *os* *gráficos* *de*
DEM.M.PL be-PRS.3.PL DET.M.PL graphs of
estatísticas
statistic
'These are the graphics of statistics.'
(MC#71, Advanced)

(4) **Este* *é* *o* *carro* *o*
DEM.M.SG be-PRS.3.SG DET.M.SG car DET.M.SG
José *gosta.*
José like-PRS.3.SG
'This is the car _ José likes.'
(MC#36, Intermediate)

(5) **Este* *telemóvel* *é* *que/ é* *de*
DEM.M.SG mobile-phone be-PRS.3.SG REL/ be-PRS.3.SG of
que *a* *Inês* *precisa.*
REL DET.F.SG Inês need-PRS.3.SG
'This mobile-phone is that/ is of that Inês needs.'
(MC#31, Advanced)

With verbs that select for an argument, Chinese speakers produced five isolated cases of preposition-stranding. Three of these five utterances were produced by the same

participant, who adopted this strategy consistently in prepositional RC. These were included in "others" and are illustrated in (6).

(6) *Este* *é* *o* *carro* *que*
DEM.M.SG be-PRS.3.SG DET.M.SG car REL
o *José* *gosta* *de*.
DET.M.SG José like-PRS.3.SG of
'This is the car that José likes of.'

(MC#17, Intermediate)

Table 3

Strategies produced by the three groups in the relativization of arguments (by verb)

		Strategy	Pied-Piping		Locative		P-Chop		Others		Total	
		Group	n	%	n	%	n	%	n	%	n	%
Verb + Prep	**gostar de** *like (of)*	Native EP	10	33%	N.A.		17	57%	3	10%	**30**	**100%**
		Adv.Chinese Speakers	30	83%	N.A.		4	11%	2	6%	**36**	**100%**
		Int. Chinese Speakers	23	64%	N.A.		7	19%	6	17%	**36**	**100%**
	precisar de *need (of)*	Native EP	8	27%	N.A.		19	63%	3	10%	**30**	**100%**
		Adv.Chinese Speakers	25	69%	N.A.		9	25%	2	6%	**36**	**100%**
		Int. Chinese Speakers	23	64%	N.A.		8	22%	5	14%	**36**	**100%**
	pensar em *think (about)*	Native EP	17	57%	N.A.		12	40%	1	3%	**30**	**100%**
		Adv.Chinese Speakers	21	58%	N.A.		13	36%	2	6%	**36**	**100%**
		Int. Chinese Speakers	13	36%	N.A.		20	56%	3	8%	**36**	**100%**
	participar em *participate (in)*	Native EP	19	63%	2	7%	5	17%	4	13%	**30**	**100%**
		Adv.Chinese Speakers	27	75%	2	6%	7	19%	0	0%	**36**	**100%**
		Int. Chinese Speakers	16	44%	2	6%	11	31%	7	19%	**36**	**100%**

Looking at the relativization of arguments by verb, presented in Table 3, native speakers show a preference for P-Chop with the verbs selecting *de* (*gostar de* 'like' (of) and *precisar de* 'need' (of)), using more PiP with the verbs selecting *em* (*pensar em* 'think' (about) and *participar em* 'participate' (in)). Advanced learners show high rates of PiP with the 4 combinations of verb + prep, but P-Chop is more salient with *pensar em* ('think' (about)). Intermediate learners are more divided between PiP and P-Chop, but they still prefer PiP with all verbs except for *pensar em* ('think' (about) (unlike native speakers). Intermediate learners also show higher percentages of 'others' than advanced learners or the control group. All in all, these data show that learners and the control group do not necessarily converge in the relativization strategies chosen for each combination of verb + preposition.

1.2. Relativization of adjuncts

Concerning the relativization of adjuncts, the advanced Chinese learners had the highest rates of PiP (56%) and also had an important proportion of sentences with the locative strategy (24%), followed by P-Chop (15%). A $\chi 2$ test comparing these results within the group of advanced speakers show that these differences are relevant ($\chi 2(3) = 84.389$, $p=<.001$). The native speakers alternate between PiP (35%) and the locative strategy (48%), preferring the latter. The $\chi 2$ test comparing the productions of native speakers with all strategies also provided significant results ($\chi 2(3) = 58.200$, $p=<.001$). The intermediate Chinese participants are divided between the three strategies: PiP (44%), locative (20%), and P-Chop (31%). A $\chi 2$ test comparing the production of the different strategies by intermediate learners indicates that the difference is relevant ($\chi 2(3) = 45.167$, $p=<.001$).

Like with arguments, the non-native participants produced other grammatical and ungrammatical alternatives to the RC in the relativization of adjuncts, such as the possessive (7), cleft (8), passive (9), and reduplication of the relativizer (10), grouped in the category "others".

(7) *Este* *é* *o* *escritório* *da* *Joana.*
DEM.M.SG be-PRS.3.SG DET.M.SG office of Joana
'This is Joana's office.'

(MC#13, Intermediate)

(8) **O* *escritório* *é* *que* *a* *Joana*
DET.M.SG office be-PRS.3.SG REL DET.F.SG Joana
telefona *que* *trabalha* *todos os dias.*
call-PRS.3.SG REL work-PRS.3.SG every day.
'This office is that Joana calls that works every day.'

(MC#31, Advanced)

(9) **Este* *é* *o* *escritório*
DEM.M.SG be-PRS.3.SG DET.M.SG office
telefonado *pela* *Joana* *todos os dias.*
called by Joana every day
'This is the office called by Joana every day.'

(MC#01, Intermediate)

(10) **Este é o escritório*
DEM.M.SG be-PRS.3.SG DET.M.SG office
que onde a Joana telefona
REL REL DET.F.SG Joana call-PRS.3.SG
todos os dias.
every day
'This is the office that where Joana calls every day.'
(MC#44, MC#45, Advanced)

Preposition-stranding was produced by two non-native participants, with the verb *gritar* (11):

(11) *Este é o jardim que*
DEM.M.SG be-PRS.3.SG DET.M.SG garden REL
a Nádia grita de.
DET.F.SG Nádia scream-PRS.3.SG of
'This is the garden that Nádia screams of.'
(MC#17, MC#42, Intermediate)

With respect to the relativization of adjuncts, the three groups differed statistically in the production of PiP ($\chi^2(2) = 6.648$, $p < .036$, Cramer's V = .19). The group of native speakers shows higher percentages of production of the locative strategy with adjuncts than the learners. A Chi-Square test taking the locative strategy as the dominant variable, comparing its production in the three groups, shows that the difference between groups with adjuncts is statistically relevant ($\chi^2(2) = 20.287$, $p < .001$, Cramer's V =.41). The differences in the production of P-Chop with adjuncts are also significant. Of the three groups, the intermediate speakers have higher rates of P-Chop with adjuncts, followed by the advanced speakers and the native speakers. A Chi-square test taking the P-Chop strategy as dominant variable, and comparing its production in the three groups, indicates that these results are significant ($\chi^2(2) = 23.853$, $p < .001$, Cramer's V = .58).

The results obtained in the relativization of adjuncts by verb are presented in Table 4.

Table 4

Strategies produced by the three groups in the relativization of adjuncts (by verb)

Verb + Prep.	Strategy / Group	PiP n	PiP %	Locative n	Locative %	P-Chop n	P-Chop %	Others n	Others %	Total n	Total %
gritar de *scream (of)*	Native EP	10	33%	16	53%	2	7%	2	7%	**30**	**100%**
	Adv. Chinese Speakers	28	78%	1	3%	5	14%	2	6%	**36**	**100%**
	Int. Chinese Speakers	20	56%	6	17%	7	19%	3	8%	**36**	**100%**
telefonar de *call (from)*	Native EP	9	30%	12	40%	1	3%	8	27%	**30**	**100%**
	Adv. Chinese Speakers	18	50%	7	19%	7	19%	4	11%	**36**	**100%**
	Int. Chinese Speakers	17	47%	2	6%	15	42%	2	6%	**36**	**100%**
trabalhar em *work (at)*	Native EP	13	43%	13	43%	2	7%	2	7%	**30**	**100%**
	Adv. Chinese Speakers	15	42%	15	42%	5	14%	1	3%	**36**	**100%**
	Int. Chinese Speakers	12	33%	7	19%	15	42%	2	6%	**36**	**100%**
estudar em *study (in)*	Native EP	10	33%	17	57%	2	7%	1	3%	**30**	**100%**
	Adv. Chinese Speakers	20	56%	11	31%	4	11%	1	3%	**36**	**100%**
	Int. Chinese Speakers	14	39%	14	39%	7	19%	1	3%	**36**	**100%**

In the analysis of adjuncts by verb + preposition, the first aspect to highlight is that native speakers show higher percentages of the locative strategy, regardless of the combination verb + preposition. In other words, the preposition does not seem to determine their options. The two groups of learners show more expressive rates of the locative strategy with the verbs that occur with the preposition *em*, perhaps indicating that they associate this preposition with a semantic locative feature. Advanced speakers show a particular high percentage of PiP with *gritar de* 'scream' (of), but this is not necessarily driven by the preposition, given the percentage shown by the same group with *telefonar de* 'call (from)'. Finally, intermediate speakers stand out by showing higher percentages of P-Chop with all verbs. The preposition does not seem the factor motivating this choice, since intermediate learners have equal rates of P-Chop with *telefonar de* 'call (from)' and *trabalhar em* 'work (at)' (42% in each case), and with *gritar de* 'scream (of)' and *estudar em* 'study (in)' (19% in each case).

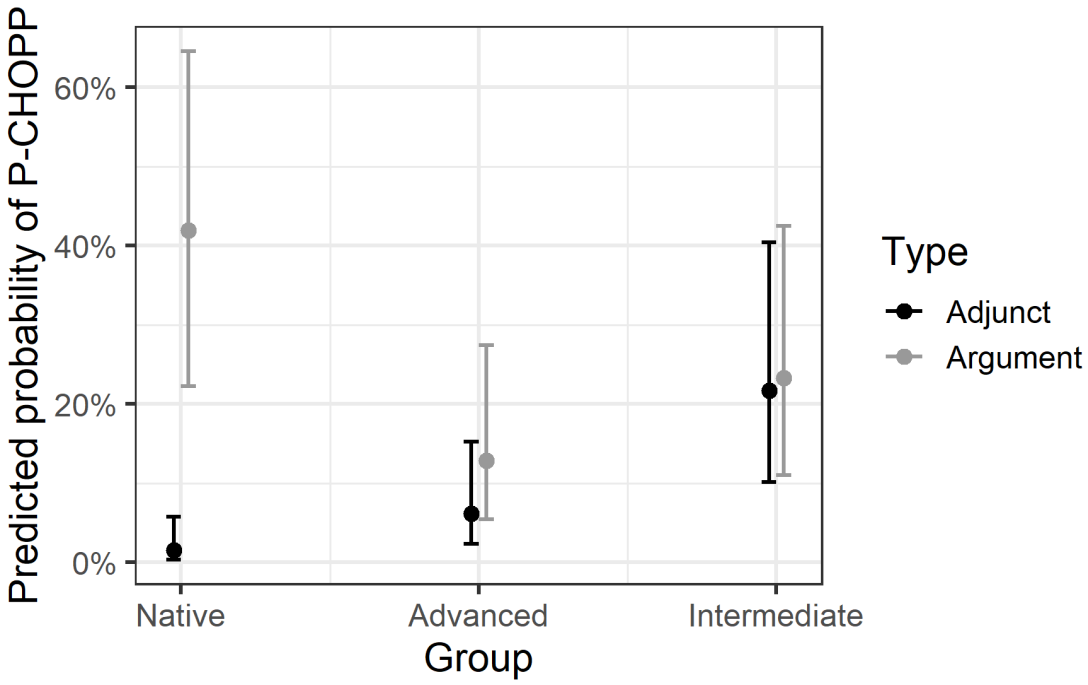
1.3. Production of P-Chop in the relativization of arguments and adjuncts

Although P-Chop is produced by the three groups, the data seem to indicate that native speakers and non-native speakers produce it in different contexts, possibly reflecting a P-Chop phenomenon of a different nature and motivated by distinct reasons.

To verify this conjecture, a logistic mixed-effects regression model[3] predicting the production of P-Chop in the oral task was fit. This model predicts the production of P-Chop against any other strategy, by group. A model with random intercepts for participant and item, as well as group and type, with the interaction, was included. Then, a model without that interaction was also fit. The model with the interaction had a significantly improved model fit as evidenced by the likelihood ratio test[4]. The results are shown in Figure 1.

Figure 1

Predicted Probability of P-Chop, by Group



With adjuncts, the statistic model predicts that native speakers and advanced learners do not differ significantly in the production of P-Chop (p=0.1483). However, the native EP speakers and the intermediate learners diverge significantly in the production of this strategy (p=0.0004). The advanced and the intermediate learners also show a

[3] Cf. Appendix E (Generalized linear mixed model – Oral production task).

[4] The random slope for Type by participant was abandoned because of a singular fit, but the results did not change significantly when the random slope was included.

statistically relevant difference in applying P-Chop (p=0.0392) (see Figure 1 and Table 1, Appendix F).

In what concerns arguments, there is a significant difference in the production of P-Chop between the native EP speakers and the advanced Chinese learners (p=0.0181) but not between native EP and the intermediate learners (p=0.2748) or between the advanced and the intermediate Chinese learners (p=0.4046) (Figure 1 and Table 2 in the Appendix F).

Regarding the difference in the production of P-Chop between the Argument vs. Adjunct conditions, there is evidence that the native speakers produce P-Chop significantly more in arguments than adjuncts (p<.0001). However, the difference between these types of sentences was not significant for the advanced (p=0.1066) and the intermediate learners (p=0.8425) (see Table 3, Appendix F).

2. Self-Paced Reading - Acceptability Judgment Tasks

In both SPR-AJT, the data were analyzed using a mixed-effect logistic regression fit using the *lme4* package in R (Bates et al., 2015; R Core Team, 2021). As the nature of the percentage rating data could not be analyzed as continuous data[5], it was binarized to be either 0 or 1, with the cutoff being based on the distribution of the data for each experimental task for each model. The models included random intercepts for participant and item, as well as random slopes for both Argument/Adjunct contrast and Strategy (PiP or Resumption), by participant[6]. A model containing these two predictors and language background was fit. As it was pertinent to my research questions whether or not the effects of each predictor would vary, based on the levels of other predictors, all potential interactions were tested. The contribution of these interactions was tested by comparing nested models with the likelihood ratio test. The final models reported here all provided significantly improved fits over reduced models. In keeping with recommended statistical practices, all experimental conditions were kept in all models regardless of their contribution to model fit.

[5] The data collected for this task could not be modelled with continuous nor as proportion data, as fitting a linear model leads to heteroskedastic patterns in the model residuals due to the bounded nature of the data. It also does not meet the requirement to be analyzed as proportion data, as the ratings from participants are not a proportion of a binary outcome in a series of trials.

[6] In the first SPR-AJT (targeting strategies), the distribution of the data showed a minimum in the density distribution at 0.61. Anything equal to or below 0.61 was treated as 0, and anything above it was treated as 1. In the second SPR-AJT (with syntactic islands), the cutoff was established at 0.455. Everything above was considered 1 and everything else was marked as 0.

2.1. SPR - AJT - Relativization strategies

Figures 2-4 display the mean acceptability rates (before binarization) given to RCs formed with PiP (Figure 2), Resumption (Figure 3) and P-Chop (Figure 4) by the three groups of speakers, where 0 meant 'very bad' and 1 meant 'very good'; recall that participants could choose any intermediate point in the scale (see table 1 in the Appendix G for all the descriptive).

These results clearly indicated that all participants gave higher acceptability rates to RCs formed through PiP, and that their judgments varied widely when judging oblique RCs that contained an RP. In the overall results (that include arguments and adjuncts), P-Chop was rated at chance level by the three groups.

Figure 2

Mean SPR-AJT ratings for oblique RCs formed with PiP (0.4-1.0)

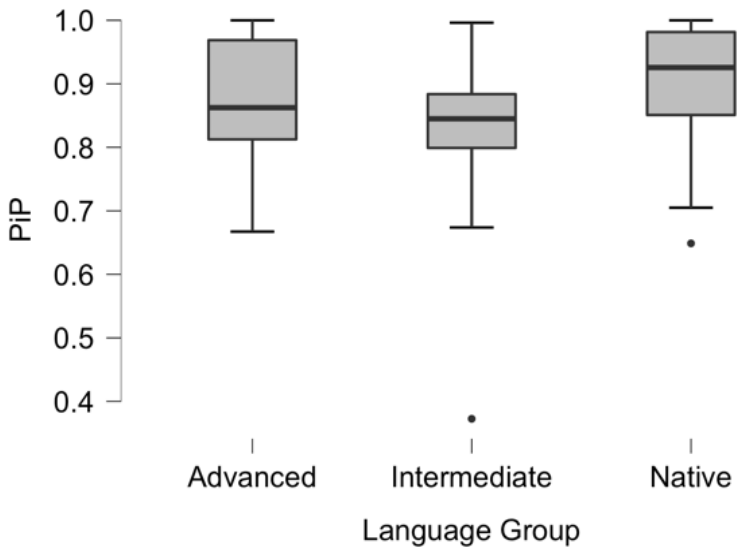


Figure 3

Mean SPR-AJT ratings for oblique RCs formed with Resumption (0.-0.8)

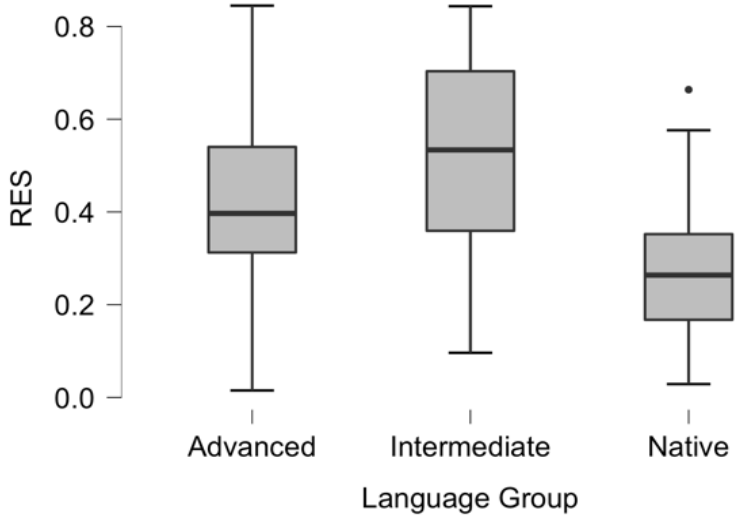
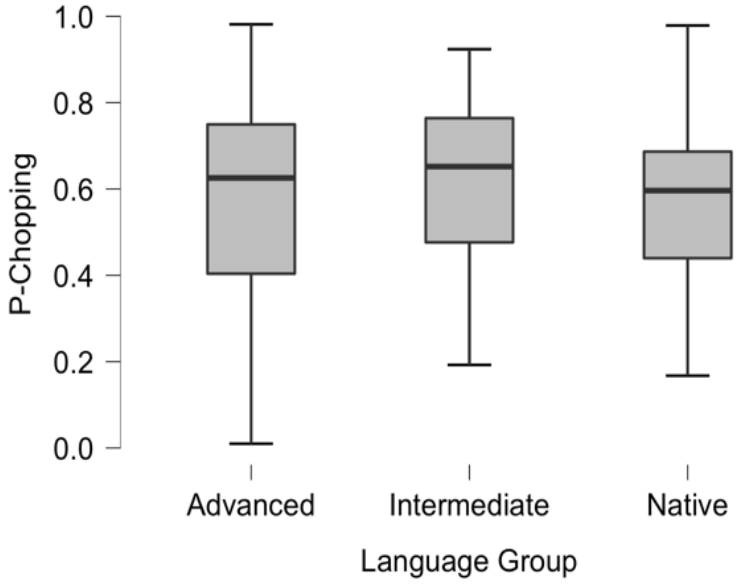


Figure 4

Mean SPR-AJT ratings for oblique RCs formed with P-Chop (0. -1.0)



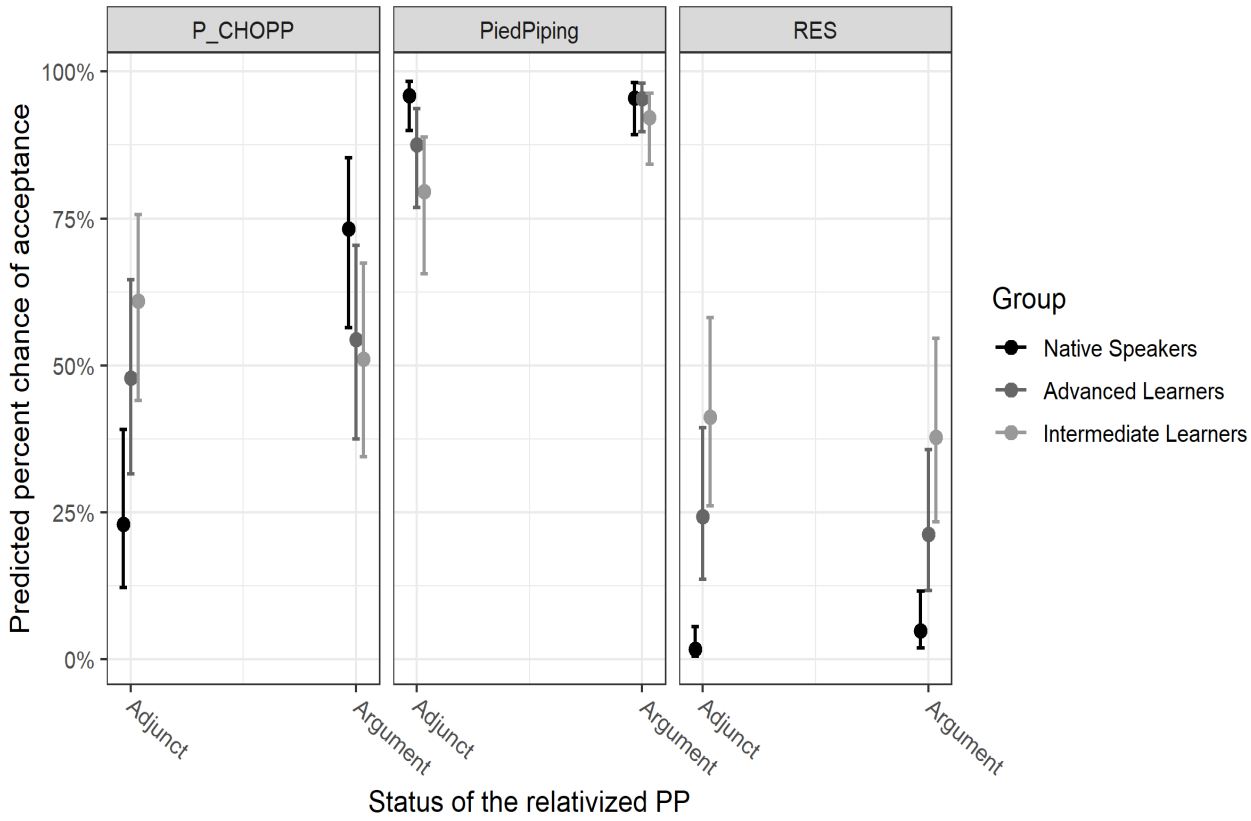
The full statistical model was the one adopted in this task. The reported model had an improved fit over the reduced model as evidenced by the likelihood ratio test $\chi 2$ (4) = 27.193, p = 1.817e-05[7]. Figure 5 illustrates the predicted chances of acceptance of each

[7] See Appendix H (Generalized Linear Mixed Model Acceptability Judgment Tasks)

strategy by group, and looking at the differences between arguments and adjuncts, after the application of the statistical model.

Figure 5

Predicted rates of acceptance of each strategy with arguments and adjuncts by group



This plot already gives us an idea that the status of the relativized PP seems to be more relevant with P-Chop, especially for native speakers. All groups accept PiP, and the fact that the relativized element is an adjunct or an argument does not seem relevant with this strategy. Resumption is rejected more expressively by native speakers and advanced speakers, regardless of the status of the relativized PP. We can also see that intermediate speakers show ratings closer to chance level in the case of non-standard strategies, not distinguishing arguments from adjuncts in any of the strategies.

2.1.1. Between Groups differences[8]

After running the statistical model, in the SPR-AJT targeting the relativization strategies, the interaction between groups and relativization strategies predicts that the differences between native speakers and advanced learners are not relevant in the acceptance of PiP in the relativization of adjuncts ($p = 0.0697$) or arguments ($p = 0.9998$). Similarly, the two groups of learners do not diverge significantly in the acceptance of PiP with adjuncts ($p = 0.3776$) or arguments ($p = 0.5274$). Native speakers differ from intermediate learners in the acceptance of PiP with adjuncts ($p = 0.023$), but not with arguments ($p = 0.5518$) (see Figure 5 and Tables 4 and 5, Appendix F). The fact that intermediate learners diverge from natives in the acceptance of PiP with adjuncts underscores that intermediate learners' intuitions of the standard PiP strategy are not as robust as those of native speakers' and advanced learners'.

The differences in the acceptance of resumption with adjuncts are statistically relevant between native speakers and advanced learners ($p <.0001$), and between native speakers and intermediate learners ($p <.0001$). In other words, natives reject resumptive RCs more assertively than non-native speakers when an adjunct is relativized. The two groups of learners do not diverge significantly in the ratings of resumption with adjuncts ($p = 0.1452$) (see Figure 5 and Table 6, Appendix F).

When an argument is relativized, the model predicts that native speakers reject resumptive RCs, but Chinese intermediate learners are at chance level, and this difference is relevant ($p <.0001$). Likewise, the ratings given to resumptive RCs by advanced learners and native speakers are statistically different ($p = 0.0048$). Even if they are below the chance level in both cases, native speakers reject them more assertively. The two groups of learners do not diverge significantly between themselves ($p = 0.1314$), but intermediate learners rate resumptive RCs at chance level and advanced learners classify resumptive relatives as ungrammatical (see Figure 5 and Table 7, Appendix F).

The interaction between groups and relativization strategies also predicts that P-Chop's ratings with adjuncts are significantly different between native speakers and advanced learners ($p = 0.0304$) and between native speakers and intermediate learners ($p = 0.0005$) (see Table 8, Appendix F). Intermediate and advanced learners do not differ

[8] All results provided are given on the log odds ratio (not the response) scale; P value adjustment: Tukey method for comparing a family of 3 estimates.

significantly in the acceptance of P-Chop with adjuncts (p = 0.3915) (see Table 8, Appendix F).

On the contrary, the prediction is that native speakers do not diverge significantly from advanced learners (p = 0.1363) nor from intermediate learners (p = 0.0676) on accepting P-Chop to relativize PP arguments. The two groups of learners are not significantly different between themselves (p = 0.9427) (see Table 9, Appendix F).

2.1.2. Within Groups Differences

The comparison of the three options in the context of the interactions predicts that, for native speakers, the difference between strategies (P-Chop vs. PiP; P-Chop vs. Resumption and PiP vs. Resumption) is statistically relevant within arguments and within adjuncts (all with p <.001) (see Tables 10 and 11, Appendix F). Furthermore, the model shows us that the differences in the acceptance of P-Chop with arguments vs. adjuncts for native speakers is statistically relevant (p.<0.001), but this does not occur with the other strategies (see Table 12, Appendix F).

Advanced learners also distinguish the three relativization strategies. The difference of the predicted ratings assigned to PiP and P-Chop, and PiP and Resumption, shows p <.0001, with arguments and adjuncts. These results show that advanced learners recognize PiP as the standard strategy with confidence. The expected ratings given by advanced learners to P-Chop and Resumption are also statistically different with arguments (p =0.0008) and adjuncts (p =0.0247) (see Tables 13 and 14, Appendix F). Advanced learners do not differ significantly in the acceptance of P-Chop with arguments vs. adjuncts (p = 0.5026), nor in the acceptance of resumption with arguments vs. adjuncts (p = 0.6828), but the difference in the acceptance of PiP with arguments vs. adjuncts is significant (p =0.0262) (see Table 15, appendix F).

Finally, intermediate speakers show a less stabilized grammar. The only relevant differences are between P-Chop and PiP with arguments (p <.0001), and PiP and Resumption with arguments (p <.0001) and adjuncts (p =0.0001). The other contrasts are not statistically relevant, showing that intermediate learners do not distinguish P-Chop from Resumption with arguments (p = 0.3446) nor with adjuncts (p = 0.1010). The differences between the standard strategy (PiP) and the non-standard P-Chop are also not relevant when adjuncts are relativized (p =0.0624) (see Tables 16 and 17, Appendix F). When the rates attributed to each strategy with arguments and adjuncts are compared, the data show that the acceptance of P-Chop with arguments vs. adjuncts is not statistically

significant for intermediate learners (p = 0.3031). Intermediate learners do not rate resumption significantly different in arguments or adjuncts either (p = 0.7139). Like advanced learners, the differences in the ratings attributed by intermediate learners to PiP with arguments and adjuncts differ statistically (p = 0.0141) (see Appendix F, Table 18).

2.2. SPR-AJT of extractions from islands

The mean ratings (from 0 to 1) given by the participants to RCs formed with extractions from islands, illustrated in Figures 6-8, show that there is a lot of variability in the judgments in all structures (see Table 2 from Appendix G).

Figure 6

Mean SPR-AJT ratings for oblique RCs formed with PiP within syntactic islands (0.2-0.8)

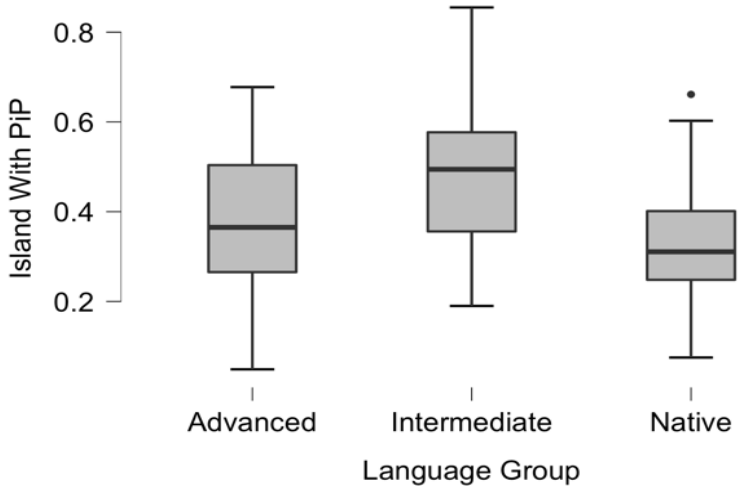


Figure 7

Mean SPR-AJT ratings for oblique RCs formed with Resumption within syntactic islands (0.-0.8)

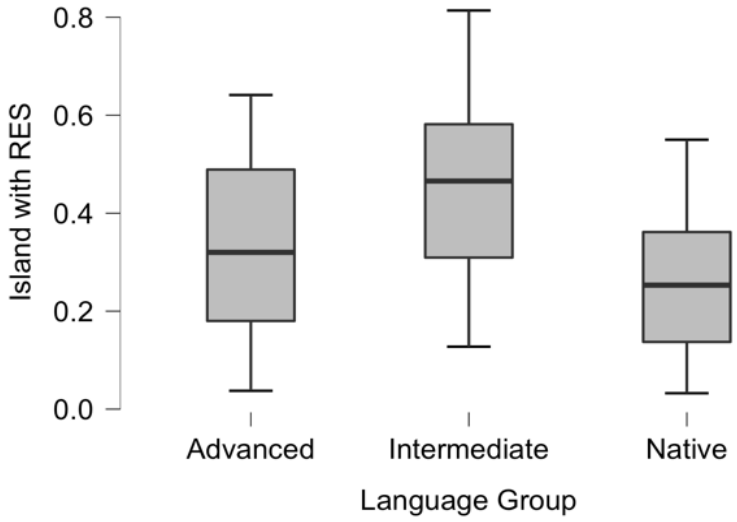
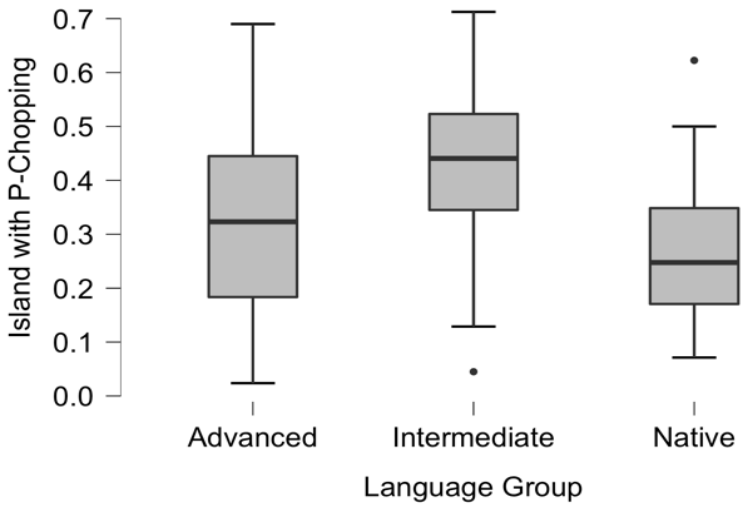


Figure 8

Mean SPR-AJT ratings for oblique RCs formed with P-Chop within syntactic islands (0.0-0.7)

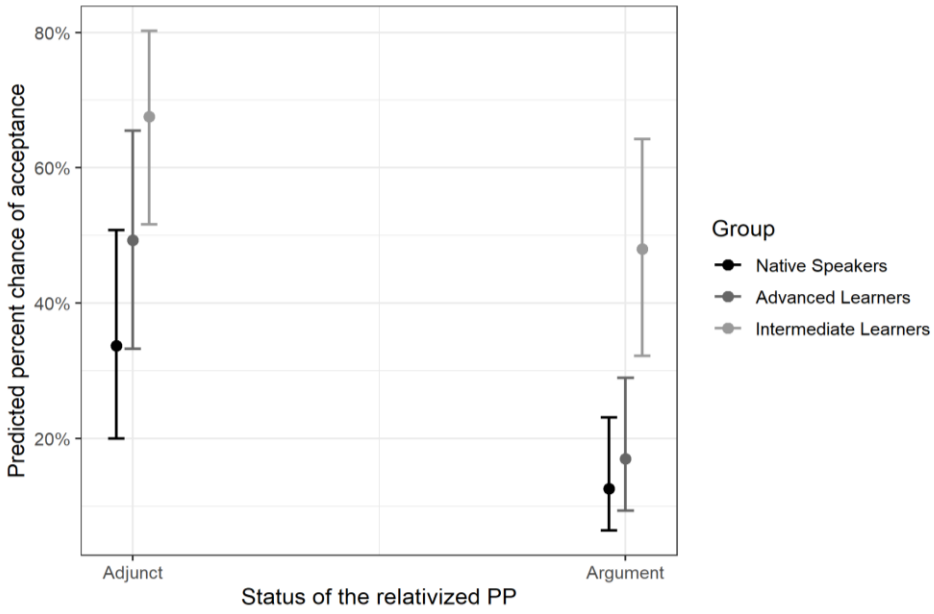


The statistical model used for this task is a generalized linear mixed model fit by maximum likelihood (Laplace Approximation)[9]. Figure 9 compares the predicted chances of acceptance of argument and adjunct RCs formed with elements from syntactic islands, not considering the relativization strategy.

[9] See Appendix H (Generalized Linear Mixed Models - Acceptability Judgment Tasks)

Figure 9

Predicted rates of acceptance of the island configurations by group, considering the status of the relativized PP



After running the statistical model, the first finding is that extractions of arguments were accepted significantly less than extractions of adjuncts by all groups ($p < 0.0001$ for native speakers and advanced learners; $p = 0.0030$ for intermediate learners) (see Table 19, Appendix F).

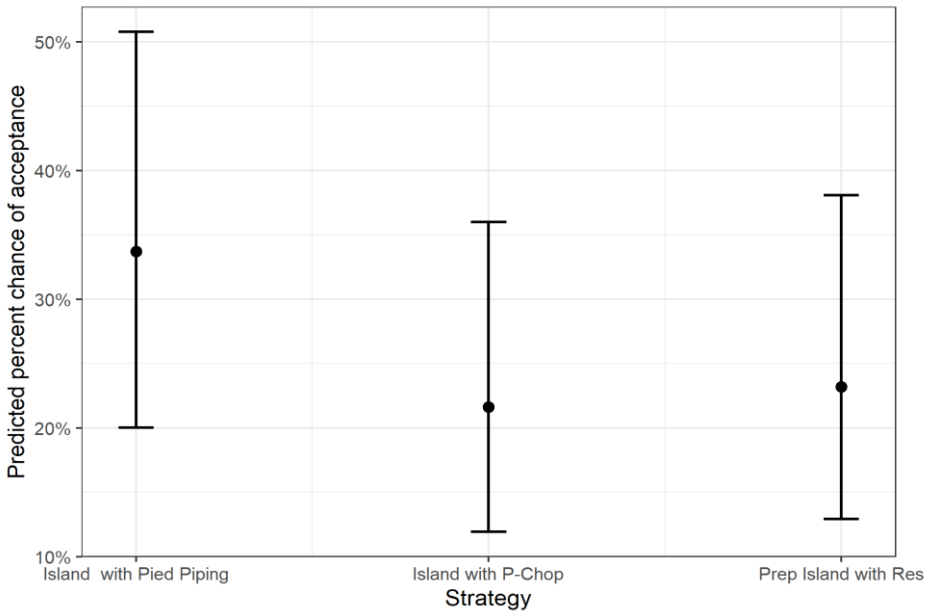
The second finding is that the intermediate Chinese speakers accepted more sentences across all types than the native EP and the advanced Chinese learners. Native EP and advanced learners were not significantly different from each other in the ratings of adjuncts ($p = 0.1883$) or arguments ($p = 0.6423$). Instead, native speakers were significantly different from intermediate learners in the ratings of adjuncts ($p = 0.0004$) and arguments ($p < 0.0001$). Advanced learners differed from the intermediate ones in the ratings of arguments ($p = 0.0001$) but not adjuncts ($p = 0.0764$) (see Tables 20 and 21, Appendix F).

Finally, the strategies were not involved in the first interaction, but pairwise comparisons were performed, given that it is a factor with three levels. While some of these differences were significant in the original model, they are not after adjusting for multiple comparisons, as shown in Figure 10 (see Table 22, Appendix F). In other words, it is not predicted that the relativization strategy used influences the acceptance/ rejection

of a relative clause formed with an element extracted from an island by any of the groups. Said differently, this indicates that resumptive elements did not contribute to rescue island configurations in this task.

Figure 10

Predicted rates of acceptance of island configurations, considering the strategy used in the RC



The results presented in the current chapter are discussed on Chapter 8, which articulates these findings with the research questions and the hypotheses raised on Chapter 6.

Chapter 8

Discussion of Results

The main goal of the present dissertation is to contribute to the study of interlanguage grammars and to a better understanding of the extent to which these diverge from native grammars. I have chosen to study the developmental path followed in the acquisition of *wh*-movement and its related properties by focusing on prepositional RCs, with the intent of identifying the locus of divergence between native and non-native grammars. Thus, the main research question concerns whether native and non-native systems are fundamentally different, and, if they differ, what is the nature of these differences. Are they a consequence of difficulties that appear in the process of reassembly (or, alternatively, due to performance factors), as predicted by Lardiere's FRH (Lardiere, 2007 and following)? Or are they exclusively found at the level of linguistic competence, as argued by Bley-Vroman (1988, 1989) or Hawkins (1997, 2005, among others), meaning that learners cannot recruit certain features from UG? The choice of *wh*-structures was motivated by the pre-assumption that MC is a *wh*-in situ language, not displaying overt *wh*-movement. Since EP shows *wh*-movement, this would be an opportunity to see how learners of an L1 without the functional features that trigger *wh*-movement would behave when acquiring these features.

Different researchers (e.g., Wen, 2020) have evidenced that, even if MC prepositional RCs with an RP do not display *wh*-movement, operator movement exists, whether it is in all RCs (Pan, 2016a, 2016b), in adjunct RCs (Aoun & Li, 2003), or gap RCs (Wen, 2020) (cf. Chapter 4). Therefore, I specifically aim at understanding how L2 learners reassemble the features that configure *wh*-movement in other relative structures when they acquire prepositional RCs, formed as a resumptive chain, without movement, in their L1.

Following the FRH and the RDH, I predicted that non-native speakers would acquire resumptive RCs first, showing a non-facilitative transfer effect (H1 and H2, Chapter 6). This prediction is based on the characteristics of the structures, given that resumptive RCs do not involve movement either in the L1 or the L2. However, we should not forget that resumptive RCs are not standard in the L2, but this transfer effect, I predict, would occur despite the fact that they do not integrate the standard input given in the classroom. The prediction is based on the structural similarity of the constructions, which

could favor the direct mapping of the features that configure the resumptive CP from the L1 into the L2 (see Chap. 6).

Prepositional RCs formed with PiP and P-Chop in EP entail *wh*-element, not available in Chinese. Additionally, PiP implies fronting the preposition along with the *wh*-phrase. To acquire these strategies, learners need to acquire the *wh*-phrases and reassemble the movement features available in the L1 into overt *wh*-movement. According to the FRH and the RDH, I expect that learners produce and accept the strategies that involve *wh*-movement, namely PiP and P-Chop. However, for the FRH, this indicates that both intermediate and advanced speakers are able to reassemble the features triggering movement in the L1 into the L2, acquiring *wh*-movement (H3a). According to the RDH, this means that the learners used other mechanisms to perform a target grammar. Following both hypotheses, I also expect that intermediate speakers show it to a lesser extent, since they are not as advanced in the acquisition process and they are likely to show evidence of the initial grammar, including also resumption (H3b).

Taking the structural characteristics of RCs into account, I have also predicted that P-Chop RCs would be more accessible to the learners than RCs formed with PiP. This prediction was grounded on the properties of the structures. Given that the only relativizer available in P-Chop RCs is the underspecified *que*, the learners need to acquire one single relativizer, contrasting with PiP RCs, where more relativizers with different semantic configurations are available. They also need to reassemble the movement features available in other relative structures into P-Chop RCs in EP, given that these entail movement, but the burden of the preposition is alleviated, since P-Chop RCs do not involve the preposition. The absence of the preposition renders P-Chop RCs more acessible than PiP (H4, chapter 6).

Furthermore, considering that native speakers prefer P-Chop with arguments rather than with adjuncts (e.g., Santos, 2014), I expect that advanced learners show instances of P-Chop closer to the native speakers, mirroring this contrast between arguments and adjuncts. However, P-Chop is also attested as a developmental phenomenon in the L2 acquisition of Prep RCs, not distinguishing arguments from adjuncts. As such, I expect that intermediate learners show higher rates of developmental P-Chop (H5 and H6, Chapter 6).

These predictions are grounded on the properties of the structures. Nevertheless, it is important to stress that the three strategies available in EP do not share the same status. The non-standard strategies are not explicitly taught in the classroom, contrary to

PiP. So, learners are mostly exposed to prepositional RCs with PiP in the classroom. They possibly encounter resumptive or P-Chop RCs in other less-controlled environments. The question is whether L2 learners follow the standard or whether they mirror native speakers' preferences, which are not necessarily equivalent to the standard. Miller & Schmitt (2012) noted that variable input delays the acquisition process in the acquisition of the L1. It is not possible to check if the acquisition of prepositional RCs in EP is hindered by the fact that prepositional RCs can be produced with three different strategies since I am not comparing it with the acquisition of prepositional RCs in a language that does not display such variation. However, the learners may avoid the "noise" introduced by the non-standard strategies by following the norm.

Syntactic island configurations were introduced in the task to tackle the implicit knowledge of the speakers. Recall that, according to the RDH (Hawkins, 2005; Hawkins & Hattori, 2006, among others), the fact that the L2ers produce a given structure does not necessarily indicate that they have acquired the features that determine it. Therefore, it is important to use other means of diagnostic that tap implicit knowledge. Considering this, and following the FRH, I predict that learners are able to acquire new functional features or reassemble the ones from their L1 into new configurations, recognizing the violations to syntactic islands and acknowledging the rescuing effect of RPs in EP. I also predict that advanced learners are more proficient than intermediate learners in this task because they are more ahead in the acquisition process. On the other hand, considering the RDH, the prediction is that learners are not able to acquire these features and will not recognize violations to syntactic islands (H7 and H8).

Finally, and looking at the extractions from argument RCs and adjunct RCs from strong islands, I predict that the ratings attributed by the learners to arguments and adjuncts will not differ significantly, because I am looking at strong islands and not weak islands, where these effects were detected (H9).

The following sections of this chapter are organized as follows: I start by synthetizing the main results of the oral production task and the SPR-AJT targeting the relativization strategies (section 1). Then, I discuss the results, considering the transfer effects from the L1, and to the operations of mapping and reassembly (section 2). Section 3 looks at the results that involved the P-Chop strategy, with non-native speakers (3.1.) and with native speakers (3.2.). In section 4, the results obtained with island configurations are debated.

1. Main Findings

In the oral production task, the main findings are:

- With arguments:
    1. Native speakers alternate mainly between PiP and P-Chop;
    2. Advanced learners show higher percentages of PiP than the control group and the intermediate learners;
    3. Intermediate learners show more variability across the three strategies, with higher percentages of PiP, followed of P-Chop and Others;
- With adjuncts:

    1. Native speakers alternate between the production of PiP and Locative strategy;

    2. Advanced learners use the three strategies, with higher rates of PiP, followed by Locative and then P-Chop;

    3. Intermediate learners exhibit higher percentages of PiP, followed by P-Chop and then Locative;

- The statistical model for the oral production of P-Chop indicates that:

    1. Only intermediate speakers are likely to produce P-Chop with adjuncts;

    2. Intermediate learners are closer to native EP in the production of P-Chop with arguments.

The SPR-AJT targeting relativization strategies shows that:

- Pied-Piping:

    1. Native speakers and advanced learners do not show significant differences in the acceptance of PiP with arguments or with adjuncts;

    2. Native speakers diverge significantly from intermediate learners in the acceptance of PiP with adjuncts, but not arguments;

    3. Advanced and intermediate learners do not show significant differences in the acceptance of PiP with arguments or adjuncts;

- Resumption:

    1. Native speakers reject resumptive RCs more assertively than the two groups of learners;

2. Advanced and intermediate learners do not diverge significantly in the rates attributed to resumptive RCs, but they show a proficiency effect;

- P-Chopping:
    1. Native speakers diverge significantly from the two groups of learners in the rejection of P-Chop with adjuncts;
    2. Native speakers and the two groups of learners do not diverge significantly in the acceptance rates of P-Chop with arguments;
    3. Advanced and intermediate learners do not differ significantly in the rates of P-Chop with adjuncts or arguments.

Regarding the use of the different strategies by each group with arguments and adjuncts, the main findings are:

1. P-Chop is rated significantly lower with adjuncts than with arguments by native speakers, but not by the two groups of learners;
2. PiP receives significantly different rates by the two groups of learners with arguments and adjuncts, but not by native speakers.

In the following sections, I discuss these findings.

2. L1 Transfer, Mapping, and Reassembly

I expected occurrences of resumptive RCs, particularly at the lowest levels of proficiency. Hence, it was predicted that the intermediate learners would produce and accept more resumptive RCs than the advanced learners (H1) and that, at the intermediate level, resumption would prevail over the other strategies (H2). However, neither of these hypotheses was confirmed, as Chinese speakers did not produce RPs to form oblique RCs in EP (see Chapter 7, section 1). I predicted some degree of direct mapping from the L1 into the L2. Following the FRH, it would be easier to map the features that determine resumption in Chinese into resumption in EP than to reassemble existing features in the L1 onto different configurations on the L2. The RDH also predicts that transfer from the L1 occurs at the early stages of acquisition. Recall that Chinese prepositional RCs display obligatory resumption. Consequently, I expected some degree of negative transfer, which would be more visible in intermediate than in advanced participants, following a developmental path. However, unlike predicted, L2 participants practically did not use

resumption in their productions, with no evidence of direct mapping in that sense. Such results question the power of transfer effects.

Furthermore, these results are at odds with what was found in the intermediate L2 Spanish of Arabic speakers, in oral (Perpiñán, 2015) and written (Perpiñán, 2020) production. Arabic is a language that accepts or requires resumption in all relativization positions except for SBJs; similarly, Chinese displays optional grammatical RPs in SBJ and DO positions, mandatory in oblique cases. Indeed, the situation of EP and Spanish is quite similar in terms of resumption: it is ungrammatical in the standard varieties but attested in spontaneous data. A plausible explanation for the lack of any sort of transfer in the intermediate participants could be that they are past the full transfer initial period, so they have already realized that RPs are not a grammatical option in EP and that they need to use a different strategy. Possibly, the fact that the learners are exposed to formal input (predominantly standard) in the classroom has contributed for this result. Nevertheless, natives still reject resumptive RCs more assertively with adjuncts and arguments than the two groups of learners, showing that, even if the participants are developing the intuition that resumption is ungrammatical, they have not yet restructured their ILG grammars completely according to the natives' intuitions. However, the slight proficiency effect found between advanced and intermediate speakers in the assessment of resumption in the SPR-AJT targeting relativization strategies points towards this direction, with intermediate speakers assessing it at chance level and advanced speakers below it. Certainly, to confirm the existence of a proficiency effect, it would be necessary to test less advanced learners, which was not possible in this study.

The participants in this study seem to have adopted PiP as the appropriate strategy, confirming the third hypothesis. According to the FRH, this indicates that Chinese learners were able to reassemble the features of *wh*-movement, accepting and producing prepositional RCs with PiP and P-Chop in EP. For the RDH, it is expected that learners produce PiP and P-Chop, but this does not indicate that they have acquired the features that determine *wh*-movement.

Advanced learners actually produced higher percentages of PiP than the control group and the intermediate learners with arguments and adjuncts. The fact that the frequency of production of PiP is higher in the learners' groups than in the native control group clearly shows that this is their preferred strategy for oblique contexts. At the same time, advanced learners have indistinguishable judgments from those given by the native speakers concerning the acceptance of PiP regardless of the status of the relativized PP,

and only the intermediate learners have significantly different lower acceptance rates of PiP than the control group when PP adjuncts are relativized, but not with PP arguments. Indeed, at first sight, it seems that non-native speakers, particularly advanced learners, mirror the performance of the natives not only in their production of the target structure, PiP, which they produce even more frequently than the natives, but also in the production of other non-standard strategies such as P-Chop and the locative relativization, which are not taught in the classroom, but are quite frequent in native productions.

It is true that advanced learners, and to a lesser extent also intermediate learners, keep the same asymmetries and tendencies found in native speakers concerning arguments and adjuncts, producing higher percentages of PiP and P-Chop with arguments than with adjuncts. Nevertheless, a more detailed analysis shows that native speakers display competing grammars, alternating between PiP and P-Chop to relativize arguments and between PiP and the locative strategy to relativize adjuncts.

The native speakers' tendency to alternate between P-Chop and PiP in the relativization of arguments, but not adjuncts, is also visible in the SPR-AJTs. The model predicts that native speakers diverge significantly in the acceptance of P-Chop with arguments vs. adjuncts ($p = 0.001$), but advanced learners ($p = 0.5026$) and intermediate learners ($p = 0.3031$) do not distinguish the acceptance of P-Chop with arguments and adjuncts.

Despite these differences between native EP and learners in the distribution of P-Chop, L2 learners, particularly the advanced speakers, show equivalent tendencies to native EP (although to a lesser extent), showing that they have internalized the target grammar, in particular PiP. Intermediate speakers, as expected, present more variability, evidencing a proficiency effect. The fact that Chinese speaking learners of EP have been able to restructure their interlanguage grammars to form oblique RCs through movement (involving PiP and P-Chop) is reinforced with the results from the second SPR-AJT that integrates syntactic islands. All in all, these results are interpreted as robust pieces of evidence for the acquisition of *wh*-movement, against the RDH. These results corroborate the hypothesis that learners are able to map and reassemble features from their native languages into new configurations in the L2, supporting Lardiere's FRH.

Advanced Chinese learners are indistinguishable in their judgments from native speakers, and only intermediate learners show less sensitivity to island violations, showing a proficiency effect, as discussed later. However, the fourth hypothesis, which stated that non-native speakers use and accept P-Chop RCs over PiP RCs, is not

confirmed, given that the results do not evidence that P-Chop prevails over PiP, neither in the production, nor in the SPR-AJT targeting relativization strategies. PiP is the preferred strategy for both groups of learners regardless of the status of the relativized PP. Possibly, this happens because PiP was more present in the (formal) input and that the learners took PiP as the preferred strategy.

3. P-Chopping

An interesting result of the study is that non-native speakers do not mirror the asymmetry identified in native speakers' production in the use and acceptance of P-Chop. Native speakers show competing strategies, alternating PiP and P-Chop in the relativization of arguments. With the combinations *gostar de* and *precisar de*, there were more native speakers producing sentences omitting the preposition than pied-piping it. Advanced L2 speakers prefer PiP, representing more than two-thirds of the advanced speakers' utterances to relativize PP arguments. Intermediate L2 speakers produce higher percentages of P-Chop with arguments than advanced learners, but the model does not predict that the difference in the production of P-Chop between intermediate and advanced learners is significant with arguments. The highest rates of P-Chop are not with the same verbs as native speakers. Intermediate speakers produce more P-Chop with *pensar em* 'think about' and *participar em* 'participate in', while P-Chop is more frequent with *gostar de* 'like (of)' and *precisar de* 'need (of)' among native speakers. In other words, it seems that intermediate learners produce more P-Chop than advanced learners, but they are not necessarily reflecting the native use of P-Chop.

The production of P-Chop with adjuncts reinforces the hypothesis that native and non-native P-Chop have a different nature. The locative strategy with arguments was available only with one verb (*participar*); with adjuncts, locative was an option for the four verbs tested. This distribution explains why the locative strategy was practically not produced with arguments by any of the groups. With adjuncts, native speakers alternated between PiP and the locative strategy, but P-Chop is not produced frequently. Instead, non-native speakers (advanced and intermediate) are divided between PiP, Locative, and P-Chop to relativize adjuncts. Advanced learners reflect the native tendency, showing higher rates of the locative strategy compared to P-Chop (see Table 2, corresponding to Table 3 from Chapter 7, here repeated to facilitate the reading). Furthermore, in the SPR-AJT targeting the relativization strategies, the acceptance of P-Chop is significantly different for native speakers with adjuncts and arguments (p = 0.001), but this does not

happen with the two groups of learners, since neither advanced learners (p = 0.5026) nor intermediate learners (p = 0.3031) differ significantly in the acceptance of P-Chop with arguments vs. adjuncts.

H5, which predicts that intermediate learners will have higher rates of "developmental" P-Chop (Perpiñán, 2010) than advanced learners, is partially confirmed by the data. Indeed, there is a proficiency effect in the production of P-Chop since intermediate speakers have higher rates of P-Chop with adjuncts than advanced speakers. The model predicts that the difference between the two groups of non-natives in the production of P-Chop with adjuncts is statistically relevant (p=0.0392). Besides, advanced learners do not diverge significantly from EP in the production of P-Chop with adjuncts (p=0.1483), while EP and intermediate learners do (p=0.0004). So, this indicates that intermediate learners are likely to produce P-Chop with adjuncts contrary to the other groups. Actually, intermediate learners produce more P-Chop than the locative strategy when relativizing a PP adjunct, which may also indicate that the acquisition of the semantically underspecified relativizer *que* precedes the acquisition of other relativizers that hold marked semantic features, such as *onde* 'where'.

With arguments, native speakers and intermediate learners do not diverge significantly in the production of P-Chop (p=0.2748). The two groups of learners do not diverge significantly as well (p=0.4046), but advanced learners differ significantly from native speakers (p=0.0181), perhaps because advanced learners produce high rates of PiP with arguments and are not alternating PiP and P-Chop, as native EP seem to be doing in the relativization of arguments.

The results for P-Chop with arguments and adjuncts for each group in the SPR-AJT shows that non-native speakers from both groups accept this strategy regardless of the type of relativized PP, which is not the case with native speakers. Native EP show a significant difference between the acceptance of P-Chop with arguments and its rejection with adjuncts (p.<0.001). Even if P-Chop is produced more by intermediate than by advanced learners with adjuncts, we cannot state that advanced learners are completely over the developmental P-Chop, even if they seem to be on their way to restructuring their ILG according to the native grammar, at least according to the data provided in the oral production task.

These data do not seem to confirm H6. The model predicts that advanced learners do not produce significantly more P-Chop with arguments than adjuncts (p=0.1066). However, native speakers produce P-Chop significantly more with arguments than

adjuncts (p<.0001). Similarly, in the SPR-AJT, advanced learners did not differ significantly in the acceptance of P-Chop with arguments vs. adjuncts (p = 0.5026), contrary to native speakers.

In a nutshell, contrary to native speakers, intermediate learners produce P-Chop with adjuncts. Advanced speakers pair with natives in the lack of production of P-Chop with adjuncts, but show indistinguishable judgments from intermediate learners in the acceptance of P-Chop regardless of the status of the relativized PP, unlike native speakers. These results seem to indicate that the native speakers' behavior shows regularities in the production and acceptance of P-Chop which intermediate speakers do not observe, and which advanced learners only seem to mirror in their lack of P-Chop with adjuncts.

The differences between native EP and Chinese learners (especially intermediate) are relevant, strengthening the hypothesis that P-Chop has a different nature for native speakers and Chinese learners. In the following paragraphs, I will argue for this distinction.

3.1. Developmental P-Chopping

Chinese learners (especially intermediate) produce and accept RCs with P-Chop, not distinguishing arguments from adjuncts, possibly indicating that they are not acquiring P-Chop from the native EP input since they are not following the same regularities that native speakers follow. However, developmental P-Chop is not expected to be so high, which may indicate that it is reinforced by the input. Thus, it would be interesting to compare these data with the data from the acquisition of another language not displaying P-Chop in the input, in order to understand if the input is enhancing developmental P-Chop in this case.

I believe that non-native P-Chop cannot be explained as L1 transfer. The researchers have indeed identified gapped adjunct RCs in Mandarin Chinese (see Chapter 4), but, contrary to what is observed in Portuguese, these are not a consequence of the relativization process. They occur with verbs that show the same behavior in matrix clauses.

The fact that non-native speakers are producing and accepting P-Chop according to their own rules cannot be explained as a 'wild grammar' phenomenon either (Klein, 1993). Indeed, P-Chop exists as a phenomenon in the natural language, as attested in EP, but also in other varieties of Portuguese (Brazilian Portuguese, Santomean Portuguese,

Cape Verdean Portuguese)[1]. Furthermore, as mentioned in Chapter 3, P-Chop is described in other languages and dialects (such as Haitian Creole, some dialects in northern Greece, colloquial Puerto Rican, colloquial French, colloquial Italian, Venezuelan Spanish, Catalan, Montreal French and Québecois, Roviana). I assume that native speakers do not have an impaired knowledge of their own natural languages, so the hypothesis of considering P-Chop a phenomenon of wild grammar is not supported.

Besides, as mentioned in Chapters 3 and 5, when acquiring prepositional RCs, children do not start by producing PiP. PiP is acquired late, through schooling, as shown by Vasconcelos (1996), Fontes (2009), and Valente (2009) for EP. This is also true in other languages (see Guasti & Cardinaletti, 2003, for Italian; Labelle, 1990, for French; McDaniel et al., 1998, for English or Pérez-Leroux, 1995, for Spanish). As a consequence, children produce RCs with P-Chop and other strategies, such as resumption or coordination. The data from L1 acquisition reinforce the idea that P-Chop is a possibility made available by UG.

Assuming that UG constrains P-Chop, the presence of P-Chop in the interlanguage grammar is an argument against the RDH (Hawkins & Lizka, 2003; Hawkins, 2005; Hawkins & Hattori, 2006, among others). Developmental P-Chop reflects the access of Chinese learners to UG to acquire prepositional RCs in Portuguese. Given that P-Chop is available in the input, it can be argued that this is not a typical case of 'poverty of stimulus.' However, as I have attempted to demonstrate earlier, non-native P-Chop does not mirror the native input and its regularities. It appears to be the result of computational mechanisms constrained by UG, which in turn constrain natural language grammars.

To explain the omission of the preposition with RCs in Brazilian Portuguese, Kato & Nunes (2009) argued that the preposition selected by certain verbs (such as *de*, with the verb *precisar*) is a realization of inherent Case. Given that inherent Case realization is subject to Last Resort, it only surfaces if the object is overt (Kato & Nunes, 2009, p. 110). As inherent Case is related to thematic selection, it explains why preposition dropping is lexically determined. Having this in mind, they claim that, in P-Chop RCs, a DP headed by a relative determiner is generated in a left dislocated position, where it receives default Case; thus, the preposition does not assign the Case to it, and the preposition does not arise. As predicted by Kato & Nunes, P-Chop seems lexically

[1] See Gonçalves, 2010; Alexandre, Gonçalves & Hagemeijer, 2011; Alexandre & Hagemeijer, 2013, among others.

determined in the results obtained with native speakers; however, this does not seem to be the case with L2 learners.

Looking at the P-Chop phenomenon in the L2, Dekydtspotter, Sprouse & Anderson (1998) argue for a non-movement account of P-Chop RCs, stating that P-Chop RCs constitute a binding construal (and not a movement chain), where a base generated operator binds with a null *pro* (see chapter 5, section 3.3.2). The authors assume Baker's notion of preposition incorporation, arguing that the omitted preposition incorporates the verb in these cases. The VP complex that results from preposition incorporation subcategorizes a DP. Consequently, it is possible to have a *pro* in the complement position because the preposition does not work as functional governor, and the ECP is not violated. However, Dekydtspotter *et al*. (1998) made this proposal for the cases of omission of the preposition with questions (and not RCs), grounding it on the asymmetry between arguments and adjuncts found by Jourdain (1996) with *wh*-questions in the acquisition of L2 French. The Chinese learners from my experiment did not show evident signs of an equivalent asymmetry between arguments and adjuncts in the use of P-Chop with RCs. Still, Dekydtspotter *et al*.'s approach may contribute to explain native P-Chop, as I develop further.

As noted by Perpiñán (2010), L2 learners hardly have a solid subcategorization knowledge of prepositional verbs. In fact, the pre-test developed for the current dissertation discarded around 40% of the potential participants (only 74 out of 118 proceeded to the experiment), because they did not know that the experimental verbs selected for prepositions. Even if the participants chosen for this study have shown that they knew that the verbs selected for a preposition in the pre-test, this does not necessarily indicate that the acquisition of the argument grid of the verbs is fully acquired. Accordingly, Perpiñán hypothesizes that prepositions could constitute an optional feature for non-native speakers, particularly because the relativized DP stays in an A' position, where it can receive the default Case. Thus, Perpiñán argues, the non-native speakers omit the preposition because they never select it from the functional lexicon. P-Chop constitutes an "interlanguage stage, fully available on account of UG, which intermediate or even advanced second language learners, as well as first language learners, go through at some point in their development of oblique RCs" (Perpiñán, 2010, pp. 210-211).

Considering the data analyzed in the present research, and in particular the contrast between intermediate and advanced speakers in the production of PiP and in the lack of production of P-Chop with adjuncts by advanced learners, it is possible to verify that non-

native speakers overcome the P-Chop phase and are able to select the preposition from the functional lexicon, even mastering the rules that determine its movement.

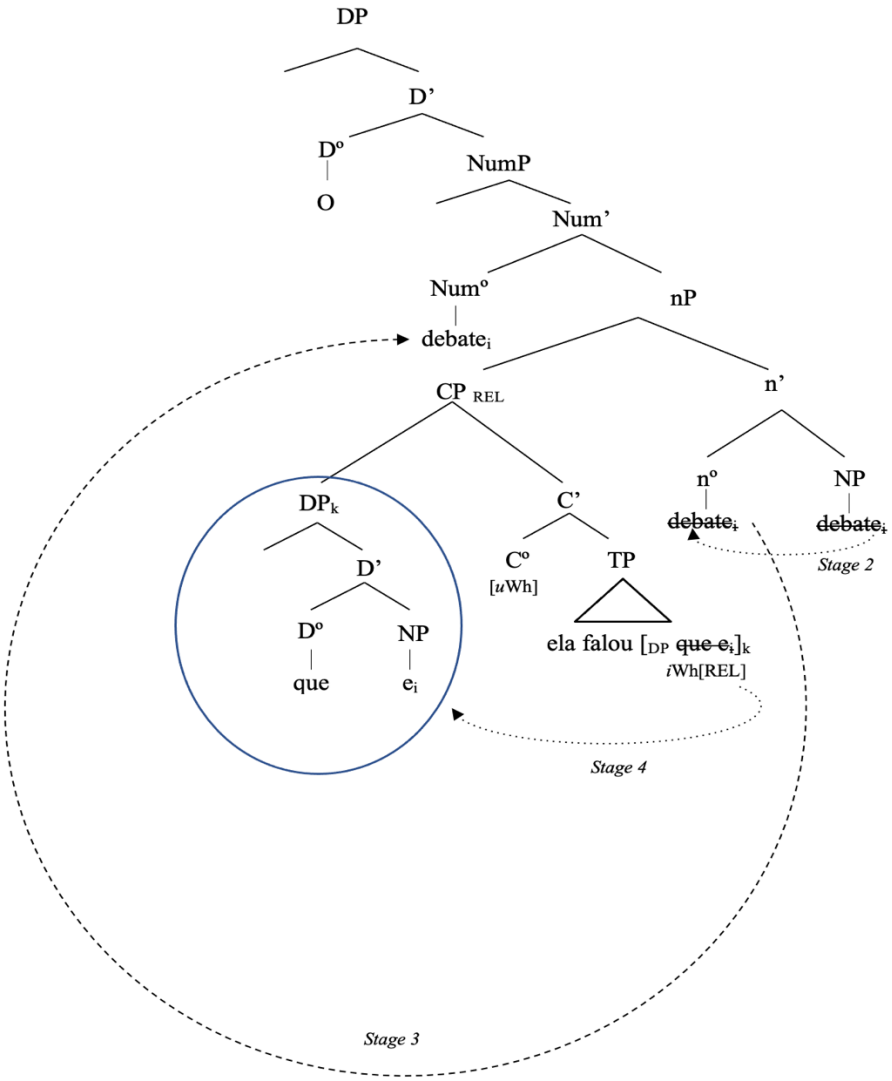
Perpiñán further claims that optionality is available because the prepositions are not crucial for the meaning of the sentence. Indeed, the learners' understanding of the sentences in Perpiñán's study was not jeopardized, as attested by the results of the comprehension task that she included in her experimental design. As the proficiency level evolves, the optionality of the preposition tends to disappear. A correlation between the occurrence of PiP and the proficiency level was identified in English-speaking learners of L2 Spanish in Perpiñán's study. My study shows an equivalent effect of proficiency in the use of PiP, accompanied by lower rates of P-Chop. The fact that the rates of P-Chop are lower with advanced speakers is an additional argument to consider that native and developmental P-Chop may be of a different nature.

Regarding the existence of movement, Dekydtspotter *et al.* (1998) argued for a non-movement account of P-Chop and explained it as a derivation motivated by the minimalist principle of economy since it only implied the operation Merge. In contrast, a movement construction would involve Merge and Move. However, an analysis involving movement seems reasonable, especially considering the results of the SPR-AJT with island configurations, which shows Chinese learners mastering the knowledge of *wh*-movement by identifying the violations to island configurations. Furthermore, the analysis of P-Chop RCs involving operator movement has already been proposed for EP (e.g., Brito, 1995), and also for P-Chop in the L1 (e.g., Guasti, 2002) and in the L2 (Perpiñán, 2020, in press). Given that P-Chop RCs are sensitive to strong crossover effects, long movement, and license parasitic gaps (cf. chapter 3, section 1.3.1.), I do not have solid reasons to discard an analysis that displays movement.

I adopt a derivation that is consistent with Rinke & Aßmann (2017) proposal for SBJ and DO RCs, as proposed in Chapter 3. In this case, I am assuming that L2 learners do not select the preposition from the functional lexicon, so the preposition is not in the numeration and the verb subcategorizes for a DP (and not for a PP), as in (1)b.

(1) (a). *o* *debate* *que* *ele* *falou*
DET.M.SG debate REL 3SG speak-PST.3SG
'the debate he spoke (about)'

(b).



3.2. Native P-Chopping

The data collected in the current dissertation also contribute to enlighten the P-Chop phenomenon with native speakers in EP. The first noteworthy aspect is that native speakers distinguish P-Chop with adjuncts from arguments in the production and the SPR-AJT. The replacement of P-Chop with the locative strategy could explain its absence with adjuncts in the production data; however, in the SPR-AJT, the locative strategy was not a possibility, and, still, native speakers showed a net asymmetry between the two types of PPs. Moreover, looking at the predicted production of P-Chop, it is also evident that native speakers do not have it as an option to relativize adjuncts. This contrast between arguments and adjuncts corroborates previous findings for EP's RCs (e.g., Santos, 2014). Equivalent findings were made in the L2 acquisition of questions (for instance, Klein, 1993; Jourdain, 1996). If P-Chop does not seem to be related to changes in the argument grid of the verbs, given that there is no evidence that P-Chop occurs in

declarative contexts in EP (e.g., Brito, 1995; Espírito Santo, 2020), how can the asymmetry between arguments and adjuncts be explained?

The notion of Preposition Incorporation (PI), introduced by Baker (1988) with applicative objects, seems to provide an appropriate explanation for the current data, as already suggested by Dekydtspotter *et al.* (1998) to justify the omission of the preposition with questions in the L2. Incorporation "is the syntactic movement of an Xº category to adjoin to its Xº governor" (Baker, 1988, p. 229). According to Baker, PI can occur with verbs that select for a PP argument. Certain verbs must be strictly subcategorized for the presence of a PP, which means that omitting the PP in those cases turns them ungrammatical. The author provides examples of PPs in dative constructions since they are "universally acknowledged as being a complement of the verb" (Baker, 1988, p. 233). Baker's conclusions are also valid for the argument PPs tested in my experimental design. Sentences (2)-(3) illustrate the grammaticality contrast between two of the verbs tested (one selecting *de* and the other selecting *em*) with and without their complements (a. and b., respectively)[2]. The pairs of question/answer, in c. and d., confirm that the PP is a complement of the verbs tested, since complements may only appear in the answer and adjuncts may occur either in the question or in the answer.

(2) (a). *O* *João* *gosta* *de* *carros.*
DET.M.SG João like-PRS.3SG of cars
'João likes cars'.

(b). **O* *João gosta*.
DET.M.SG João like-PRS.3SG
Lit: 'João likes'

(c). *Q: *O* *que* *é* *que* *acontece*
DET.MSG what be-PRS.3SG that happen-PST.3SG
ao *João de* *carros?*
to-DET.M.SG João of cars
*A: *Gosta.*
like-PRS.3SG
Lit: Q: 'What happened to João of cars?'
A: 'He likes.'

[2] The examples with the remaining experimental verbs selecting arguments are in Appendix I, (1)-(2).

(d). *Q: O que é que acontece ao João?*
DET.MSG what be-PRS.3SG that happen-PST.3SG to-DET.M.SG João
A: Gosta de carros.
Like-PRS.3SG of cars
Q: 'What happened to João?
A: 'He likes cars.'

(3) (a). *O João pensa na namorada.*
DET.M.SG João think-PRS.3SG in-DET.F.SG girlfriend
'João thinks about his girlfriend.'

(b). *#O João pensa.*
DET.M.SG João think-PST.3SG
'João thinks.'

(c). Q: **O que é que acontece*
DET.MSG what be-PRS.3SG that happen-PST.3SG
ao João na namorada?
to-DET.M.SG João in-DET.F.SG girlfriend
A: **Pensou.*
Think-PST.3SG
Lit: Q: 'What happened to João in his girlfriend?'
A: 'Thought.'

(d). Q: *O que é que acontece*
DET.MSG what be-PRS.3SG that happen-PST.3SG
ao João?
to-DET.M.SG João
A: *Pensou na namorada.*
Think-PST.3SG in-DET.F.SG girlfriend
Q: 'What happened to João?'
A: 'He thought about his girlfriend.'

On the contrary, the PP adjuncts tested in the experimental design may be omitted (see (4) for one example of an adjunct with *de* and (5) for an adjunct with *em*[3]). These are clearly adjuncts, as demonstrated by the question-answer pairs in c. and d.:

(4) (a). *A empregada telefonou do escritório.*
DET.F.SG waitress call-PST.3SG from-DET.M.SG office
'The waitress called from the office.'

(b). *A empregada telefonou.*
DET.F.SG waitress call-PST.3SG
'The waitress called.'

(c). Q: *O que é que a empregada fez*
What DET.F.SG waitress do-PST.3SG
do escritório?
from-DET.F.SG office
A: *Telefonou.*
Call-PST.3SG.
Q: 'What did the waitress do from the office?'
A: 'She called.'

(d). Q: *O que é que a empregada fez?*
What DET.F.SG waitress do-PST.3SG
A: *Telefonou do escritório.*
Call-PST.3SG from-DET.F.SG office
Q: What did the waitress do?
A: She called from the office.

[3] The examples with the other two experimental verbs with adjuncts are in Appendix I, (3)-(4).

(5) (a). *O* *rapaz* *trabalha* *no*
DET.M.SG boy work-PRS.3SG in-DET.M.SG
supermercado.
supermarket
'The boy works at the supermarket.'

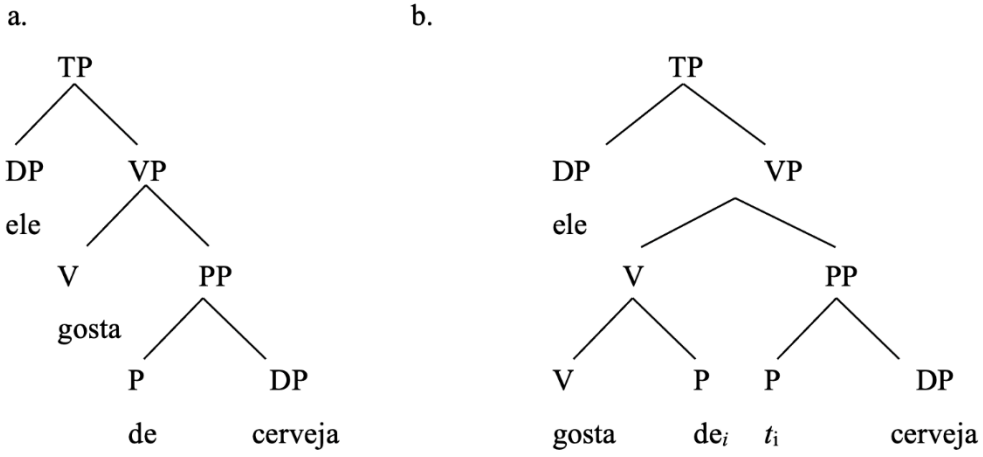
(b). *O* *rapaz* *trabalha.*
DET.F.SG boy work-PRS.3SG
'The boy works.'

(c). Q*: O que é que* *o* *rapaz faz* *no*
What DET.M.SG boy do-PST.3SG in-DET.M.SG
supermercado?
supermarket
A: *Trabalha.*
Work-PRS.3SG
Lit: Q: 'What does the boy in the supermarket?
A: 'He works.'

(d). Q: *O que é que* *o* *rapaz faz?*
What DET.M.SG boy do-PST.3SG
A: *Trabalha* *no* *supermercado.*
Work-PRS.3 in-DET.M.SG supermarket
Lit: Q: 'What does the boy?
A: 'He works in the supermarket.'

Baker notes that subcategorization presupposes theta-role assignment, meaning that PPs such as those in (2)-(3) are theta marked by the verb that governs them. Following Baker, these are eligible cases where the preposition can incorporate the verb. The moved preposition c-commands its trace, satisfying the Empty Category Principle (ECP), and the PP from which the preposition is extracted is co-indexed with the verb, not constituting a barrier to government (cf. (6)b, adapted from Baker, 1988, p. 288).

(6)



Baker predicts that incorporation of a preposition heading an adjunct PP is not possible, as it is ruled out by the Head Movement Constraint (HMC): the adjunct itself works as a barrier to government between the verb and the head position inside the adjunct.

In Baker's analysis of preposition incorporation with applicative objects, a "grammatical function changing process" in which "an oblique phrase comes to be the direct object of the clause it appears in" (Baker, 1988, p. 288) is at stake. However, Baker claims that this process does not occur *per se*, and it results from incorporating the preposition from the PP into the verb that governs it, just as illustrated in (6)b. In other words, the moved preposition leaves a trace in its base position that heads the PP containing the oblique DP.

The different behavior of applicative objects and direct objects in languages that have applicative objects argues for the presence of a PP node in applicative objects ((6)b), which is absent with direct objects. One evidence is that, in languages that show this behavior, it is not possible to extract an applicative object to form a relative clause, contrary to what happens with direct objects:

[relativization of direct object]

(7) (a). *Ndi-ku-ganiz-a kuti kuti Mavuto a-na-on-a mfumu.*
1SG-PRS-think-ASP that Mavuto SP-PST-see-ASP chief
'I think that Mavuto saw the chief.'

(b). *Iyi ndi mfumu imene ndi-ku-ganiz-a kuti*
This is chief which 1SG-PRS-think-ASP that
a-na-on-a.
3SG-PST-see-ASP
'This is the chief that I think that she saw.'

[relativization of benefactive applicative object]

(8) (a). *A-ku-ganiz-a kuti mu-na-phik-ir-a*
3SG-PRS-think-ASP that 2SG-PST-cook-APPL-ASP
mfumu nsima
chief corn mush
'He thinks that you cooked corn mush for the chief.'

(b). * *Iyi ndi mfumu imene ndi-ku-ganiz-a kuti*
This is chief which 3SG-PRS-think-ASP that
mu-na-phik-ir-a nsima.
2SG-PST-cook-APPL-ASP cornmush
'This is the chief which you think that he cooked corn mush for.'

(Baker, 1988, p. 289)

The asymmetry identified in the EP native speakers' production and acceptance of P-Chop with arguments, contrasting with adjuncts, seems to receive a proper account if the P-Chop phenomenon involves a PI process. Nevertheless, contrary to what is described by Baker with applicative objects, the object of the preposition of the verbs selecting an argument in the current dissertation can be relativized, involving PiP, P-Chop or Resumption. However, there is no evidence that a P trace blocks the movement when P-Chop occurs in EP.

Baker makes an interesting distinction between benefactive/ dative PPs and instrumental PPs. Benefactive/ dative PPs receive their theta role from the prepositional element, as the ungrammaticality of the extractions proves. Instrumental PPs get their theta role directly from the verb and they display an inherent case. The preposition appears as a spell out of the assignment or can be a "byproduct of Case indexing" (Baker, 1988, fn. 64, p. 300).

Indeed, the theme and instrument can be incorporated in languages that display noun incorporation, but benefactives and datives cannot. Following Baker, noun incorporation is prevented in benefactive/ dative applicatives because a trace of the preposition governs the applicative object. On the contrary, the instrument (like the theme) is not governed by an empty preposition and may be incorporated.

I assume that, in the EP verbs that show a preference for the deletion of the preposition in RCs, like *gostar (de),* a process of grammatical function change similar to the one that Baker describes for instrumental objects occurs. Therefore, the DP receives the oblique Case from the preposition, and the verb assigns the theta role directly to the DP. In other words, the preposition is just the spell out of the theta-role assignment and behaves like a 'dummy' Case assigner which is defective in the attribution of the theta role. It is not unexpected that this happens since, in other languages, the oblique Case may be equivalent to the Case of 'basic objects.'

If the preposition is a byproduct of Case assignment and does not assign any theta role, it does not work as a barrier to movement. The DP is reanalyzed as a theme. When the relativization occurs, the preposition is eliminated before spell-out because it does not hold any interpretable feature contributing to the meaning of the sentence. The derivation proceeds as a DO RC (Rinke & Aßmann, 2017), with a transitive relativizer.

This explanation predicts that P-Chop is not available with adjuncts in the same way as with arguments. First, the preposition does assign Case to adjuncts. Besides, due to the HMC, adjuncts work as a barrier and the DP headed by the preposition cannot be reanalyzed. Typical examples of adjuncts are most temporal phrases, manner phrases, and reason phrases. Regarding locative PPs, Baker distinguishes inner locatives (arguments) and outer locatives (adjuncts). I will not discuss this distinction here, given that the locatives tested in my experimental design behave like adjuncts, as illustrated earlier ((4)-(5)).

Furthermore, the understanding of P-Chop as a phenomenon of dummy oblique Case assignment/ defective theta-marking by the preposition predicts that it occurs with verbs that share comparable properties. They need to select a functional preposition that assigns oblique Case to a DP object; the DP object of the preposition is marked as a theme. Besides *gostar de* and *precisar de,* other verbs that select a PP that is semantically a theme, such as *lembrar-se de, recordar-se de*, *esquecer-se de*, are expected to accept P-Chop. This was indeed attested in a previous study with EP native speakers (see Espírito Santo, 2020).

The derivation I am proposing for EP native P-Chop is equivalent to the one that I have proposed for non-native P-Chop. A DP (and not a PP) is moved, and the derivation is identical to the derivation of direct object RCs. However, the underlying reasons for P-Chop are different in both groups. EP native P-Chop is ruled by the ECP and results from changes in the argument structure of the verb: the preposition is present in the numeration, and acts as a dummy, not assigning a theta-role, and the DP may be reanalyzed as a theme. In these cases, the verb and the preposition work as a complex where the preposition is merely functional (and not semantic). Thus, the preposition is not a barrier to government between the verb and the complement of the preposition. The preposition is not necessary to interpret the sentence and, as such, it is eliminated before Spell-Out. Non-native P-Chop does not obey such regularities and constitutes a developmental stage, where the preposition is simply not selected from the functional lexicon.

4. Island Configurations

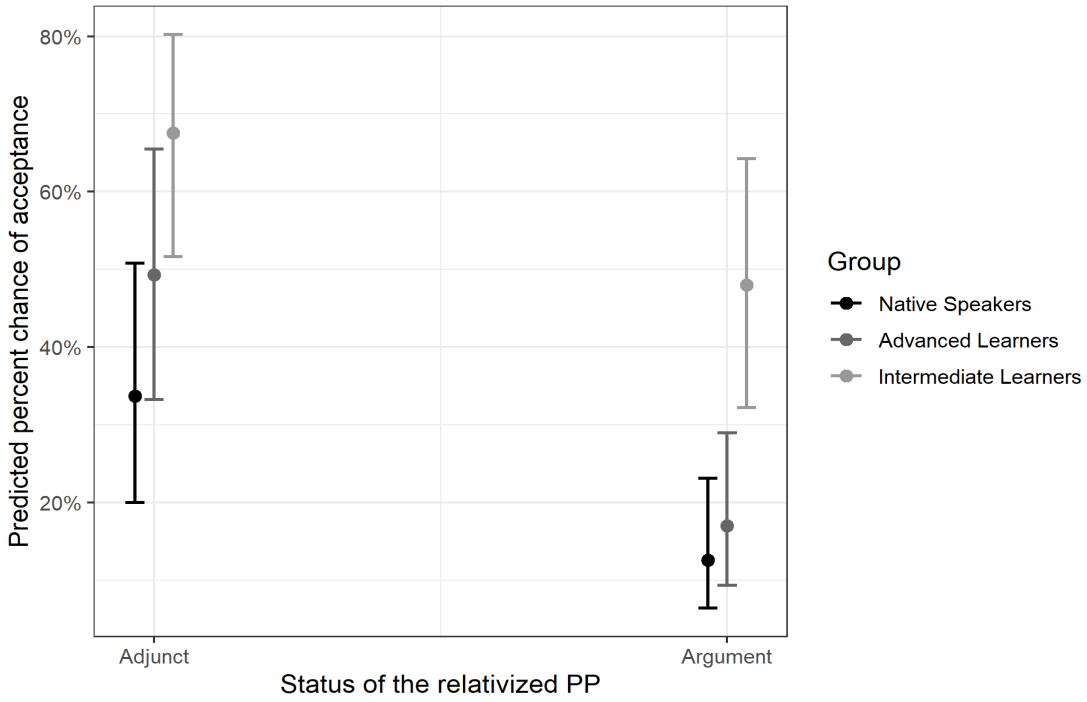
The SPR-AJT testing island configurations provides three main findings:

1) extractions of argument PPs from strong islands are rated worse than extractions of adjunct PPs by all groups (against H9, Chapter 6, which predicted no distinction between the two types of PPs extracted from strong islands);
2) for intermediate learners, the difference between sentences is not as marked as for advanced learners and native speakers (as hypothesized in H7);
3) the relativization strategies do not seem to be relevant to the extraction; in particular, participants rejected extractions from islands with PiP, P-Chop and Resumption, indicating that RPs apparently do not play a significant role in rescuing the island from ungrammaticality (against H8, Chapter 6).

Figure 1, corresponding to Figure 9 in Chapter 7, illustrates these findings. The difference between relativization strategies is not shown because it was not relevant.

Figure 1

Predicted rates of acceptance of the island configurations by group, considering the status of the relativized PP



Intermediate Chinese speakers accepted more sentences across all types than the native EP and the advanced Chinese learners, diverging from native learners in the ratings of adjuncts (p = 0.0004) and arguments (p< 0.0001), and of advanced learners in the ratings of arguments (p = 0.0001) but not adjuncts (p = 0.0764). This is not surprising, underscoring that intermediate learners show more variability than advanced speakers. Nevertheless, these data also indicate that the restrictions to movement are acquired early, at least at an intermediate level. I will discuss the other two findings in the following paragraphs.

4.1. Asymmetry between extractions of arguments and adjuncts from strong islands

The strong islands tested in the current dissertation are adjunct islands. These were first explained by Huang (1982) with the Conditions on Extraction Domains (CED) (see Chapter 3, section 1.4). According to the CED, SBJs ((9)a) and adjuncts ((9)b) are opaque to extraction for the same reason: they are not properly governed by a lexical head and, consequently, they cannot be extracted.

(9) (a).*Who$_i$ did [pictures of $__{}_i$] pleased you?

(Huang, 1982a, p. 486)

(b). *Who$_i$ did John come back [before I had a chance to talk to $_{}_i$]?

(Huang, 1982a, p. 487)

The opacity of adjunct islands and SBJ islands was generically explained with the structural distinction between complements and non-complements[4].

Following the Subjacency Condition (Chomsky, 1973, 1977), under the Barriers Framework, island constraints were explained as an impossibility to move an element across two or more bounding nodes (see Chapter 3). However, in the MP, the notion of government is replaced by Phase Theory, which accounts for locality constraints, and syntactic derivations proceed in smaller units, called phases. Completed phases are removed from the narrow syntax and transferred to external systems, where they undergo Spell-Out. The domains become 'frozen' after being transferred and spelled-out. Since spell-out is cyclic, the domains become impervious for narrow syntax and inaccessible for the derivation[5].

The literature admits that the grammatical function of the extracted element plays a role in the extraction possibilities of adjunct clauses. Indeed, researchers claim that weak islands only show island effects when adjuncts (and not arguments) are extracted (see Chomsky, 1986a; Huang, 1982b; Lasnik & Saito, 1992; Szabolcsi, 2006, among others):

[extraction of argument from weak island]

(10) Which problem did John ask <how to phrase _>?

[4] Other hypotheses have been advanced in the literature to explain the islandhood of adjuncts based on the contrast between complements and non-complements, such as the proposal of immediate spell-out (Uriagereka, 1999; Nunes & Uriagereka, 2000). The underlying idea is that adjuncts must be spelled out in a different derivational space before being connected to the derivation because of linearization demands. The computational system treats them as a unique and non-changeable unit, similar to a lexical item. Adjuncts are not accessible for syntactic operations, and no elements can be extracted from them (even if they can merge with the rest of the structure). Other researchers have made similar proposals (cf. Raposo, 2002; Narita, 2011; Boeckx, 2012, 2014).

[5] See Müller (2019, pp. 28-34), for an overview of the different hypotheses to explain the islandhood of adjuncts.

[extraction of adjunct from weak island]

(11) *How did John ask <which problem to phrase _>?

'What is the manner such that John asked which problem to phrase in that manner'

(Szabolcsi, 2006, examples (82), (83), p. 22)

In the current dissertation, I have tested extractions of adjunct PPs and argument PPs from adjunct islands. Adjunct islands are typically considered strong islands, so I did not expect an asymmetry in extracting adjuncts and arguments. This task contrasts adjuncts and arguments because the experimental verbs were the same across all tasks, to avoid overloading the L2ers with new lexical items.

The adjunct islands tested included four adverbial clauses introduced by *porque*, 'because', and four adverbial clauses introduced by *enquanto,* 'while'. My concern in this task was to have an equivalent number of temporal and causal adjunct islands (4+4); therefore, the relation between the type of adjunct clause and the grammatical function of the relativized PP was not controlled as a variable. In the end, extractions of arguments were tested from three adverbial causal clauses introduced by *porque*, 'because', and one temporal clause introduced by *enquanto,* 'while'; extractions of adjunct PPs were tested by three adverbial temporal clauses introduced by *enquanto,* and one clausal clause introduced by *porque*, as schematized on Table 3[6].

Table 1

Relation between the type of adverbial clause and the grammatical function of the relativized PP

	Type of island	
Grammatical function of the relativized PP	Temporal adverbial clause introduced by *enquanto*	Causal adverbial clause introduced by *porque*
Argument	1	3
Adjunct	3	1

[6] The adverbial clauses from which the extraction of arguments and adjuncts occurred are presented in attachment I (examples (5)-(12)).

The results show a clear asymmetry between the extraction of arguments and adjuncts (see earlier Figure 1).

However, it is important to underscore that the asymmetries in the extraction of arguments for EP native speakers and advanced learners are more expressive than for intermediate learners, again showing that intermediate learners are at an earlier developmental stage. The predicted rates of acceptance of extractions of adjuncts are higher, but these are still at the chance level and below hence, judged to be ungrammatical by native speakers (see Fig.3). In other words, the native participants consider that extractions of adjuncts are less ungrammatical than extractions of arguments, and this is statistically relevant ($p < 0.0001$, see chapter 7). Even if this asymmetry was unexpected, it does not go against the predictions of the literature for strong islands, since the literature maintains that strong islands do not accept any type of extraction (argument or adjunct).

With weak islands, the literature describes an opposite tendency to what I have identified in my results: extractions of arguments should be more acceptable than extractions of adjuncts. So, my first conjecture was that the type of adverbial phrase (temporal or causal) used as an island had influenced the participants' judgments, given that these were not evenly distributed between arguments and adjuncts (see table 3 above). To confirm/ infirm the possibility that the type of adverbial clause was influencing the results, I have paid close attention to the adverbial clauses used in the experimental design.

Following Lobo (2003), there are two types of adverbial causal clauses in Portuguese: those that express an objective relation between two elements and those in which the speaker infers a relation between situations. Lobo provides several examples of each type. Sentences (12) and (13) illustrate a causal clause of type 1 and a causal clause of type 2, respectively, and their paraphrases are in (b) and (c) from Lobo (2003, p. 70):

(12) (a). *A sala arrefeceu* ***porque*** *tu deixaste a janela aberta.*
DET.F.SG living-room chill-PST.3SG because 2SG leave-PST.3SG DET.F.SG window open
'The living-room chilled because you left the window open.'

(b). *Tu deixaste* *a* *janela aberta* *e* *isso*
2SG leave-PST.3SG DET.F.SG window open and DEM
fez *com* *que* *a* *sala*
made-PST.3SG with that DET.F.SG living-room
arrefecesse
chill-SBJ.3SG
'You left the window open and that made that the living-room chilled'

(13) (a). *Ele* *faltou* *ao* *jantar* *porque*
3SG miss-PST.3SG to-DET.M.SG dinner because
não *conhecia* *ninguém*.
not know-PST.3SG nobody
'He missed his dinner because he didn't know nobody.'

(b). *O* *facto* *de* *ele* *não conhecer ninguém*
DET.M.SG fact of 3SG not know nobody
levou-o *a faltar* *ao* *jantar.*
made-PST.3SG-him to miss to-DET.M.SG dinner
'The fact that he did not know anyone made him miss the dinner.'

(c). *A* *razão/o motivo por que* *ele* *faltou*
DET.F.SG reason/motive why 3SG miss-PST.3SG
ao *jantar* *foi* *que* *ele* *não*
*t*o-DET.M.SG dinner be-PST.3SG that 3SG not
conhecia *ninguém*.
know-PST.3SG nobody
'The reason/motive why he missed dinner was that he did not know anyone.'

It is possible to distinguish the two types of causal clauses. In type 2 sentences, the causal clause expresses the cause of the assertion that is made in the matrix sentence, and it functions as an explanation of what is tacitly said, but not as a direct cause of the situation expressed in the matrix clause:

(14) (a). *O João está cá, porque já*
DET.M.SG João be-PRS.3SG here because already
vi o carro dele.
see-PST.3SG DET.M.SG car his
'João is here because I have already seen his car.'

(b). *# A causa de o João estar cá*
DET.F.SG cause of DET.M.SG João be here
foi eu ter visto o carro dele.
be-PST.3SG 1SG have seen DET.M.SG car his
'The reason why João is here is that I have seen his car.'

(c). *# O facto de eu ter visto o*
DET.M.SG fact of 1SG have seen DET.M.SG
carro dele fez com que ele estivesse cá.
car his made-PST.3SG with that 3SG be-SBJ.PST.3SG here
'The fact that I have seen João's car made that he is here.'

(d). *O João está cá e eu sei isso porque já vi o carro dele.*
DET.M.SG João be-PRS.3SG here and 1SG know-PRS.3SG that because already see-PST.3SG DET.M.SG car his
'João is here and I know that because I have already seen his car.'

(e). *A* *razão* *por que eu* *digo* *que*
DET.F.SG reason why 1SG say-PRS.1SG that
o *João* *está* *cá* *é*
DET.M.SG João be-PRS.3SG here be-PRS.3SG
porque já *vi* *o* *carro* *dele.*
because alreadysee-PST.3SG DET.M.SG car his
'The reason why I say that João is here is because I have already seen his car.'

(Lobo, 2003, p. 70)

In order to see if the type of adverbial clause used in the experimental design was influencing the results, I submitted the adverbial causal clauses used as islands in the SPR-AJT with island configurations to similar tests[7]. All causal clauses are of the first type: they express a direct causal relation between situations.

The temporal adverbial clauses introduced by *enquanto* 'while' locate the interval of time where the event described in the matrix occurs. It can overlap totally with it, as in (15), or it can be included in the interval of time of the embedded clause, as in (16), implying that the event described in the embedded clause has some duration[8].

[total overlap]

(15) *Enquanto o* *João* *corrigiu* *os*
While DET.M.SG João correct-PST.3SG DET.M.PL
testes, o *Pedro viu* *os* *desenhos animados.*
tests DET.M.SG Pedro see-PST.3SG DET.M.PL cartoons
'While João corrected the tests, Pedro saw the cartoons.'

[7] The tests are presented in Appendix I, examples (13)-(16).

[8] Adverbial clauses introduced by *enquanto* may also have a contrastive value, namely when certain predicates that denote instantaneous events occur in the embedded clause, such as *chegar* 'arrive' in (i):

(i) *Enquanto o* *João* *chegou,* *o* *Paulo saiu.*
While DET.M.SG João arrive-PST.3Sg DET.M.SG Paulo leave-PST.3Sg
'While João arrived, Paulo left.'

(Lobo, 2003, p. 83)

As none of the sentences used in my test show these properties, I will not discuss them here.

[inclusion]

(16) *Enquanto o João estava a dormir,*
While DET.M.SG João be-PST.3SG to sleep
a Lúcia chegou.
DET.F.SG Lúcia arrive-PST.3SG
'While João was sleeping, Lúcia arrived.'

(Lobo, 2003, p. 83)

The adverbial temporal clauses tested represent situations of inclusion and do not differ in this matter.[9]

According to the previously exposed, the causal adverbial clauses used in the experimental design all express a direct causal relation. The temporal adverbial clauses all express inclusion. In other words, they are homogeneous within each group.

Given this, I hypothesized that other factors interfered in the participants' judgments. Following Muller (2019), extractions from adjunct islands in English can be constrained by different factors, such as the semantic relation and the corresponding degree of coherence between the adjunct and the clause event, the degree of syntactic integration of the adjunct clause, the finiteness of the adjunct clause and the grammatical function of the extracted element (whether it is an argument or an adjunct). The finiteness of the adjunct clause is not relevant for the current discussion, given that all islands tested were finite. The grammatical function of the extracted element was already referred to, and it is relevant in a reversed way, given that arguments were judged worse than adjuncts on this task. So, I presume that the corresponding degree of coherence between the adjunct and the clause event, and the degree of syntactic integration of the adjunct clause, may had conditioned the participants' judgments.

Assuming that the semantic relation and coherence between the adjunct and the clause event is relevant in extractions from islands in English, Truswell (2007, 2011) proposes an interface-based analysis of patterns of *wh*-movement in English, according to which both syntactic and semantic representations constrain extractions from adjuncts. The author claims that *wh*-movement is ruled by event-based locality domains, proposing a Single Event Condition:

[9] See appendix I, examples (17)-(21).

(17) The Single Event Condition

An instance of *wh*-movement is legitimate only if the minimal constituent containing the head and the foot of the chain can be construed as describing a single event.

(Truswell 2011, p. 38, *apud* Müller, 2019, p. 38)

According to this hypothesis, extractions are possible when the matrix VP and the adjunct VP describe one single macroevent. "Macroevent formation is possible if the subevents in question are perceived as related by one of two contingent relations, namely *direct causation* and *enablement*, where the latter is a relation holding among events that form part of an agent's plan." (Truswell, 2011, my emphasis).

Looking at the islands tested and considering Truswell's hypothesis, the prediction is that extractions of arguments are better than adjuncts. Arguments were extracted from three adverbial causal sentences expressing a direct causal relation, and adjuncts were extracted from three adverbial temporal sentences. Furthermore, temporal adverbial clauses constitute one case where extraction is ruled out, according to Truswell. When the matrix and the adjunct clause are interpreted as occurring simultaneously, rather than being causally related, Truswell predicts that the conditions for the formation of a macroevent are not met and, as such, the extraction is prevented. The adverbial temporal clauses tested were introduced by the connector *enquanto* 'while,' which precisely transmits an idea of simultaneity.

I have analyzed the average results assigned by Chinese learners and native speakers to the extractions from the four temporal and the four causal clauses separately, regardless of the grammatical function of the extracted element. In average, the participants rated the extractions from temporal clauses higher (Chinese learners = 0.48; EP = 0.34) and from causal clauses lower (Chinese learners = 0.32; EP = 0.23). So, the semantic relation and the degree of coherence established between the adjunct and the clause event do not seem to explain these results either.

The degree of integration of the adjunct clause with the clause that it modifies also seems to play a role in the extraction possibilities from adjunct islands (Müller, 2019). Haegeman (2003, 2004, 2010, 2012) distinguishes central adverbial clauses (CACs) and peripheral adverbial clauses (PACs). The first type modifies the event described in the matrix clause, and the latter has a discourse structuring function. The same connector may introduce a CAC or a PAC, and this is the case of *enquanto* 'while' and *porque* 'because,'

the connectors that introduce the adverbial clauses that were used as islands in this task. Syntactically, CACs and PACs are merged at different points in the structure they modify. CACs are merged at TP or *v*P and are more integrated into the structure; PACs are merged higher and are less integrated into the matrix clause.

The syntactic difference between CACs and PACs has consequences for the coordination possibilities and scope phenomena that can identify the type of adverbial clause. One of the diagnostics consists of clefting the adverbial clause. Contrary to CACs, PACs cannot be clefted, given that they are out of the scope of focusing operators, in that they are merged outside the TP and cannot be c-commanded by elements in the associated clause.

I have submitted the islands used in my experimental design to this diagnostic, attempting to identify a difference that could explain the results obtained (see appendix I, examples 21-28). All the islands used in the task are CACs. So, the asymmetries between arguments and adjuncts cannot be explained by the degree of syntactic integration of the adjunct clause.

Lobo (2003) compared the syntactic behavior of CACs introduced by different connectors in Portuguese. Central adverbial causal clauses introduced by *porque* and central adverbial temporal clauses introduced by *enquanto* behave similarly regarding 1) the possibility of occurring in an initial or final position, 2) the scope of negation, 3) the scope of operators, 4) the answer to *wh*-questions, 5) alternate interrogatives, and 6) alternate negation (Lobo, 2003, p. 154). The similar behavior of the two types of adverbial clauses is an additional argument to consider that it is not the type of adverbial clause that rendered them more permeable to the extraction of adjuncts.

None of the explanations provided so far accounts for the fact that extractions of adjuncts were rated higher than extractions of arguments from adjunct adverbial island by the three groups. In Table 4, I present the average ratings attributed by EP L2 speakers and native speakers considering the set of three sentences that concerns each extraction (that is, including the average of the extractions from the same verb with the three relativization strategies):

Table 2

Average ratings attributed by Chinese learners and EP native speakers (control group) to extractions from islands, considering the experimental verb, the grammatical function of the extracted element and the semantic index

Verb	Grammatical Function of the Extracted Element	Extracted element	Semantic index	Average results (3 items)	
				Chinese learners (intermediate and advanced)	EP (control group)
estudar	ADJ	*na escola*	Locative	0.55	0.44
telefonar	ADJ	*do hospital*	Locative	0.53	0.42
trabalhar	ADJ	*na loja*	Locative	0.45	0.32
participar	ARG	*no concerto*	Locative	0.33	0.29
precisar	ARG	*dos livros*	Theme	0.34	0.25
gritar	ADJ	*da sala*	Locative	0.35	0.23
pensar	ARG	*no bolo*	Theme	0.38	0.20
gostar	ARG	*da casa*	Theme	0.27	0.17

Except for *gritar 'scream'*, all the elements whose extraction was rated higher had a locative index. Interestingly, researchers who have claimed that the grammatical function of the extracted element is not enough to explain the adjunct/ argument asymmetry in extractions from weak islands noted the importance of the semantic specification of the event in the acceptance of extractions from islands (Ross, 1984; Kroch, 1989; Comorovski, 1989; Rizzi, 1990; Cinque, 1990; Obenauer, 1992, and Kiss, 1993, *apud* Szabolcsi, 2006, p. 23). To make extractions more acceptable, it is not enough that the extracted element is an argument; it must be referential. The extracted arguments must have referential theta-roles; besides, "event specification may license a temporal and locative index that accounts for the fact (...) that such phrases are less sensitive to weak islands than manner and reasons." Even if these observations are made for weak islands, it is interesting that the extracted adjuncts had a locative value in all sentences; the extracted argument that was better rated (from *participar*) also had a locative value. Possibly, the locative index of the extracted element facilitated the extraction. Although I am speculating, I believe that the locative adjunct of *gritar* did not behave like the other locative adjuncts because of the lack of coherence of the sentence[10].

[10] The initial sentence, from which the extraction with *gritar* was made, is in (i):
(i) Os meninos foram para o

The coreference relations between the SBJs of the matrix and the embedded clause may also have influenced the results. The adjunct of *estudar* was extracted from a temporal adverbial clause with unique properties among the test items: the SBJ of the embedded clause is pronominal, and it is coreferential with the object of the matrix clause. (18) illustrates the matrix and adverbial sentences previous to the extraction/ relativization.

(18)	*A*	*aluna*	*conheceu*	*o*	*rapaz$_i$*
	DET.F.SG	student	meet-PST.3SG	DET.M.SG	boy
	[enquanto	*ele$_i$*	***estudava***	***na***	*escola].*
	while	3SG	study-PST.3SG	at-DET.F.SG	school
	'The student met the boy while he studied at the school.'				

Moreover, the locative adjunct *na escola* 'at school' may modify both the verb of the matrix clause *conhecer* 'meet' and the verb of the embedded clause *estudar* 'study.' I believe that this sentence received higher ratings than the others because these two factors were combined: coreference of the matrix object and the embedded SBJ; two available positions for the locative modifier.

Finally, I think that the extraction of the arguments of *gostar* and *pensar* were affected by the semantics of the sentences. The adverbial sentences before the extraction/ relativization are presented in (19)-(20):

(19)	*A*	*amiga*	*vai*	*vender*	*o*	*apartamento*
	DET.F.SG	friend	go-PRS.3SG	sell	DET.M.SG	apartment
	[*porque*	*o*	*namorado*	***gosta***		
	because	DET.M.SG	boyfriend	like-PRS.3SG		
	da *casa].*					
	of-DET.F.SG house					
	'The girl is going to sell the apartment because her boyfriend likes the house.'					

DET.M.PL	boys	go-PST.3SG	to	DET.M.SG	
escritório	*[porque*	*o*	*avô*		
office	because	DET.M.SG	grandfather		
gritou		*da*	*sala].*		
scream-PST.3SG		from-DET.F.SG	livingroom		

'The boys went to the office because the grandfather screamed from the living-room.'

The relation of causality established between the fact that the grandfather screamed and the need of the boys to go to a different room is not obvious.

(20)	*As*	*amigas*	*comiam*	*a*	*sopa*
	DET.F.PL	friends	eat-PST.3PL	DET.F.SG	soup
	[enquanto	***pensavam***	***no***	*bolo].*	
	while	think	in-DET.M.SG	cake	

'The friends ate the soup while they thought about the cake.'

In the case of the verb *gostar*, the object of the matrix (*apartamento* 'flat') and the embedded clause (*da casa* 'of the house') have a similar referent (where the latter may be taken as a paraphrase of the former), and the object of the matrix verb may have been interpreted as being co-referent with the object of the verb of the embedded clause; the sentence is not felicitous under this interpretation. Possibly, this interfered in the results.

Regarding the extraction of the argument of *pensar*, I believe that the semantic relation between the matrix sentence and the adverbial clause also played a role. Possibly the lack of specificity of the object of *pensar* (*o bolo* 'the cake') rendered the sentence less credible. Indeed, it is possible to think of a cake, but usually, we refer to a specific cake (such as 'the chocolate cake', or 'my grandmother's cake'). So, possibly the lack of specificity affected the interpretation.

In a nutshell, all groups rated extractions of adjuncts higher than extractions of arguments from strong islands, against what was expected. First, because the literature does not refer to any asymmetry with extractions from strong islands, possibly because these are usually not permeable to extraction. Second, most of the aspects that seem to interfere in the extractions from weak islands did not play a role in this situation. The referentiality of locative adjuncts may contribute to such an asymmetry. However, although the differences between extractions of arguments and adjuncts are statistically relevant for all groups, I believe that these reflect the specific fragilities of the experimental items. Still, they also highlight the importance of referentiality noted by previous research. Furthermore, these results may indicate that certain semantic or pragmatic issues are more relevant in extractions from islands than syntactic considerations. The fact that islands are sensitive to discourse related factors is not new and has been widely studied[11]. These results corroborate previous research that highlights the need to consider other aspects than syntax in the analysis of extractions from islands.

[11] For instance, island effects are weakened or erased when the *wh*-word is D-linked (see Cinque, 1990; Rizzi, 1990; Kiss, 1993, among others).

4.2. The (non) rescuing effect of resumption

Notably, and against what I predicted in Hypothesis 8, extractions from syntactic islands with RPs had equivalent rates to extractions from syntactic islands with the P-Chop strategy but lower acceptance rates than extractions from syntactic islands with the pied-piping strategy and a gap (see Figures 2-4, below, corresponding to Figures 6-8 of Chapter 7).

Figure 2

Mean SPR-AJT ratings for oblique RCs formed with PiP within syntactic islands (0.2-0.8)

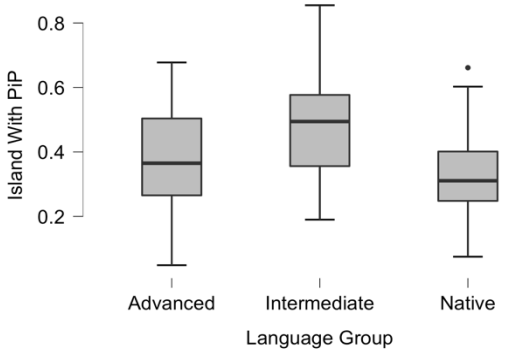


Figure 3

Mean SPR-AJT ratings for oblique RCs formed with Resumption within syntactic islands (0.-0.8)

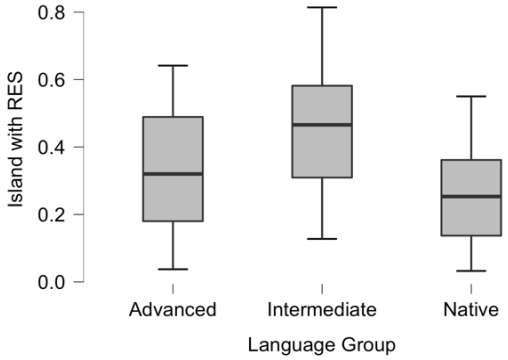
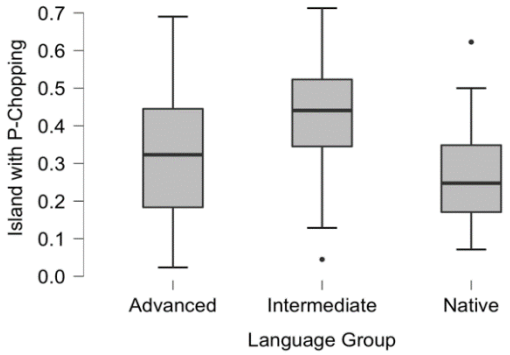


Figure 4

Mean SPR-AJT ratings for oblique RCs formed with P-Chop within syntactic islands (0.0-0.7)



This effect was kept constant across all groups. Whereas it was predicted that extractions involving P-Chop would have lower ratings than extractions involving PiP, it was unexpected that the RP did not rescue or improve island violations. In fact, the presence of the RPs renders these sentences less acceptable than extractions from islands with PiP, which yield illicit *wh*-movement. This result contradicts the traditional literature that advocates for the rescuing effect of RPs (Ross, 1967; Kroch, 1981, a.o.). However, more recent experimental studies, including off-line and online comprehension of island constructions with RPs and gaps, presented similar outcomes in other languages (Alexopoulou and Keller, 2007; Heestand et al., 2011; Polinsky et al., 2013; Perpiñán, 2020, among others). This has also been verified with native speakers, in what Perpiñán called the "paradox over RP's: "why are they produced by native speakers who rate them as unacceptable?" (Perpiñán, 2020, p. 3).

The present dissertation reinforces these conclusions for EP, given that extractions from islands were considered worse with an RP than with PiP by all groups. These results are in line with the findings of Perpiñán (2020), as the inability of RPs to rescue island configurations was also observed both for native and non-native grammars. Perpiñán (2020, p. 10) suggested that the complexity of the extracted element with the PiP strategy "makes it more salient and or more referential, and as such it remains highly activated in memory (Hofmeister & Sag, 2010; Just and Carpenter, 1992; Kluender, 1998), making its integration in the discourse (d-linking) easier".

Finally, these results may also be a consequence of the type of task applied since the participants were asked to rate the acceptability of the sentences and not about comprehension, which may impact the overall assessment (Beltrama & Xiang, 2016).

Indeed, Beltrama & Xiang (2016) propose that the paradox of RPs results from the type of task used. They looked at the rescuing effect of RPs in Italian and English, comparing the results of an acceptability judgment task and a comprehension task. RPs did show an amelioration effect when the participants were asked about the comprehension of the sentences, but not when the question was about grammaticality. The authors concluded that the rescuing effect of RPs is not at the level of grammaticality/ acceptability, but at the level of sentence comprehension.

In any case, the results from the SPR-AJT with island configurations corroborate that RPs are not solving the problems in the derivation and suggest that RPs may be related to discourse-pragmatics and comprehension, as noted by Beltrama and Xiang (2016), and not exclusively to syntax (Polinsky et al., 2013). Notably, the lack of amelioration of extractions from islands with RPs is attested in EP native and non-native speakers alike (see Figures 4-6), indicating that Chinese learners not only have been able to acquire *wh*-movement and its related morphological properties, as seen in the production task, but they have also acquired the syntactic restrictions imposed on movement as well as their processing, despite the fact that their native language allows RPs in some island contexts (although not consensually, as discussed above). I take these results as clear indicators that EP L2 speakers are able to fully access UG and restructure their grammars accordingly, even in cases of poverty of stimulus such as the one presented in this study. Chinese learners have totally overcome the properties of their L1 oblique relativization strategies and have mastered or are in the process of mastering the morphosyntactic properties of EP prepositional RCs, a quite complex structure that already presents in the L1 more variation than what is usually taught in class. This is a remarkable enterprise particularly taking into account the low frequency of the structure in the input.

Conclusion and Further Work

The current dissertation addresses the L2 acquisition of prepositional RCs in EP by MC native speakers. The approach and the conclusions of this project are grounded on the results of an experimental study that was built and run for the current project, as synthetized below.

Following a GG approach, the dissertation starts with a literature review of L2 acquisition hypotheses, articulating them with the main developments in GG and capturing the changes from the P&P model (Chomsky, 1981, 1986b) to the most recent MP perspective (Chomsky, 1995). Two main L2 acquisition hypotheses following a minimalist approach are considered: the RDH and the FRH (both presented in Chapter 1). These two hypotheses have in common the fact that they take features as the units of linguistic transfer from the L1 into the L2, but their predictions go in opposite directions. Indeed, the RDH assumes that non-native speakers are prevented from accessing certain features that are available in UG (functional features). The FRH assumes that non-native speakers may access UG and map (directly transferring equivalent features) or reassemble (i.e., reorganize into different structures and/or configurations) the features available in their L1s into the L2 that they are acquiring.

A minimalist approach to L2 acquisition assumes that the linguistic structure whose acquisition is being studied is carefully analyzed. In other words, to understand which features are transferred from the L1 into the L2, in case this happens, it is necessary to describe the properties of the relevant structures in both languages. For this reason, the current dissertation provides a description of relative constructions in both languages, in Chapter 2. The main analyses that have been proposed in the GG literature to account for RCs are synthetized and discussed, namely the HEA, the HRA, and the MA.

Following the HEA, the head antecedent of the RC is external to it. The HRA assumes that the head is internal to the relative CP and the MA claims that there are two matching heads, one internal and another external to the RC. The three analyses have received criticisms. In particular, the HRA has been criticized for assuming NP movement and because it implies that the head NP and the RC form a constituent, but these problems were technically solved by Bianchi (1999). However, the HRA cannot explain how the external D can assign Case to the head antecedent if this one is generated inside the RC. To solve this issue, Bianchi stipulates that Case assignment is post-syntactic, which is not an ideal solution. The HRA also cannot explain Principle C effects. For these reasons, it was not considered. The MA attempts to explain Principle C effects through an operation

of ‘vehicle change’ that may be problematic for EP. Besides, the MA does not explain idiom interpretation in a straightforward way. The main questions raised regarding the HEA concerned reconstruction effects and right adjunction. In its classical approach, the HEA supposed a right adjoined NP that is ruled out under the Antisymmetry framework (Kayne, 1994).

In Chapter 2, Portuguese RCs are described, including the *wh*-operators available and the analyses adopted by different researchers. This dissertation adopts the HEA, but assuming that the relative CP is at Spec, nP, meaning that right-adjunction is not an issue (following Alexandre, 2000 and Rinke & Aßmann, 2017). Furthermore, accepting that Binding Principles can operate at any level of the computation, the HEA may explain reconstruction effects. For these reasons, the analysis adopted in this dissertation is the HEA for RCs in EP.

After arguing for the existence of RCs in MC and presenting its main properties, the central proposals for MC RCs are also discussed and presented in this chapter, including those that follow the HEA (Ning, 1993), the HRA (Simpson, 2002; Pan, 2016; Aoun & Li, 2003) and the MA (Xu, 2009). However, Chinese RCs have properties that make their analysis very challenging: Chinese does not have relative pronouns nor determiners, and RCs are head-final, which raises a lot of problems when trying to derive a relative clause. For the current dissertation, it was necessary to understand the features involved in the relative CP of prepositional RCs. For this reason and considering that I do not have enough information to reach a conclusion on what the best analysis for Chinese RCs might be, despite all the research on this matter, I have abstained from taking a stand on this topic.

Given that I am studying one subtype of restrictive RCs, in particular, prepositional RCs, I felt the need to examine this type of RC carefully in each one of the languages, the target L2[1] grammar (EP), and the L1 of the participants (MC).

Chapter 3 is entirely devoted to prepositional RCs in EP, considering the three relativization strategies that are described in the literature, namely, Pied-Piping (PiP) (which is standard) and P-Chop and Resumption (which are non-standard). A subtype of

[1] It is important to clarify that L2 is understood in a broad sense, since the participants in the experimental design all speak English as an L2, but Portuguese is the language under analysis. The learners’ proficiency in English was not controlled, and it may have served as a facilitator in the acquisition of RCs in EP; however, it did not seem determinant in the sense that the speakers did not use Preposition Stranding, the strategy most common in English, in the production data. Nevertheless, these data deserve a deeper analysis of the potential effect of the L2 (English) on the L3 (EP) that this study does not consider and which may be developed in further research.

PiP (the locative strategy) is also considered, motivated by the results of the research. The feature set of Cº and the derivations proposed for EP in the three relativization strategies are discussed as well. I have assumed that PiP and P-Chop both involve *wh*-movement. However, the relativizers available in the PiP strategy are more diverse, including an intransitive form of the relativizer *que*, but also *quem, onde, o(s)/a(s) qual(is)* and *quanto(s)/a(s)*, which are semantically specified with different features (see Chapter 2). P-Chop RCs only occur with the underspecified transitive relativizer *que*, whilst resumptive RCs are formed with a relativizer generated in Cº, which is equivalent to a COMP. These are three possible target-structures for the participants in the experimental study of this dissertation.

The study of prepositional RCs in MC, the L1 of the participants, was also necessary, in order to verify what features could have been transferred from it into the L2. The study of Chinese prepositional RCs is puzzling: first, prepositions in Chinese are not consensually considered a category; second, and admitting that PPs do exist in this language, some researchers suggest that it is necessary to distinguish PP arguments from PP adjuncts, whereas others claim that all PPs should be analyzed as adjuncts; third, the judgments of researchers diverge regarding the grammaticality of certain structures in Chinese (for instance, some researchers admit that RPs rescue islands in Chinese, while others do not agree); and finally, there is no agreement regarding the availability of the features that trigger movement in Chinese nor regarding the structures where this feature occurs. After a revision of the literature that discusses these issues, and considering the analyses proposed, I have assumed that prepositional RCs in Chinese (which are mandatorily resumptive) are formed through a chain that does not involve movement, following Wen (2020).

The conclusions of other studies on the acquisition of prepositional RCs in L1 and L2 acquisition are presented in Chapter 5. This chapter underscores the pertinence of studying RCs and prepositional RCs considering their different relativization strategies – PiP, Preposition Stranding, Resumption and P-Chop (usually referred to as Null-Prep in this research field). In particular, this chapter shows that the P-Chop phenomenon has deserved a lot of attention in L2 acquisition and it has even originated the wild grammar hypothesis (Klein, 1993), because P-Chop was seen as a possibility that is out of the limits of UG. This chapter also reviews the studies that have examined L2 P-Chop in other languages, finding an asymmetry between arguments and adjuncts in the production of P-Chop in *wh*-questions (for instance, Dekytdpotter *et al.*, 1998 and Jourdain, 1996).

Finally, more recent proposals on P-Chop as a developmental stage in L2 acquisition (Perpiñán, 2010, 2020) are considered, showing that non-native speakers go through a developmental stage during which they omit the prepositions with certain verbs because they are not selecting them from the lexicon.

Chapter 5 describes the L2 studies focusing on the acquisition of resumption, including the ones that considered the acquisition of resumption under the NPAH universals, concluding that L2ers tend to use unmarked RPs in RCs, even if their native languages do not display them (for instance, Pavesi, 1986; Hyltenstam, 1984, 1990). However, this section also considers Hawkins & Chan's (1997) proposal that RPs, which are typologically unmarked options, are not necessarily acquired first.

Finally, Chapter 5 addresses the studies that investigated the acquisition of *wh*-movement, considering the extractions from syntactic islands as a diagnostic measure, i.e., to test if speakers have acquired *wh*-movement. In particular, the research that led Hawkins & Chan (1997) to propose the FFFH is explored. Hawkins & Chan (1997) suggest that speakers of a language that does not display overt *wh*-movement, like Chinese, cannot acquire the functional features that trigger *wh*-movement in the L2. Even if L2ers apparently produce structures involving movement, they are resorting to other mechanisms available in UG to produce them, in a situation of 'missing feature despite appearances' (Hawkins, 2005, p. 125). The need to include tasks that draw on different types of knowledge, underlined by Hawkins & Chan (1997), motivated the inclusion of an experimental task involving syntactic islands in the current dissertation.

Chapter 6 presents the experimental design adopted in the present dissertation. A total of 102 participants were involved, 72 Chinese native speakers and 30 native EP speakers. Three tasks were run: an oral production task and two SPR-AJTs. The first SPR-AJT tackled the three relativization strategies available in EP (PiP, P-Chop and Resumption), in order to assess if participants accept them. The second SPR-AJT tests RCs formed with extractions from syntactic islands. The experimental design was pilot-tested and the conclusions drawn from its application are also described in Chapter 6.

Chapter 6 recovers the theoretical input presented in the previous chapters, namely: 1) the L2 acquisition hypotheses; 2) the characteristics of RCs in both languages and the assumptions made on the structure of prepositional RCs in EP and Mandarin Chinese, and 3) the findings of previous research on the acquisition of (prepositional) RCs. Considering this, the research questions and the hypotheses that guide the current dissertation are formulated and presented. The research questions are divided into three

main topics: 1) initial transfer (mapping); 2) developmental paths (reassembly) and 3) syntactic islands. Nine different hypotheses are advanced, addressing these RQs.

In the first line of research, the RQ addresses transfer of resumption:

RQ1: Do Chinese-speaking learners of EP initially map the properties of prepositional RCs from their L1 onto the target language and therefore start by adopting resumption as the default strategy?

Considering the development path (second group of questions), I ask three different questions:

RQ2.

a) Are Chinese-speaking learners of EP able to select the *wh*-movement feature from other L1 relative structures (i.e., gap or adjunct RCs) and reassemble it into the relative C of prepositional RCs in the L2? Specifically, do they produce and accept RCs with PiP and P-Chop in EP?

b) If both groups produce and accept PiP and P-Chop, is there a difference between intermediate and advanced speakers?

RQ3. Can we identify a sequence in the acquisition of the three relativization strategies (Resumptive RCs, P-Chop and PiP)?

RQ4. Is there an asymmetry in the use and acceptance of P-Chop with arguments and adjuncts by the L2ers?

Finally, looking at syntactic islands, my research questions/ hypotheses are the following:

RQ5. Are Chinese-speaking learners of EP sensitive to island configurations, showing acquisition of *wh*-movement? More specifically, when extracting the head of RCs within syntactic islands, do Chinese participants rate them higher if rescued by an RP than if produced with PiP or P-Chop?

RQ6. Do Chinese participants rate argument RCs within a syntactic island worse than adjunct RCs?

The study, whose results are presented in Chap. 7, reveals that Chinese speakers do not produce nor accept resumptive RCs in EP L2, not evidencing transfer from their L1. Furthermore, native EP speakers do not produce or accept resumption either, despite this strategy being described as one of the non-standard strategies available in this language (RQ1).

Another finding from the study is that PiP is consistently produced by advanced learners in the oral production task (even more than by native speakers) and accepted by the three groups in the SPR-AJT that tested the three relativization strategies (RQ2).

P-Chop is produced more / better rated by intermediate learners than by advanced learners, in particular with adjuncts, and native speakers show regularities in the production of P-Chop that non-native EP speakers do not exhibit. In particular, native EP produce/ accept P-Chop mainly with arguments; whereas intermediate non-native speakers produce/ accept it with adjuncts and with different arguments, possibly because they did not acquire all the properties that characterize native P-Chop. The fact that intermediate speakers show higher rates of P-Chop with adjuncts and arguments partially answers RQ2b.

However, no clear answer was found to RQ3, given that PiP is the preferred strategy by the learners, despite P-Chop being attested among intermediate speakers. The data collected in the present dissertation seem inconclusive to answer RQ4. The results indicate that intermediate learners, contrary to advanced learners and native speakers, are likely to produce P-Chop with adjuncts. Besides, advanced participants show higher rates of P-Chop in the production of arguments, apparently closer to native speakers, but the predictive model does not indicate that the difference between arguments and adjuncts is significant in the production of advanced learners. Furthermore, native speakers reject P-Chop with adjuncts but accept it with arguments, and this difference is relevant. On the contrary, non-native speakers do not display such an asymmetry. So, the data seem inconclusive, perhaps indicating that advanced learners are in a developmental path towards the acquisition of the properties of native P-Chop, in particular if the data from production are taken into account.

Finally, the SPR-AJT that tested the sensitivity to extractions from syntactic island configurations, aiming at answering RQ5 and RQ6, showed that the relativization strategy used is not relevant to the extraction. In other words, this means that RPs do not rescue islands from ungrammaticality for any of the groups (answering RQ5). Moreover,

this test shows extractions of argument PPs from strong islands being rated worse than extractions of adjunct PPs by all groups (RQ6).

Considering this, several conclusions on the L2 acquisition of RCs and *wh*-movement can be drawn. One of the most relevant findings is that acquisition of wh-movement is possible, as seen in the learners' sensitivity to extraction from islands. EP non-native speakers can access UG and reassemble the functional features that determine *wh*-movement, restructuring their ILG concerning *wh*-movement in the target language. In particular, learners are able to access uninterpretable features to form the combination *u*Wh[REL] + *i*Cat[DET], which is not available in their native language. This finding is especially relevant because it indicates that L2 speakers are fully able to acquire complex structures and their restrictions, hence supporting full access hypotheses like the FRH, and against those that establish a limit to the acquisition after the critical period, such as the RDH. The main research questions addressed in the Chapter 1 of this dissertation seem to receive a proper answer: non-native speakers can recruit uninterpretable functional features from UG to restructure their ILG in adulthood, namely acquiring the features that determine *wh*-movement in the target language, against the RDH (Hawkins & Chan, 1997; Hawkins, 2005; Hawkins & Hattori, 2006) and corroborating the FRH (Lardiere, 2005, 2008, 2009).

This project also contributes to shed light on the phenomenon of P-Chop, not only in L2 acquisition, but also in the target language (in particular, in EP). Indeed, the results presented here indicate that possibly P-Chop has a different nature in the L1 and in L2 acquisition. Whilst Chinese intermediate L2ers seem to do it regardless of whether the relativized PP is an adjunct or an argument, in EP L1, P-Chop shows regularities (it is accepted mostly in the relativization of PP arguments and not with PP adjuncts) and is constrained by UG. Being a possibility in the natural language, P-Chop cannot be an instance of a wild grammar, against Klein (1993). On a different note, since the evidence shows that P-Chop is in complementary distribution with PiP, other hypotheses that argue for the anti-naturality of PiP (Kenedy, 2007) are also discarded. This dissertation analyzes the cases of native P-Chop as a consequence of an ongoing change on the argument structure of the verbs that P-Chop is more common with. The preposition selected by those verbs is a byproduct of dummy oblique Case assignment; consequently, when the DP is relativized, it is reanalyzed as a theme and the preposition it is not necessary. The fact that this is an ongoing changing process may explain why it is visible in relativization, where it is triggered by PP movement, and not in other structures. One interesting

prediction is that these verbs may change the argument grids even in other contexts. In other words, if this explanation is on the right track, verbs like *gostar* possibly will not select the preposition (*de* 'of) in any context somewhere in the future, but this is obviously speculative[2]. Further work on EP native P-Chop may control the grammatical function of the relativized PP and the thematic grid of the embedded verb to understand and predict other lexical contexts where this strategy may show up.

Chinese L2 speakers of EP do not exhibit the same regularities towards the use and acceptance of P-Chop as native speakers do. So, I believe that, despite the fact that they are apparently mirroring a non-standard strategy available in the input, they are, in fact, going through a developmental stage that was observed by other researchers studying the acquisition of different language combinations and structures (Perpiñán, 2010, 2020; Jourdain, 1996). In fact, intermediate learners exhibit no asymmetry between arguments and adjuncts in the production and acceptance of P-Chop and the advanced learners surpass the P-Chop stage and prefer PiP. The presence of developmental P-Chop in the outcomes of the experimental design corroborates other hypotheses that show how functional aspects are the hardest to acquire (see, for instance, the Bottleneck Hypothesis, Slabakova, 2013, 2019). Moreover, if developmental P-Chop is constrained by UG, this constitutes additional evidence in favor of the access of L2 speakers to UG, in favor of the FRH and against the RDH. Further work may examine data from spontaneous production, oral or written, to identify if the preposition is omitted in contexts where it is mandatory. These data would reinforce the idea that the preposition is not realized in the relativization because it is not selected from the lexicon.

It should not be ignored, though, that other researchers that looked into the P-Chop phenomenon in an L2 found an asymmetry between arguments and adjuncts similar to the one that was identified here with EP native speakers, but in the acquisition of questions (Jourdain, 1996; Klein, 1993). Further research should investigate the P-Chop phenomenon with interrogative sentences, both in native and L2 EP acquisition, to understand if the same regularities are observed.

The resumptive strategy is also considered and debated in this project, not only because it occurs as a non-standard strategy in EP, but also because it is mandatory to relativize PPs in Chinese L1. Two major findings were made regarding resumption:

[2] This is already observed for *precisar (de)* 'need (of)' since some native speakers produce non *wh*-movement sentences without the preposition, as in: (i) *Eu preciso isso* 'I need that.'

1) L2 learners do not transfer this strategy from their L1 into the L2, even if it occurs in the (non-standard) input;
2) EP native and non-native speakers do not show any type of sensitivity to the rescuing effects of resumptive pronoun in syntactic islands configurations.

The fact that RPs are not transferred into L2 acquisition seems to indicate a reduced power of transfer effects in the acquisition of prepositional RCs by Chinese native speakers (at least at intermediate and advanced stages of acquisition). In the L2, Chinese learners do not produce nor accept RPs, which are grammatical and mandatory (in some contexts) in their L1. Nevertheless, L2ers do not reject resumption as assertively as native speakers, indicating that they are in the process of restructuring their ILGs, but did not conclude it yet. Furthermore, beginners were not included in the current dissertation, given the complexity of prepositional RCs, which are generally acquired in intermediate or advanced levels. So, as the initial levels were not tested, it is not possible to assert with confidence what are the reasons underlying the lack of transfer effects.

The results obtained may receive an explanation in the fact that RCs formed through movement in the L2 are present in the formal input (showing mainly PiP) but also in the 'naturalistic' input (also with P-Chop), triggering the process of reassembly at early stages. Possibly, for this reason, participants are already over the initial mapping period, realizing that RPs are not an option in the L2. Further research can investigate if negative transfer effects exhibiting RPs are more salient in initial levels[3] and compare the results of speakers that are not exposed to formal instruction (acquiring only the L2 in immersion) with the results of speakers exposed to it, in order to understand the weight of formal instruction in the acquisition of an L2.

Moreover, syntactic extractions from islands show a lack of effect of RPs in rescuing island configurations, both for EP native and non-native speakers. These results are in line with other studies that underscore the relation between RPs, discourse/ pragmatics and comprehension (Polinsky, 2013), underlining the need to look at other components of the grammar (besides syntax) when analyzing syntactic islands and their effects. The lack of rescuing power of RPs may also be explained by the type of task, as

[3] This is actually a hard task to accomplish if we analyze the acquisition of RCs by native Chinese speakers. Indeed, less complex RCs (such as subject or direct object RCs) are acquired earlier, but have different characteristics – for instance, in Chinese, the RP is optional in direct object RCs and only occurs with certain predicates in subject RCs. To give an example, the experimental of the current dissertation included direct object RCs, but these did not provide any relevant outcomes, possibly because the participants were past the initially mapping period.

proposed, for instance, by Beltrama & Xiang (2016). Further research may use equivalent sentences in a different judgment task, focused on comprehension, i.e., on the ability to understand the sentence (instead of focusing on its acceptability).

Finally, the results of this dissertation show that extractions of adjuncts are considered less ungrammatical than extractions of arguments, against what is predicted in the literature for weak islands. Although the syntactic islands here considered are all strong islands, different possibilities may explain such unexpected asymmetry. A careful analysis of the sentences seems to indicate that pragmatic/ discourse characteristics of the specific items tested may be the reason for this outcome, emphasizing the necessity of considering other components of the grammar in the analysis and study of syntactic islands.

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Appendix A

Language Exposure/ Proficiency

Table 1 – Dominant language at school (Chinese participants)

Mandarin	Cantonese	English	Portuguese	Another dialect	Participants
☑					16
☑			☑		15
☑		☑	☑		13
☑	☑	☑	☑		9
☑	☑	☑			4
	☑				4
	☑	☑			2
		☑	☑		2
☑	☑				2
			☑		2
		☑			1
☑		☑			1
☑				☑	1
				Total	72

Table 2 - Exposition to formal lessons of Portuguese

0-6 months	6-12 months	1-2 years	2-5 years	More than 5 years	Participants
				☑	12
			☑		36
		☑			17
	☑				6
☑					1
				Total	72

Table 3- Distribution of participants by level

Proficiency level	Enrolled in Portuguese lessons	Level concluded previously	Total by level
B1	11	-	**11**
B2	22	3	**25**
C1	19	10	**29**
C2	1	6	**7**
Total	**52**	**20**	**72**

Appendix B

Part 1: Linguistic Questionnaire – Non-native Speakers

A sua participação neste estudo é anónima. Todos os dados recolhidos serão posteriormente tratados e anonimizados. Agradecemos que responda às questões abaixo de forma autêntica. Muito obrigada pela sua colaboração!

1. **Nome**_____

2. **Data de nascimento**_____

3. **Género:** Masculino ☐ Feminino ☐

4. **Língua materna:**
   - **4.1.** Chinês Mandarim ☐
   - **4.2.** Cantonês ☐
   - **4.3.** Outra ☐. Qual? _____

5. **Língua de ensino (língua utilizada pelos professores na escola):**
   - **5.1.** Chinês Mandarim ☐
   - **5.2.** Cantonês ☐
   - **5.3.** Inglês ☐
   - **5.4.** Português ☐
   - **5.5.** Outra. Qual?_____

6. **Há quanto tempo estuda Português/ Durante quanto tempo estudou Português?**
   - **6.1.** 0-6 meses ☐
   - **6.2.** 6-12 meses ☐
   - **6.3.** 1-2 anos ☐
   - **6.4.** 2-5 anos ☐
   - **6.5.** Mais de 5 anos ☐

7. **Qual é a variedade de Português que fala?**
   - **7.1.** Português Europeu (de Portugal) ☐
   - **7.2.** Português do Brasil ☐
   - **7.3.** Outra. ☐ Qual?_____

8. **Qual era a sua idade quando começou a aprender Português?**_____

8. **Nas próximas perguntas, assinale com uma cor o número que melhor descreve a sua relação com a língua portuguesa. Escolha apenas UMA opção.**

Os números correspondem a:

1 = raramente, 2 = menos de uma vez por semana, 3 = uma ou duas vezes por semana, 4 = quase todos os dias, 5 = todos os dias.

8.1. Com que frequência fala português

8.1.1.com os seus amigos?	1	2	3	4	5
8.1.2.com familiares?	1	2	3	4	5
8.1.3.na universidade/no trabalho?	1	2	3	4	5
8.1.4.em lojas/locais públicos?	1	2	3	4	5

8.2. Com que frequência escreve em português

8.2.1.para os seus amigos?	1	2	3	4	5
8.2.2.para familiares?	1	2	3	4	5
8.2.3.na universidade/no trabalho?	1	2	3	4	5
8.2.4.em lojas/ locais públicos?	1	2	3	4	5

8.3. Com que frequência

8.3.1. vê programas de televisão ou filmes em Português?	1	2	3	4	5
8.3.2. ouve música em Português?	1	2	3	4	5
8.3.3. ouve podcasts/ programas de rádio em Português?	1	2	3	4	5
8.3.4. assiste a/ participa em reuniões/ conferências/ aulas em Português?	1	2	3	4	5

8.4. Com que frequência lê em Português

8.4.1. no trabalho/ na universidade (e-mails, artigos, etc.)?	1	2	3	4	5
8.4.2. livros de ficção ou de não ficção?	1	2	3	4	5
8.4.3. artigos e materiais disponíveis na Internet?	1	2	3	4	5

9. Neste momento, tem aulas de Português?

9.1. Sim ☐

9.2. Não ☐

9.1.1. Se respondeu "Sim", indique o nível que frequenta:

A2 ☐ B1 ☐ B2 ☐ C1 ☐ C2 ☐

9.1.2. Se respondeu "Não", indique o último nível que frequentou/ qual é o nível do seu certificado mais recente:

A2 ☐ B1 ☐ B2 ☐ C1 ☐ C2 ☐

9.1.2.1. Se respondeu "Não", indique a data da conclusão do seu último curso de Português:

_____

10. Qual é o seu desempenho em Português? Assinale UM nível para cada competência:

	Inicial	**Intermédio**	**Avançado**	**Superior**
Escrita				
Conversação				
Compreensão Oral				
Compreensão Escrita				

11. Há quanto tempo está em Portugal?_____

12. Já tinha estado em Portugal, num país ou numa região em que se fale Português?

12.1. Sim ☐

12.2. Não ☐

12.2.1. Se respondeu "Sim", indique mais detalhes (país, data de início e de fim do período em que esteve lá, etc.):_____

_____

_____

_____

_____

13. Há alguém na sua família que fale Português?

13.1. Sim ☐

13.2. Não ☐

13.2.1. Se respondeu “Sim”, indique mais detalhes (parentesco, grau de convivência, etc.):

_____

_____

_____

_____

14. Fala outras línguas, para além da sua língua nativa e de Português?

14.1. Sim ☐

14.2. Não ☐

14.2.1. Se respondeu “Sim”, indique:

14.2.1.1. Que outra(s) língua(s) fala_____

_____

_____

_____

14.2.1.2. Quantos anos tinha quando começou a aprender essa(s) língua(s)_____

_____

_____

_____

_____

14.2.1.3. Durante quanto tempo estudou essa(s) língua(s)_____

_____

_____

_____

_____

Muito obrigada pela sua colaboração!

Part 2: Linguistic Questionnaire -Native EP Speakers

A sua participação neste estudo é anónima. Todos os dados recolhidos serão posteriormente tratados e anonimizados. Agradecemos que responda às questões abaixo de forma autêntica. Muito obrigada pela sua colaboração!

15. **Nome**_____
16. **Data de nascimento**_____
17. **Género:** Masculino ☐ Feminino ☐
18. **Língua materna:**
    - **18.1.** Português Europeu ☐
    - **18.2.** Outra. Qual? _____
19. **Língua de ensino (língua utilizada pelos professores na escola):**
    - **19.1.** Português Europeu ☐
    - **19.2.** Inglês ☐
    - **19.3.** Outra. ☐ Qual?_____
20. **Nível de escolaridade;**
    - **20.1.** Ensino secundário ☐
    - **20.2.** Licenciatura ☐
    - **20.3.** Mestrado ☐
    - **20.4.** Doutoramento ☐
    - **20.5.** Outro ☐ . Qual?_____
21. **Fala outras línguas, para além de Português?**
    - **21.1.** Sim ☐
    - **21.2.** Não ☐

      21.2.1. Se respondeu "Sim", indique:

      21.2.1.1. Que outra(s) língua(s) fala_____

      21.2.1.2. Quantos anos tinha quando começou a aprender essa(s) língua(s)_____

      21.2.1.3. Durante quanto tempo estudou essa(s) língua(s)_____

Muito obrigada pela sua colaboração!

Appendix B – Part 3 - Informed Consent

"The acquisition of Direct Object and Prepositioned Relative Clauses in European Portuguese by Native Chinese Speakers"

Goals: The current project intends to study the acquisition of relative clauses in European Portuguese (EP) non-native language (L2). It looks at the acquisition of prepositional and direct object relative clauses in EP L2 by native Chinese speakers. One of the goals of the current project is to articulate the empirical data gathered with the relevant hypotheses for L2 acquisition, providing evidence that will contribute to clarify the role of previous linguistic knowledge and Universal Grammar (UG) in L2 adult acquisition. Besides, it aims at relating the experimental data with the existing syntactic analyses proposed for RCs in both languages, contributing to a feature categorization of the functional category CP in EP and Chinese.

Description and methodology: For this study, we have developed an experimental design composed by oral/aural and written production and comprehension tasks. The participants are native Chinese speakers learning EP formally at the ICLP, in Portugal, but also Chinese native speakers that live in Portugal and who have acquired EP without instruction. We will also involve native EP speakers that will participate in control groups and in small tasks that are complementary to the main study (namely to clarify issues of variation related with relative clauses).
In the oral production tasks, we will stimulate relative clauses and other structures (distractors), using images presented in a computer or tablet as a starting point. We will also ask for grammaticality judgments to native and non-native participants, using aural and written stimulus. The expected results may contribute to the study of the acquisition of relative clauses in European Portuguese L2 and may also provide new elements to the main theoretical hypotheses that currently guide the research in L2 acquisition.

Foreseeable risks: Non applicable.

Potential benefits for the participants: Direct benefits for the participants are not guaranteed. However, the results of the study will contribute to increase scientific knowledge on the acquisition of relative clauses in EP L2 and, therefore, may indirectly benefit other studies in the research areas of L2 acquisition and development. No financial benefits will derive from the participation in the study.

Voluntary participation: Participants will be free to refuse their participation in the study or to withdraw their consent, hence suspending their participation at all times. Participation is voluntary and refusal to participate leads to no penalty or loss of benefits.

Confidentiality: The collected data will be used exclusively for research purposes. The collected information from each participant will be combined and analyzed with information from other participants. Complete confidentiality relative to all the personal identifying data from each participant will be observed. Each participant will be assigned an encoded number and the identity of the participants will never be revealed in any report or publication resulting from the study.

DECLARATION OF INFORMED CONSENT

"The acquisition of Direct Object and Prepositioned Relative Clauses in European Portuguese by Native Chinese Speakers"

I hereby declare I became aware of a study with the goal of studying the acquisition of direct object and prepositional relative clauses in European Portuguese and I have voluntarily accepted to participate in it. For this purpose, I agree to participate in an oral production/aural comprehension tasks and/or in a grammaticality judgement task.

I consent to the following: the collected data will be anonym. They will be stored in secure servers at the institution to which the researcher belongs, according to the applicable law, and will be used exclusively for research purposes. However, I feel free to revoke the permission to use my data at all times.

I further declare the results of the studies obtained with my data can be used anonymously in scientific presentations and publications.

I was given a clear account of the proposed study and could ask questions about it. I received a duly signed and dated copy of this declaration.

Date, name and signature of the participant

I discussed this study with the participant, using clear and appropriate language. I properly informed the participant about the nature of the study and its foreseeable benefits and risks. I consider that the participant fully understood my explanation.

Date, name and signature of the professor/researcher in charge

CONSENTIMENTO INFORMADO

"Aquisição de orações relativas de objeto direto e preposicionadas em Português Europeu língua segunda por falantes nativos de Chinês Mandarim"

Objetivo do estudo: O presente projeto pretende estudar a aquisição de frases relativas em português europeu língua não materna (L2), observando, em particular, a aquisição de frases relativas preposicionadas e de objeto direto por falantes nativos de Chinês Mandarim. Um dos objetivos deste estudo é a articulação de dados empíricos com as hipóteses teóricas relevantes para a aquisição de L2, contribuindo-se assim para a análise do papel desempenhado por conhecimento linguístico anterior e pela Gramática Universal (GU) na aquisição de uma L2 depois do período crítico. Para além disso, pretende-se relacionar os dados experimentais com as análises sintáticas existentes para as frases relativas em ambas as línguas (Português Europeu e Chinês Mandarim), contribuindo para uma caracterização dos traços que compõem a categoria funcional CP em Português Europeu e em Chinês Mandarim.

Descrição e métodos: Para este estudo, desenvolveu-se um desenho experimental composto por tarefas de produção e de compreensão oral e escrita. Os participantes serão falantes nativos de Chinês Mandarim a aprender a língua portuguesa formalmente, em Portugal, mas também falantes de Chinês Mandarim residentes em Portugal que adquiriram a língua portuguesa sem acesso a instrução formal. Serão ainda envolvidos falantes nativos de Português Europeu, que participarão em grupos de controlo e em pequenas tarefas complementares ao estudo central (nomeadamente para clarificar questões de variação na produção de frases relativas).

Nas tarefas de produção oral, elicitar-se-ão estruturas relativas e outras (distratores), a partir de imagens apresentadas em computador. Serão também solicitados juízos de gramaticalidade a participantes nativos e não nativos, a partir de estímulos áudio e escritos. Os resultados expectáveis poderão contribuir para o estudo da aquisição de frases relativas em português L2, esperando-se ainda contributos mais genéricos para as principais hipóteses teóricas que orientam os estudos de aquisição de L2.

Riscos previsíveis: Não aplicável.

Possíveis benefícios para os participantes: Não se garante que este estudo proporcione benefícios diretos para o participante. No entanto, a informação obtida vai contribuir para aumentar o conhecimento científico sobre a aquisição de frases relativas em português L2 e poderá, indiretamente, vir a beneficiar outros estudos na área de aquisição e desenvolvimento de L2, mas também outros estudos relacionados com a sintaxe das frases relativas em português europeu.

Participação voluntária: O participante terá toda a liberdade para recusar a participação no estudo ou retirar o seu consentimento, suspendendo a participação em qualquer momento. A participação é voluntária e a recusa em participar não acarreta qualquer penalização ou perda de benefícios.

Confidencialidade: Os dados obtidos serão utilizados exclusivamente para investigação. A informação recolhida de cada participante será combinada e analisada em conjunto com informação de outros participantes. Todos os dados de identificação de cada participante serão mantidos em confidencialidade. Para o estudo, a cada participante será atribuído um número codificado. A

identidade dos participantes nunca será revelada em qualquer relatório ou publicação decorrente do estudo.

DECLARAÇÃO DE CONSENTIMENTO INFORMADO

"Aquisição de orações relativas de objeto direto e preposicionadas em Português Europeu língua segunda por falantes nativos de Chinês Mandarim"

Declaro ter tomado conhecimento e aceitar participar, voluntariamente, num estudo que tem por objetivo estudar a aquisição de frases relativas em português europeu como língua segunda. Para esse efeito, aceito que seja feita uma tarefa de produção oral e/ou de juízos de gramaticalidade, conforme acima mencionado.

Autorizo que os dados obtidos, e posteriormente anonimizados, sejam armazenados no servidor da instituição de acolhimento a que o investigador está associado, podendo apenas ser utilizados no âmbito deste estudo, de acordo com legislação em vigor. Poderei, no entanto, revogar a autorização para utilização dos meus dados em qualquer momento.

Declaro ainda que os resultados dos estudos realizados com os meus dados poderão ser usados em comunicações e publicações científicas de forma anónima.

O estudo proposto foi-me claramente explicado e tive oportunidade de colocar questões. Recebi uma cópia desta declaração devidamente assinada e datada.

Data, Nome e assinatura do participante

Discuti este estudo com o participante, utilizando uma linguagem compreensível e apropriada. Informei adequadamente o participante sobre a natureza deste estudo e sobre os seus possíveis benefícios e riscos. Considero que o participante compreendeu a minha explicação.

Data, Nome e assinatura do Professor/Investigador responsável

Appendix C - Cloze Test (Pre-Experimental Design)

Cloze Test

Trabalhar (1) _____ [a uma/numa/de uma/uma] equipa de sonho? Milionário (2) _____ [procurar/procura/procurasse/Ø] fotógrafo para dar a volta ao mundo. Salário? Cerca de 49 mil euros por ano. Os candidatos não têm de ter experiência nem de ter estudado (3) _____ [uma/com uma/de uma/numa] escola de fotografia profissional. Só têm de dominar o Instagram e de estar disponíveis para viajar a qualquer momento. Matthew Lepre quer contratar "um fotógrafo pessoal" para tirar as fotografias (4) _____ [os quais/que/ø/quem] publica na conta de Instagram enquanto (5) _____ [Ø/viaja/viajou/viajaria] pelo mundo. Ao mesmo tempo, (6) _____ [aproveita/aproveitava/aproveitasse/aproveitar] para promover os seus cursos de comércio eletrónico e pensa (7) _____ [os/pelos/aos/nos] futuros clientes do seu negócio. Segundo o anúncio publicado no Instagram, no qual se vê um jovem a telefonar (8) _____ [com/sem/Ø/de] um hotel de cinco estrelas, os candidatos não têm de ter experiência profissional enquanto fotógrafos. Além disso, o empresário autoriza o futuro funcionário a "trazer um amigo" para participar (9) _____ [às/com as/nas/as] viagens. Todas as despesas (10) _____ [ser/sejam/Ø/são] pagas e o salário prometido é de 55 mil dólares por ano (cerca de 49 mil euros). "Só durante o último ano, (11) _____ [conseguirei/consigo/consegui/conseguir] expandir o meu negócio enquanto viajava para os Emirados Árabes Unidos, Indonésia, Estados Unidos, Nova Zelândia, Itália, França, Espanha, Suíça e Tailândia", conta ao jornal britânico o milionário australiano, de 27 anos, fundador da Ecom Warrior Academy, uma plataforma de cursos online de comércio eletrónico. "Até agora, (12) _____ [contarei/contaria/contar/contei] com o meu melhor amigo para estar lá e tirar fotografias com o telemóvel dele. Mas o meu negócio (13) _____ [expandiu-se/Ø/expandirse/expandir-se-ia] rapidamente e agora quero que o Mitch se concentre noutras áreas, por isso, estou a fazer este convite aberto ao mundo, para encontrar alguém para esse papel." Segundo Lepre, os candidatos precisam (14) _____ [num/de um/um/com um] passaporte válido, antes de mais. Além disso, têm de conhecer as lógicas (15) _____ [quem/onde/que/ø] contribuem para o sucesso de uma conta no Instagram e de gostar (16) _____ [em/ø/de/com] viagens, uma vez que terão de estar disponíveis para viajar a qualquer momento. "A pessoa selecionada para o cargo tem de ser flexível com a sua vida e de estar disponível para se juntar a mim na minha agenda louca, (17) _____ [que/quanto/ø/quem] pode levar-me a qualquer sítio, a qualquer hora." Para se candidatar ao cargo, os interessados têm de seguir as contas @matthewlepre (235 mil seguidores) e @ecomwarrior no Instagram, fazer tag ao amigo (18) _____ [que/onde/ø/quem] querem levar na primeira viagem, subscrever a conta de Youtube e submeter alguns detalhes pessoais no site da empresa. Matthew Lepre pede ainda uma última loucura. Para provar que estão interessados, os candidatos têm de mostrar o que valem num percurso de montanhismo. No fim do percurso, têm de gritar (19) _____ [com/sem/Ø/de] uma montanha três razões (20) _____ [onde/que/ø/quem]

convençam Matthew a escolhê-los. Depois, devem mandar-lhe o vídeo desse momento, através do Instagram.

O vencedor será anunciado a 31 de maio de 2020. Numa história publicada no Instagram a 20 de dezembro, Lepre dizia já ter recebido mais de 55 mil candidaturas, (21) _____ [pelas quais/com as quais/as quais/das quais] se destacavam 157. No início do ano, o empresário já (22) _____ [lançar/tinha lançado/lançava/Ø] uma oferta de emprego semelhante, mas para o cargo de assistente pessoal. A antiga estudante de moda australiana Tyanna de Assis foi a escolhida entre 70 mil candidatos.

Texto adaptado de notícia (jornal Público)
https://www.publico.pt/2019/12/24/fugas/noticia/empregoinstagram-sonho-milionario-procura-fotografo-dar-volta-mundo-1898301

Solutions

Trabalhar (1) numa **equipa de sonho? Milionário (2)** procura **fotógrafo para dar a volta ao mundo.**

Salário? Cerca de 49 mil euros por ano. Os candidatos não têm de ter experiência nem de ter estudado (3) numa escola de fotografia profissional. Só têm de dominar o Instagram e de estar disponíveis para viajar a qualquer momento.

Matthew Lepre quer contratar "um fotógrafo pessoal" para tirar as fotografias (4) que publica na conta de Instagram enquanto (5) viaja pelo mundo. Ao mesmo tempo, (6) aproveita para promover os seus cursos de comércio eletrónico e pensa (7) nos futuros clientes do seu negócio.

Segundo o anúncio publicado no Instagram, no qual se vê um jovem a telefonar (8) de um hotel de cinco estrelas, os candidatos não têm de ter experiência profissional enquanto fotógrafos. Além disso, o empresário autoriza o futuro funcionário a "trazer um amigo" para participar (9) nas viagens. Todas as despesas (10) são pagas e o salário prometido é de 55 mil dólares por ano (cerca de 49 mil euros).

"Só durante o último ano, (11) consegui expandir o meu negócio enquanto viajava para os Emirados Árabes Unidos, Indonésia, Estados Unidos, Nova Zelândia, Itália, França, Espanha, Suíça e Tailândia", conta ao jornal britânico o milionário australiano, de 27 anos, fundador da Ecom Warrior Academy, uma plataforma de cursos online de comércio eletrónico.

"Até agora, (12) contei com o meu melhor amigo para estar lá e tirar fotografias com o telemóvel dele. Mas o meu negócio (13) expandiu-se rapidamente e agora quero que o Mitch se concentre noutras áreas, por isso, estou a fazer este convite aberto ao mundo, para encontrar alguém para esse papel."

Segundo Lepre, os candidatos precisam (14) de um passaporte válido, antes de mais. Além disso, têm de conhecer as lógicas (15) que contribuem para o sucesso de uma conta no Instagram e de gostar (16) de viagens, uma vez que terão de estar disponíveis para viajar a qualquer momento. "A pessoa selecionada para o cargo tem de ser flexível com a sua vida e de estar disponível para se juntar a mim na minha agenda louca, (17) que pode levar-me a qualquer sítio, a qualquer hora."

Para se candidatar ao cargo, os interessados têm de seguir as contas @matthewlepre (235 mil seguidores) e @ecomwarrior no Instagram, fazer tag ao amigo (18) que querem levar na primeira viagem, subscrever a conta de Youtube e submeter alguns detalhes pessoais no site da empresa. Matthew Lepre pede ainda uma última loucura. Para provar que estão interessados, os candidatos têm de mostrar o que valem num percurso de montanhismo. No fim do percurso, têm de gritar (19) de uma montanha três razões (20) que convençam Matthew a escolhê-los. Depois, devem mandar-lhe o vídeo desse momento, através do Instagram.

O vencedor será anunciado a 31 de maio de 2020. Numa história publicada no Instagram a 20 de dezembro, Lepre dizia já ter recebido mais de 55 mil candidaturas, (21) das quais se destacavam 157.

No início do ano, o empresário já (22) tinha lançado uma oferta de emprego semelhante, mas para o cargo de assistente pessoal. A antiga estudante de moda australiana Tyanna de Assis foi a escolhida entre 70 mil candidatos.

Appendix D

Part 1 - Oral Production Task

Complete as frases com a informação disponível…

Exemplo



A Ana sonhou com um relógio.

Exemplo



A Ana sonhou com um relógio.



Que relógio é este?

Este é o relógio… *com que a Ana sonhou.*

Exemplo



Palácio da Pena



Palácio Nacional de Queluz

Perto de Lisboa, há dois grandes palácios.

Exemplo



Palácio da Pena



Palácio Nacional de Queluz

Perto de Lisboa, há dois grandes palácios.



Onde é que podemos encontrar o Palácio da Pena?
O Palácio da Pena... *é em Sintra.*
O Palácio da Pena... *fica em Sintra.*

Exemplo



A Sofia abriu a porta.

Exemplo



A Sofia abriu a porta.



Que porta é esta?
Esta é a porta... *que a Sofia abriu.*

Exemplo



A Joana perdeu a mochila.

Exemplo



A Joana perdeu a mochila.



Onde é que podemos encontrar a mochila da Joana?
A mochila da Joana... *está na cadeira.*

Exemplo



Neste bairro, acontecem muitas coisas.

Exemplo



Neste bairro, acontecem muitas coisas.



Onde é que podemos encontrar o piquenique?
O piquenique... *é no Jardim da Estrela.*

A atividade começa aqui!

[Control DO RC]



A Alice lê um livro.



A Alice lê um livro.



Que livro é este?
Este é o livro...

[Prepositional Adjunct RC]



A Tânia trabalha num consultório.



A Tânia trabalha num consultório.



No consultório da Tânia, onde é que podemos encontrar o relógio?
O relógio...

[Filler]



Neste bairro, acontecem muitas coisas.



Neste bairro, acontecem muitas coisas.



Onde é que podemos ver a exposição de pintura?
A exposição de pintura...

[Prepositional Argument RC]



O José gosta de um carro.



O José gosta de um carro.



Que carro é este?
Este é o carro…

[Filler]



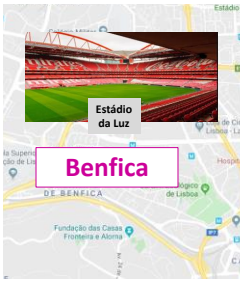


Em Lisboa, há dois grandes estádios.





Em Lisboa, há dois grandes estádios.



Onde é que podemos encontrar o Estádio da Luz?
O Estádio da Luz…

[Control DO RC]



O António perdeu o gato ontem.

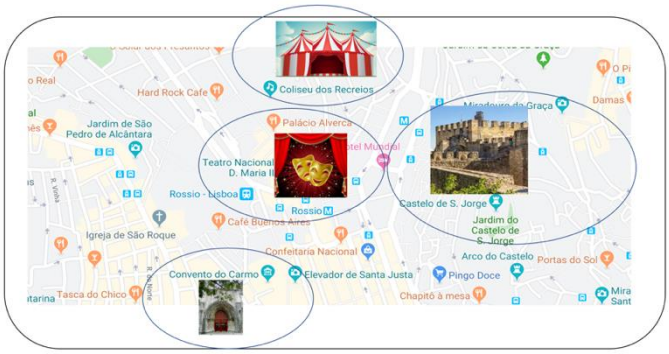


O António perdeu o gato ontem.



Que gato é este?
Este é o gato...

[Filler]



Em Lisboa, acontecem muitas coisas.



Em Lisboa, acontecem muitas coisas.



Onde é que podemos encontrar o circo?
O circo...

[Prepositional Argument RC]



A cantora participou num espetáculo.



A cantora participou num espetáculo.



Que espetáculo é este?
Este é o espetáculo...

[Filler]



A Ana procura o telemóvel.

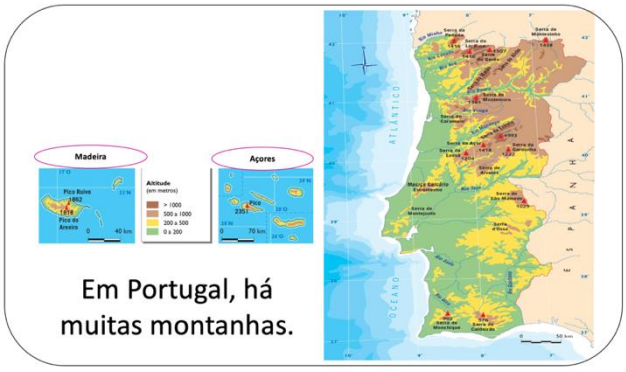


A Ana procura o telemóvel.

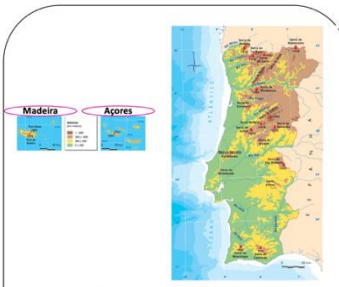


Onde é que podemos encontrar o telemóvel da Ana?
O telemóvel da Ana...

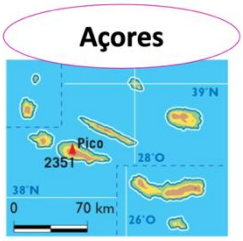
[Filler]



Em Portugal, há muitas montanhas.



Em Portugal, há muitas montanhas.



Onde é que podemos encontrar a montanha do Pico?
A montanha do Pico...

[Control DO RC]



A Isabel comprou um vestido.



A Isabel comprou um vestido.



Que vestido é este?
Este é o vestido...

[Filler]



O quarto do Miguel está desarrumado.



O quarto do Miguel está desarrumado.



Onde é que podemos encontrar o avião?

O avião...

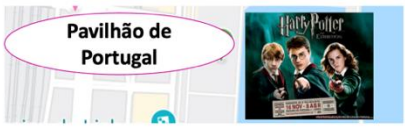
[Filler]



No Parque das Nações, acontecem muitas coisas.



No Parque das Nações, acontecem muitas coisas.



Onde é que podemos encontrar a exposição 'Harry Potter'?

A exposição 'Harry Potter'...

[Prepositional Adjunct RC]



A Joana telefona do escritório todos os dias.



A Joana telefona do escritório todos os dias.



Que escritório é este?
Este é o escritório...

[Filler]



Há muitos países na Europa com cidades bonitas.



Há muitos países na Europa com cidades bonitas.

Em que país é que podemos encontrar a cidade de Lisboa?
Lisboa...



[Control DO RC]



O Manuel quer um coelho.



O Manuel quer um coelho.



Que coelho é este?
Este é o coelho...

[Filler]



A Maria não sabe dos óculos.



A Maria não sabe dos óculos.



Onde é que podemos encontrar os óculos da Maria?
Os óculos da Maria...

[Prepositional Adjunct RC]



O piloto trabalha no aeroporto.

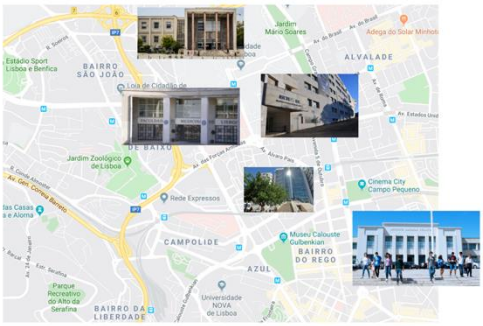


O piloto trabalha no aeroporto.

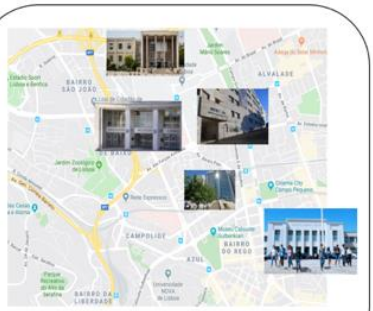


Que aeroporto é este?
Este é o aeroporto...

[Filler]



Em Lisboa, há muitas faculdades.



Em Lisboa, há muitas faculdades.



Onde é que podemos encontrar a Faculdade de Letras?
A Faculdade de Letras...

[Control DO RC]



O Miguel comeu uma salada.



O Miguel comeu uma salada.



Que salada é esta?
Esta é a salada...

[Filler]



A Luísa perdeu as chaves no parque.



A Luísa perdeu as
chaves no parque.



Onde é que podemos encontrar
as chaves da Luísa?
As chaves da Luísa...

[Filler]



Na Fundação Calouste Gulbenkian, acontecem muitas coisas.



Na Fundação Calouste Gulbenkian, acontecem muitas coisas.



Onde é que podemos encontrar a exposição?
A exposição...

[Prepositional Adjunct RC]



A Nádia grita de um jardim.



A Nádia grita de um jardim.



Que jardim é este?
Este é o jardim...

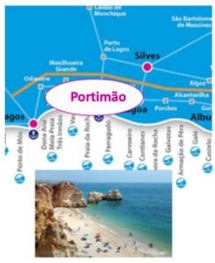
[Filler]



O Algarve tem muitas praias.



O Algarve tem muitas praias.

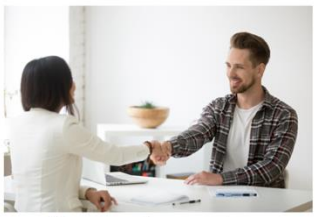


Onde é que podemos encontrar a Praia da Rocha?
A Praia da Rocha...

[Control DO RC]



A Susana conheceu o colega.



A Susana conheceu o colega.



Que colega é este?
Este é o colega...

[Filler]







[Prepositional Argument RC]







[Filler]



Em Portugal, há muitos museus.



Em Portugal, há muitos museus.



Onde é que podemos encontrar o Museu Machado de Castro?
O Museu Machado de Castro...

[Control DO RC



O Tiago bebeu vinho ao jantar.



O Tiago bebeu vinho ao jantar.



Que vinho é este?
Este é o vinho...

[Filler]



O João não conseguiu estacionar o carro na rua.



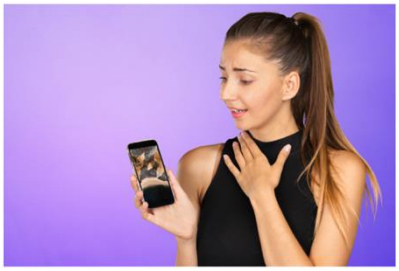
O João não conseguiu estacionar o carro na rua.

Garagem

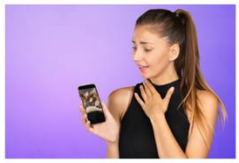


Onde é que podemos encontrar o carro do João?
O carro do João...

[Prepositional Argument RC]



A Inês precisa de um telemóvel.

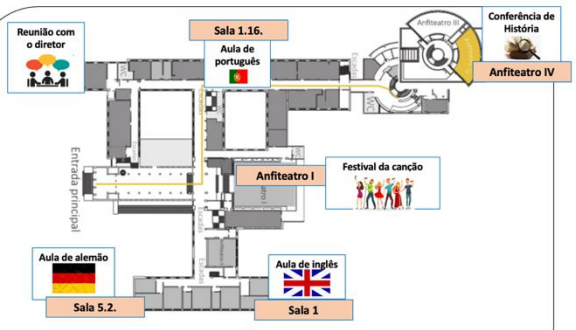


A Inês precisa de um telemóvel.

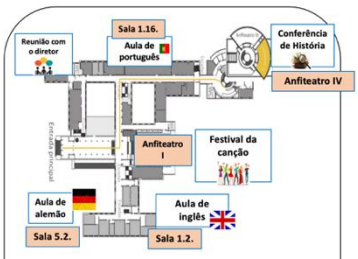


Que telemóvel é este?
Este é o telemóvel...

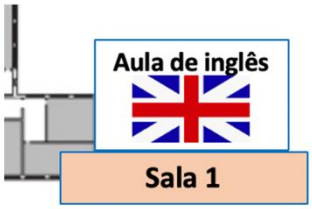
[Filler]



Na Faculdade, acontecem muitas coisas.



Na Faculdade, acontecem muitas coisas.



Onde é que podemos encontrar a aula de inglês?
A aula de inglês...

[Control DO RC]



O Nuno encontrou um cão.



O Nuno encontrou um cão.



Que cão é este?
Este é o cão...

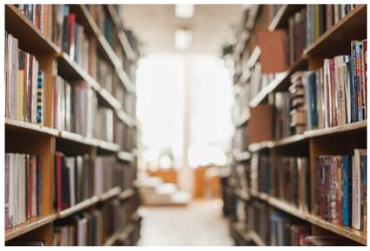
[Prepositional Adjunct RC]



A Tatiana estuda na biblioteca.



A Tatiana estuda na biblioteca.



Que biblioteca é esta?
Esta é a biblioteca...

Muito obrigada!

Appendix D – Part 2

Sentences – SPR-AJT (Relativization Strategies)

Pied-Piping – Arguments

(1) A mota de que o rapaz gosta é grande.

(2) O filme em que a aluna pensou é interessante.

(3) O concerto em que a cantora participou foi no Campo Pequeno.

(4) O computador de que a menina precisa é caro.

Pied-Piping – Adjuncts

(5) O café em que a rapariga trabalha tem muitos clientes.

(6) A janela de onde o avô gritou é muito alta.

(7) A universidade em que o rapaz estuda é muito famosa.

(8) A casa de onde o senhor telefonou é antiga.

Resumption – Arguments

(9) O concerto que a cantora participou nele foi no Campo Pequeno.

(10) O computador que a menina precisa dele é caro.

(11) O filme que a aluna pensou nele é interessante.

(12) A mota que o rapaz gosta dela é grande.

Resumption – Adjuncts

(13) A universidade que o rapaz estuda nela é muito famosa.

(14) O café que a rapariga trabalha nele tem muitos clientes.

(15) A casa que o senhor telefonou de lá é antiga.

(16) A janela que o avô gritou de lá é muito alta.

P-Chopping – Arguments

(17) O filme que a aluna pensou é interessante.

(18) A mota que o rapaz gosta é grande.

(19) O computador que a menina precisa é caro.

(20) O concerto que a cantora participou foi no Campo Pequeno.

P- Chop – Adjuncts

(21) A janela que o avô gritou é muito alta.

(22) O café que a rapariga trabalha tem muitos clientes.

(23) A casa que o senhor telefonou é antiga.

(24) A universidade que o rapaz estuda é muito famosa.

Control DO RCs – Gap – [+ animate]

(25) O aluno que a professora encontrou é novo.

(26) O cão que a empregada perdeu é grande.

(27) O gato que a menina quer é cinzento.

(28) O professor que a rapariga conheceu é simpático.

Control DO RCs – Gap – [- animate]

(29) A sopa que o rapaz comeu é deliciosa.

(30) O livro que a estudante leu é interessante.

(31) O sumo que a mulher bebeu é muito doce.

(32) O relógio que a senhora comprou é caro.

Control DO RCs – Resumption – [+ animate]

(33) O cão que a empregada o perdeu é grande.

(34) O gato que a menina o quer é cinzento.

(35) O aluno que a professora o encontrou é novo.

(36) O professor que a rapariga o conheceu é simpático.

Control DO RCs – Resumption – [- animate]

(37) O livro que a estudante o leu é interessante.

(38) A sopa que o rapaz a comeu é deliciosa.

(39) O relógio que a senhora o comprou é caro.

(40) O sumo que a mulher o bebeu é muito doce.

Fillers – Grammatical

(41) Lisboa tem muitos monumentos. A Torre de Belém é bonita.

(42) A Rússia tem a maior área da Ásia. É um país muito grande.

(43) Nova Iorque tem muitos edifícios. Nova Iorque é na América.

(44) O meu prédio foi pintado. Está bonito.

(45) O Miguel está doente. Hoje, o Miguel está em casa.

(46) Paris tem muitos monumentos. Paris é em França.

(47) A Alice tem um caniche. O cão da Alice é muito pequeno.

(48) O pai foi buscar os meninos. Os meninos estão no jardim.

(49) A Joana lavou o casaco de lã com água quente. Agora, o casaco dela está muito pequeno.

(50) O filho da Manuela cresceu muito. Ele está muito grande.

(51) Cabo Verde tem praias lindas. A água do mar é muito quente.

(52) Xangai tem muita vida noturna. Xangai é na China.

(53) A Alice faz anos. A festa de aniversário é em casa dela.

(54) Ele não encontrou lugar de estacionamento na rua. O carro dele está no parque.

(55) A Joana acabou de fazer a sopa. A sopa está quente.

(56) O Benfica joga contra o Sporting. O jogo é no Estádio de Alvalade.

(57) A Alice esqueceu-se dos óculos. Os óculos dela estão na sala.

(58) Lisboa tem uma luz especial. Lisboa é em Portugal.

(59) A Madona vem a Lisboa. O único concerto é no Coliseu.

(60) O Instituto organiza o Festival da Canção. O Festival é no anfiteatro 1.

Fillers – Ungrammatical

(61) *Ele não encontrou lugar de estacionamento na rua. O carro dele é no parque.

(62) *A Alice faz anos. A festa de aniversário em casa dela.

(63) *O Vaticano tem 0,44 quilómetros quadrados. Este país está muito pequeno.

(64) *Lisboa tem uma luz especial. Lisboa está em Portugal.

(65) *Agosto é o mês das férias. Agosto um mês quente.

(66) *O Rui comprou um carro bom. O carro está muito grande.

(67) *O Instituto organiza o Festival da Canção.O Festival está no anfiteatro 1.

(68) *A Alice esqueceu-se dos óculos. Os óculos dela na sala.

(69) *A Alice tem uma casa bonita. A casa dela grande.

(70) *O Benfica joga contra o Sporting. O jogo está no Estádio de Alvalade.

(71) *Portugal tem um clima bom. Portugal está um país quente.

(72) *A Madona vem a Lisboa. O único concerto no Coliseu.

(73) *Nova Iorque tem muitos edifícios. Nova Iorque está na América.

(74) *O peru saiu agora do forno. O peru quente.

(75) *O teu cabelo cresceu muito desde o verão. É tão grande!

(76) *A Joana arranjou o vestido comprido. Agora, o vestido dela pequeno.

(77) *Xangai tem muita vida noturna. Xangai na China.

(78) *A Alice esqueceu-se dos óculos. Os óculos dela são na sala.

(79) *A Madona vem a Lisboa. O único concerto está no Coliseu.

(80) *O menino teve gripe. Depois da doença, é tão magro!

(81) *O bolo saiu do forno. O bolo é quente.

(82) *O Miguel está doente. Hoje, o Miguel em casa.

(83) *O teu cão mudou imenso nos últimos meses. O teu cão grande!

(84) *A Alice faz anos. A festa de aniversário está em casa dela.

(85) *Lisboa tem uma luz especial. Lisboa em Portugal.

(86) *O Miguel comprou um Mini Cooper. O carro dele pequeno.

(87) *A Ana tem dois filhos. Os filhos da Ana bonitos.

(88) *O jardim tem novas plantas. O jardim bonito.

(89) *Xangai tem muita vida noturna. Xangai está na China.

(90) *Ele não encontrou lugar de estacionamento na rua. O carro dele no parque.

(91) *O Instituto organiza o Festival da Canção. O Festival no anfiteatro 1.

(92) *O pai foi buscar os meninos. Os meninos são no jardim.

(93) *O bebé nasceu ontem. Tal como o pai, o bebé está muito bonito.

(94) *O Benfica joga contra o Sporting. O jogo no Estádio de Alvalade.

(95) *O pai foi buscar os meninos. Os meninos no jardim.

(96) *Paris tem muitos monumentos. Paris em França.

(97) *O Miguel está doente. Hoje, o Miguel é em casa.

(98) *Paris tem muitos monumentos. Paris está em França.

(99) *A senhora pintou o cabelo. Depois de pintar o cabelo, é bonita.

(100) *Nova Iorque tem muitos edifícios. Nova Iorque América.

Appendix D – Part 3

Sentences – SPR-AJT (Island Configurations)

PiP RCs formed with elements extracted from a syntactic island

PiP - Arguments

(1) *O concerto em que a rapariga comprou bilhetes porque a cantora participa é caro.

(2) *A casa de que a amiga vai vender o apartamento porque o namorado gosta é linda.

(3) *O bolo em que as amigas comiam a sopa enquanto pensavam é delicioso.

(4) *Os livros de que a professora vai à livraria porque o estudante precisa são caros.

PiP – Adjuncts

(5) *O hospital de onde a senhora encontrou a Maria enquanto telefonava é organizado.

(6) *A escola em que a aluna conheceu o rapaz enquanto ele estudava é antiga.

(7) *A sala de onde os meninos foram para o escritório porque o avô gritou é grande.

(8) *A loja em que a rapariga vai ao centro enquanto as amigas trabalham é gira.

Resumption – Arguments

(9) ? O concerto que a rapariga comprou bilhetes porque a cantora participa nele é caro.

(10) ? O bolo que as amigas comiam a sopa enquanto pensavam nele é delicioso.

(11) ? A casa que a amiga vai vender o apartamento porque o namorado gosta dela é linda.

(12) ? Os livros que a professora vai à livraria porque o estudante precisa deles são caros.

Resumption – Adjuncts

(13) ? A loja que a rapariga vai ao centro enquanto as amigas trabalham nela é gira.

(14) ? A sala que os meninos foram para o escritório porque o avô gritou de lá é grande.

(15) ? A escola que a aluna conheceu o rapaz enquanto ele estudava nela é antiga.

(16) ? O hospital que a senhora encontrou a Maria enquanto telefonava de lá é organizado.

P-Chopping – Arguments

(17) *A casa que a amiga vai vender o apartamento porque o namorado gosta é linda.

(18) *Os livros que a professora vai à livraria porque o estudante precisa são caros.

(19) *O concerto que a rapariga comprou bilhetes porque a cantora participa é caro.

(20) *O bolo que as amigas comiam a sopa enquanto pensavam é delicioso.

P-Chopping – Adjuncts

(21) *A escola que a aluna conheceu o rapaz enquanto ele estudava é antiga.

(22) *O hospital que a senhora encontrou a Maria enquanto telefonava é organizado.

(23) *A sala que os meninos foram para o escritório porque o avô gritou é grande.

(24) *A loja que a rapariga vai ao centro enquanto as amigas trabalham é gira.

Control (within islands) - Gap DO – RCs ([+ animate] head)

(25) *O pássaro que a senhora ficou chateada porque a empregada perdeu é raro.

(26) *A amiga que os colegas ficaram espantados quando o estudante encontrou é simpática.

(27) *O gato que o lojista está aborrecido porque a menina quer é meigo.

(28) *O professor que as raparigas ficaram alegres quando a colega conheceu é exigente.

Control (within islands) - Gap DO – RCs ([- animate] head)

(29) *A refeição que o empregado ficou alegre enquanto o menino comia é saborosa.

(30) *O relógio que o lojista está feliz porque a senhora comprou é caro.

(31) *O batido que a empregada está contente porque a menina bebeu é saudável.

(32) *O documento que a professora ficou espantada enquanto o rapaz lia é complexo.

Control (within islands) - Resumptive DO – RCs ([+ animate] head)

(33) ? O professor que as raparigas ficaram alegres quando a colega o conheceu é exigente.

(34) ? O gato que o lojista está aborrecido porque a menina o quer é meigo.

(35) ? A amiga que os colegas ficaram espantados quando o estudante a encontrou é simpática.

(36) ? O pássaro que a senhora ficou chateada porque a empregada o perdeu é raro.

Control (within islands) - Resumptive DO – RCs ([- animate] head)

(37) ? O batido que a empregada está contente porque a menina o bebeu é saudável.

(38) ? A refeição que o empregado ficou alegre enquanto o menino a comia é saborosa.

(39) ? O documento que a professora ficou espantada enquanto o rapaz o lia é complexo.

(40) ? O relógio que o lojista está feliz porque a senhora o comprou é caro.

Control RCs (outside islands) (Prepositional)

(41) A loja em que a rapariga trabalha desde que saiu da universidade tem roupa gira.

(42) O escritório de onde o chefe da empresa telefonou na quarta-feira de manhã fechou.

(43) O concerto em que a cantora participa na sexta-feira à noite no Coliseu é caro.

(44) A universidade em que a rapariga estudou durante os últimos cinco anos fechou.

(45) A varanda de onde o professor gritou na tarde de quarta-feira tem muitas plantas exóticas.

(46) O trabalho em que a professora pensou no fim de semana passado é muito complicado.

(47) O computador de que o rapaz gosta está na loja de tecnologia do centro comercial.

(48) O hospital de onde a enfermeira telefonou ontem à tarde fica no centro do país.

(49) Os livros de que o aluno precisa estão à venda na livraria mais antiga da cidade.

(50) O espetáculo em que o cantor vai participar na semana do Natal tem muitos artistas.

Control (outside islands)– DO RCs

(51) O pianista que a senhora conheceu no concerto na sexta-feira à noite é bonito.

(52) O sumo que a menina bebeu na cantina da escola depois das aulas estava estragado.

(53) O pássaro que a menina quer está à venda numa loja de animais perto da escola.

(54) O pássaro que a rapariga encontrou no jardim no domingo à tarde era cinzento.

(55) O bolo que a rapariga comeu na tarde de domingo em casa da amiga era de limão.

(56) O relógio que a senhora comprou na loja mais cara do centro comercial caiu no chão.

(57) O cão que a senhora perdeu no jardim na sexta de manhã era o preferido da menina.

(58) O bolo que os amigos comeram na pastelaria mais famosa da cidade de Lisboa era delicioso.

(59) O documento que os alunos leram no computador da professora de inglês é importante.

(60) O artista que as turistas conheceram na exposição na galeria é muito famoso.

Filler – Grammatical

(61) Os automobilistas precisam de usar mais o metro, porque a gasolina é muito cara.

(62) O turista comeu muitos pratos típicos no Porto, porque gosta de provar coisas diferentes.

(63) A senhora quer um cão corajoso e forte, porque tem medo de ficar sozinha em casa.

(64) Os estudantes vão pensar num tema de trabalho diferente, porque a professora autorizou.

(65) A empregada gritou da varanda mais alta da casa, porque queria chamar as crianças.

(66) Enquanto estava de férias na casa de praia, a rapariga leu todos os livros da autora.

(67) Os dois jovens encontraram o gato da vizinha porque pediram ajuda aos bombeiros do bairro.

(68) O rapaz conheceu os seus atores preferidos, enquanto eles davam autógrafos aos fãs.

(69) Quando os ténis baixaram de preço no período das promoções, a rapariga comprou os mais giros.

(70) Os senhores telefonaram do hotel de luxo, porque queriam falar com o filho mais velho.

(71) O veterinário perdeu dois pássaros, porque não teve cuidado com as regras de segurança.

(72) Os alunos pensaram no tema do trabalho, quando estiveram juntos na biblioteca.

(73) A médica acha que deve trabalhar na clínica privada, porque quer seguir mais pacientes.

(74) Os estudantes leram livros sobre a história de Portugal, porque queriam ter boas notas.

(75) Os colegas participaram num concurso de escrita criativa quando estavam no primeiro ano da faculdade.

(76) As amigas gostam de boas câmaras, porque publicam muitos vídeos nas redes sociais.

(77) Quando o telemóvel fica sem bateria nas viagens, os pais telefonam dos aeroportos.

(78) As amigas beberam dois sumos de laranja no bar, enquanto esperavam pelos colegas de turma.

(79) O futebolista comprou uma casa muito cara com vista para o mar, porque gosta de praia.

(80) A senhora trabalha no centro comercial, desde que o marido foi despedido da empresa.

(81) Os jovens precisam de um guarda-chuva e de uma capa, nos dias em que há temporal.

(82) O turista dinamarquês bebeu dois vinhos diferentes, porque queria escolher o melhor.

(83) Os jovens estudam na escola de línguas, desde que começaram a aprender mandarim.

(84) Quando mudaram para uma casa com jardim, os meninos quiseram um cão grande.

(85) O cantor afirmou que iria participar no espetáculo de Natal, porque gosta da banda.

(86) Os amigos gostam muito de ir à praia no início do verão, enquanto há poucos turistas.

(87) Quando fizeram o passeio pela rota dos vinhos, os turistas comeram pratos deliciosos.

(88) O aluno quer estudar na universidade de artes, porque adora pintar e fazer esculturas.

(89) A avó gritou do quarto para os netos irem para a cozinha, quando o jantar ficou pronto.

(90) O veterinário perdeu o cão do rapaz, depois de um passeio pelo parque municipal.

Fillers - Ungrammatical

(91) *Os jovens encontrou a professora de artes, porque foi à exposição no centro cultural.

(92) *Os alunos estuda muito para os exames, porque quer entrar na melhor universidade.

(93) *As professoras de música precisa de um piano, porque quer ensinar os estudantes a tocar.

(94) *Enquanto a mãe fizeram o jantar para a família, beberam um sumo de laranja fresco.

(95) *Quando os primos estava de férias de verão, eles telefonava da casa da praia.

(96) *Os amigos participou juntos no festival da canção, quando o Instituto o organizou.

(97) *As amigas comeu um bolo de chocolate com avelãs, porque foi o aniversário da avó.

(98) *O marido pensam num destino de férias, quando compraram uma viagem para a mulher.

(99) *As amigas conheceu o seu cantor preferido, quando ficou três horas à espera dele.

(100) *As senhoras gosta do novo cabeleireiro no centro da cidade, porque é muito barato.

Appendix E

Generalized linear mixed model – Oral production task

```
Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: PCHOPP ~ Group * Type + (1 | Participant_ID) + (1 | Item)
##    Data: d
## Control: glmerControl(optimizer = "bobyqa")
##
##      AIC      BIC   logLik deviance df.resid
##    742.5    780.1   -363.3    726.5      808
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -8.5134 -0.4463 -0.2105 -0.0055  3.9886
##
## Random effects:
##  Groups         Name        Variance Std.Dev.
##  Participant_ID (Intercept) 3.2820   1.8116
##  Item           (Intercept) 0.2141   0.4627
## Number of obs: 816, groups:  Participant_ID, 102; Item, 8
##
## Fixed effects:
##                                Estimate Std. Error z value Pr(>|z|)
## (Intercept)                      -4.1634
## GroupAdvanced                     1.4369
## GroupIntermediate                 2.8789
## TypeArgument                      3.8377
## GroupAdvanced:TypeArgument       -3.0279
## GroupIntermediate:TypeArgument   -3.7471
## ---
0.7024  -5.928 3.07e-09 ***
0.7696   1.867  0.06189 .
0.7522   3.827  0.00013 ***
0.7037   5.453 4.94e-08 ***
0.7207  -4.201 2.66e-05 ***
0.6976  -5.371 7.83e-08 ***
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) GrpAdv GrpInt TypArg GrA:TA
## GroupAdvncd -0.757
## GropIntrmdt -0.805  0.698
## TypeArgumnt -0.775  0.557  0.597
## GrpAdvnc:TA  0.636 -0.693 -0.574 -0.752
## GrpIntrm:TA  0.670 -0.560 -0.698 -0.788  0.757
```

Appendix F

Tables - Statistical Models

1. Oral Production Task

Table 1

Contrasts between groups in the production of P-Chopping with Adjuncts

Contrast	estimate	SE	df	z. ratio	p. value
Native - Advanced	-1.437	0.770	Inf	-1.867	0.1483
Native - Intermediate	-2.879	0.752	Inf	-3.827	0.0004
Advanced - Intermediate	-1.442	0.591	Inf	-2.438	0.0392

Table 2

Contrasts between groups in the production of P-Chopping with Arguments

Contrast	estimate	SE	df	z. ratio	p. value
Native - Advanced	1.591	0.586	Inf	2.717	0.0181
Native - Intermediate	0.868	0.566	Inf	1.534	0.2748
Advanced - Intermediate	-0.723	0.563	Inf	-1.283	0.4046

Table 3

Contrast within each group in the production of P-Chopping in the argument vs. adjunct conditions

Contrast	estimate	SE	df	z. ratio	p. value
Native speakers	-3.8377	0.704	Inf	-5.453	<.0001
Advanced learners	-0.8098	0.502	Inf	-1.614	0.1066
Intermediate learners	-0.0906	0.456	Inf	-0.199	0.8425

2. Acceptability Judgment Task targeting relativization strategies

2.1. Pied Piping

Table 4

Contrasts between groups in the acceptance of Pied-Piping with Adjuncts

Contrast	estimate	SE	df	z. ratio	p. value
Native - Advanced	1.1918	0.540	Inf	2.209	0.0697

Native - Intermediate	1.7825	0.531	Inf	3.357	0.0023
Advanced - Intermediate	0.5907	0.444	Inf	1.332	0.3776

Table 5

Contrasts between groups in the acceptance of Pied-Piping with Arguments

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Native - Advanced	0.0117	0.576	Inf	0.020	0.9998
Native - Intermediate	0.5757	0.554	Inf	1.040	0.5518
Advanced - Intermediate	0.5640	0.523	Inf	1.079	0.5274

2.2. Resumption

Table 6

Contrasts between groups in the acceptance of Resumption with Adjuncts

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Native - Advanced	-2.8922	0.645	Inf	-4.486	<.0001
Native - Intermediate	-3.6740	0.640	Inf	-5.745	<.0001
Advanced - Intermediate	-0.7818	0.416	Inf	-1.877	0.1452

Table 7

Contrasts between groups in the acceptance of Resumption with Arguments

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Native - Advanced	-1.6685	0.532	Inf	-3.138	0.0048
Native - Intermediate	-2.4752	0.523	Inf	-4.734	<.0001
Advanced - Intermediate	-0.8068	0.419	Inf	-1.926	0.1314

2.3. P-Chopping

Table 8

Contrasts between groups in the acceptance of P-Chopping with Adjuncts

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Native - Advanced	-1.1204	0.442	Inf	-2.534	0.0304
Native - Intermediate	-1.6537	0.442	Inf	-3.742	0.0005
Advanced - Intermediate	-0.5332	0.408	Inf	-1.306	0.3915

Table 9

Contrasts between groups in the acceptance of P-Chopping with Arguments

Contrast	estimate	SE	df	z. ratio	p. value
Native - Advanced	0.8318	0.436	Inf	1.908	0.1363
Native - Intermediate	0.9649	0.434	Inf	2.221	0.0676
Advanced - Intermediate	0.1331	0.407	Inf	0.327	0.9427

2.4. Native Speakers

Table 10

Contrasts in the predicted acceptance of the three strategies by native speakers with adjuncts

Contrast	estimate	SE	df	z. ratio	p. value
P-Chopping – Pied-Piping	-4.352	0.536	Inf	-8.127	<.0001
P-Chopping - Resumption	2.824	0.634	Inf	4.456	<.0001
Pied-Piping - Resumption	7.175	0.722	Inf	9.941	<.0001

Table 11

Contrasts in the predicted acceptance of the three strategies by native speakers with arguments

Contrast	estimate	SE	df	z. ratio	p. value
P-Chopping – Pied-Piping	-2.038	0.505	Inf	-4.039	0.0002
P-Chopping - Resumption	3.984	0.529	Inf	7.525	<.0001
Pied-Piping - Resumption	6.022	0.608	Inf	9.897	<.0001

Table 12

Contrasts in the predicted acceptance of each strategy comparing adjuncts vs. arguments (native speakers)

Contrast	estimate	SE	df	z. ratio	p. value
Adjunct-Argument (P-Chop)	-2.2159	0.439	Inf	-5.048	<.0001
Adjunct-Argument (PiP)	0.0977	0.570	Inf	0.171	0.8640
Adjunct-Argument (Resumption)	-1.0554	0.670	Inf	-1.575	0.1153

2.5. Advanced Learners

Table 13

Contrasts in the predicted acceptance of the three strategies by advanced learners *with* adjuncts

Contrast	estimate	SE	df	z. ratio	p. value
P-Chopping – Pied-Piping	-2.040	0.423	Inf	-4.826	<.0001
P-Chopping - Resumption	1.052	0.403	Inf	2.608	0.0247
Pied-Piping - Resumption	3.091	0.437	Inf	7.081	<.0001

Table 14

Contrasts in the predicted acceptance of the three strategies by advanced learners with arguments

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
P-Chopping – Pied-Piping	-2.858	0.473	Inf	-6.040	<.0001
P-Chopping - Resumption	1.484	0.407	Inf	3.646	0.0008
Pied-Piping - Resumption	4.342	0.491	Inf	8.847	<.0001

Table 15

Contrasts in the predicted acceptance of each strategy comparing adjuncts vs. arguments (advanced learners)

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Adjunct-Argument (P-Chop)	-0.2637	0.393	Inf	-0.670	0.5026
Adjunct-Argument (PiP)	-1.0824	0.487	Inf	-2.224	0.0262
Adjunct-Argument (Resumption)	0.1683	0.412	Inf	0.409	0.6828

2.6. Intermediate Learners

Table 16

Contrasts in the predicted acceptance of the three strategies by intermediate learners with adjuncts

Contrast	estimate	SE	df	z. ratio	p. value
P-Chopping – Pied-Piping	-0.916	0.406	Inf -	2.255	0.0624
P-Chopping - Resumption	0.803	0.392	Inf	2.048	0.1010
Pied-Piping - Resumption	1.719	0.408	Inf	4.218	0.0001

Table 17

Contrasts in the predicted acceptance of the three strategies by intermediate learners *with* arguments

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
P-Chopping – Pied-Piping	-2.427	0.443	Inf	-5.474	<.0001
P-Chopping - Resumption	0.544	0.391	Inf	1.393	0.3446
Pied-Piping - Resumption	2.971	0.446	Inf	6.659	<.0001

Table 18

Contrasts in the predicted acceptance of each strategy comparing adjuncts vs. arguments (intermediate learners)

Contrast	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Adjunct-Argument (P-Chop)	0.4027	0.391	Inf	1.030	0.3031
Adjunct-Argument (PiP)	-1.1090	0.452	Inf	-2.455	0.0141
Adjunct-Argument (Resumption)	0.1433	0.391	Inf	0.367	0.7139

3. Acceptability Judgment Task with Island Configurations

3.1. Contrast Argument – Adjunct

Table 19

Contrast of the predicted acceptance of argument vs. adjunct extraction from syntactic islands by each group

Contrast Argument/ Adjunct	**estimate**	**SE**	**df**	**z. ratio**	**p. value**
Native Speakers	1.263	0.307	Inf	4.112	<.0001
Advanced Learners	1.556	0.288	Inf	5.405	<.0001
Intermediate Learners	0.813	0.274	Inf	2.967	0.0030

3.2. Between Groups

Contrast of the predicted acceptance of adjunct *extraction from syntactic islands between the three groups*

Table 20

Groups	estimate	SE	df	z. ratio	p. value
Native – Advanced Learners	-0.649	0.372	Inf	-1.746	0.1883
Native – Intermediate Learners	-1.410	0.371	Inf	-3.797	0.0004
Advanced – Intermediate Learners	-0.761	0.351	Inf	-2.170	0.0764

Table 21

Contrast of the predicted acceptance of argument *extraction from syntactic islands between the three groups*

Groups	estimate	SE	df	z. ratio	p. value
Native – Advanced Learners	-0.355	0.396	Inf	-0.897	0.6423
Native – Intermediate Learners	-1.860	0.387	Inf	-4.807	<.0001

Advanced – Intermediate Learners	-1.504	0.362	Inf	-4.161	0.0001

3.2. Between Strategies

Contrast of the predicted acceptance of RCs formed with extraction from islands with the different strategies (all groups)

Table 22

Contrast - Strategies	estimate	SE	df	z. ratio	p. value
Island w/ PiP vs. Island w/ P-Chop	0.6102	0.300	Inf	2.035	0.1040
Island w/ PiP vs. Island w/ RP	0.5202	0.299	Inf	1.740	0.1903
Island w/ P-Chop vs. Island w/ RP	-0.0899	0.300	Inf	-0.299	0.9518

Appendix G

Descriptive Statistics previous to data binarization

Table 1

Descriptive Statistics Task 1 – SPR-AJT (Relativization Strategies)

	PiP			RES			P-Chopping		
	Adv.	**Int.**	**Nat.**	**Adv.**	**Int.**	**Nat.**	**Adv.**	**Int.**	**Nat.**
Valid	36	36	30	36	36	30	36	36	30
Missing	0	0	0	0	0	0	0	0	0
Mean	0.867	0.831	0.896	0.409	0.531	0.270	0.549	0.616	0.579
Std. Deviation	0.095	0.115	0.101	0.210	0.202	0.146	0.240	0.195	0.186
Minimum	0.667	0.372	0.649	0.015	0.096	0.029	0.010	0.193	0.168
Maximum	1.000	0.996	1.000	0.845	0.844	0.664	0.981	0.924	0.979

Table 2

Descriptive Statistics - Task 2 – SPR-AJT with Island Configurations

Descriptive Statistics

	Island w/ PiP			Island w/ RES			Island w/ P-Chopping		
	Adv.	**Int.**	**Nat.**	**Adv.**	**Int.**	**Nat.**	**Adv.**	**Int.**	**Nat.**
Valid	36	36	30	36	36	30	36	36	30
Missing	0	0	0	0	0	0	0	0	0
Mean	0.381	0.488	0.336	0.323	0.460	0.264	0.320	0.430	0.268
Std. Deviation	0.180	0.164	0.148	0.180	0.197	0.151	0.172	0.158	0.132
Minimum	0.049	0.190	0.075	0.037	0.128	0.033	0.024	0.045	0.071
Maximum	0.677	0.855	0.661	0.641	0.814	0.550	0.690	0.713	0.623

Appendix H

Generalized Linear Mixed Models

Acceptability Judgement Task 1 – targeting relativization strategies

GLM 1

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula: BinaryRating ~ Cond + Group + Strategy + Cond:Group + Cond:Strategy +
t1.m1 <- glmer(BinaryRating ~ Cond + Group + Strategy + Cond:Group +
    Cond:Strategy + Group:Strategy + Cond:Group:Strategy + (1 |
    Participant_ID) + (1 | Item), data = t1, family = binomial(),
    control = glmerControl(optimizer = "bobyqa"))
summary(t1.m1)
## Group:Strategy + Cond:Group:Strategy + (1 | Participant_ID) +
##    (1 | Item)
##Data: t1
## Control: glmerControl(optimizer = "bobyqa")
##
##      AIC      BIC   logLik deviance df.resid
##   2311.4   2427.4  -1135.7   2271.4     2428
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -8.4396 -0.5002  0.1489  0.5100  9.5630
##
## Random effects:
##  Groups         Name        Variance Std.Dev.
##  Participant_ID (Intercept) 1.6451   1.2826
##  Item           (Intercept) 0.1604   0.4005
## Number of obs: 2448, groups:  Participant_ID, 102; Item, 24
##
## Fixed effects:
##
```

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.2074	0.3901	-3.095	0.001967	**
CondArgument	2.2159	0.4390	5.048	4.47e-07	***
GroupAdvanced Learners	1.1204	0.4422	2.534	0.011293	*
GroupIntermediate Learners	1.6537	0.4420	3.742	0.000183	***
StrategyPiedPiping	4.3519	0.5355	8.127	4.41e-16	***
StrategyRES	-2.8236	0.6336	-4.456	8.34e-06	***
CondArgument:GroupAdvanced Learners	-1.9522	0.4322	-4.517	6.28e-06	***
CondArgument:GroupIntermediate Learners	-2.6186	0.4309	-6.077	1.22e-09	***
CondArgument:StrategyPiedPiping	-2.3136	0.7199	-3.214	0.001309	**
CondArgument:StrategyRES	-1.1605	0.7984	-1.454	0.146083	
GroupAdvanced Learners:StrategyPiedPiping	-2.3123	0.5429	-4.259	2.05e-05	***
GroupIntermediate Learners:StrategyPiedPiping	-3.4362	0.5337	-6.438	1.21e-10	***
GroupAdvanced Learners:StrategyRES	1.7717	0.6333	2.798	0.005148	**
GroupIntermediate Learners:StrategyRES	2.0203	0.6275	3.220	0.001284	**
CondArgument:GroupAdvanced:StrategyPiedPiping	3.1323	0.7638	4.101	4.11e-05	***
CondArgument:GroupIntermediate:StrategyPiedPiping	3.8253	0.7430	5.148	2.63e-07	***
CondArgument:GroupAdvanced:StrategyRES	0.7285	0.8001	0.910	0.362576	
CondArgument:GroupIntermediate:StrategyRES	1.4198	0.7889	1.800	0.071879	

```
##
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation matrix not shown by default, as p = 18 > 12.
## Use print(x, correlation=TRUE)  or
##     vcov(x)        if you need it
```

Acceptability Judgement Task 2 –island configurations

```
## Generalized linear mixed model fit by maximum likelihood (Laplace
##   Approximation) [glmerMod]
##  Family: binomial  ( logit )
## Formula:
## BinaryRating ~ Cond + Group + Strategy + Cond:Group + (1 | Participant_ID) +
##     (1 | CODE)
##    Data: t2
## Control: glmerControl(optimizer = "bobyqa")
##
##      AIC   BIC       logLik      deviance    df.resid
##   2546.4   2604.5    -1263.2     2526.4      2438
##
## Scaled residuals:
##     Min        1Q          Median      3Q     Max
##    -3.7192     -0.5608     -0.2753     0.6141  5.2574
##
## Random effects:
##  Groups         Name        Variance Std.Dev.
##  Participant_ID (Intercept) 1.7185   1.3109
##  CODE           (Intercept) 0.2954   0.5435
## Number of obs: 2448, groups:  Participant_ID, 102; CODE, 24
##
Fixed effects:
##                                      Estimate    Std. Error   z value   Pr(>|z|)
## (Intercept)                          -0.6765     0.3611       -1.873    0.061015.
## CondArg                              -1.2626     0.3071       -4.112    3.93e-05 ***
## GroupAdvanced                        0.6485      0.3715       1.746     0.080859 .
## GroupIntermediate                    1.4099      0.3714       3.797     0.000147 ***
## StrategyIsland with P-Chop           -0.6102     0.2999       -2.035    0.041899 *
## StrategyPrep Island with Res         -0.5202     0.2990       -1.740    0.081857 .
## CondArg:GroupAdvanced                -0.2935     0.2787       -1.053    0.292338
## CondArg:GroupIntermediate            0.4496      0.2655       1.693     0.090427 .
##
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) CndArg GrpAdv GrpInt SIwP-C StPIwR CnA:GA
## CondArg     -0.373
## GroupAdvncd -0.567  0.144
## GropIntrmdt -0.569  0.142  0.554
## StrtgyIwP-C -0.409  0.009 -0.003 -0.007
## StrtgyPrIwR -0.410  0.007 -0.003 -0.007  0.497
## CndArg:GrpA  0.164 -0.520 -0.285 -0.161  0.002  0.002
## CndArg:GrpI  0.173 -0.550 -0.167 -0.298 -0.004 -0.002  0.603
Estimate Std. Error z value Pr(>|z|)
```

Appendix I

Sentences supporting the discussion of results

Tests - PP Complements

(1) *a.* *O* *Pedro* *precisa* *do* *certificado.*
DET.M.SG Pedro needs-PRS.3SG of-DET.M.SG certificate
'Pedro needs the certificate.'

b. **O* *Pedro* *precisa.*
DET.M.SG Pedro needs-PRS.3SG
Lit: 'Pedro needs'.

c. *- *O que é que* *aconteceu* *ao* *Pedro* *de* *certificado?*
What happen-PST.3SG to-DET.M.SG Pedro of certificate
- **Precisa.*
Need-PRS.3SG

Lit: -'What happened to Pedro of certificate?'
-'Needs.'

d. *– O que é que* *aconteceu* *ao* *Pedro?*
What happen-PST.3SG to-DET.M.SG Pedro
- Precisa *do* *certificado.*
need-PRS.3SG of-DET.M.SG certificate

-'What happened to Pedro?
- 'He needs the certificate.'

(2) a. *A* *fadista* *participou* *no*
DET.F.SG Fado singer participate-PST.3SG in-DET.M.SG
concerto.
concert
'The Fado singer participated in the concert.'

b. *A fadista participou.
DET.F.SG Fado singer participate-PST.3SG
Lit: 'The Fado singer participated.'

c. - *O que é que aconteceu à fadista
What happen-PST.3SG to-DET.F.SG Fado singer
no concerto?
in-DET.M.SG concert
- *Participou.
Participate-PRS.3SG

Lit: - 'What happened to the Fado singer in the concert?'
- 'Participated.'

d. – O que é que aconteceu à fadista?
What happen-PST.3SG to-DET.F.SG Fado singer
- Participou no concerto.
Participate-PRS.3SG in-DET.M.SG concert

Lit: - 'What happened to the Fado singer?'
- 'Participated in the concert.'

Tests - PP Adjuncts

(3) a. A senhora grita da varanda.
DET.F.SG lady scream-PRS.3SG from-DET.F.SG balcony
'The lady screams from the balcony.'

b. A senhora grita.
DET.F.SG lady scream-PRS.3SG
'The lady screams.'

c. – O que é que a senhora fez da
What DET.F.SG lady do-PST.3SG from-DET.F.SG
varanda?

balcony

- *Gritou.*

Scream-PST.3SG

- ‘What did the lady do from the balcony?

- ‘She screamed.’

d. *– O que é que* *a* *senhora* *fez?*

What DET.F.SG lady do-PST.3SG

- *Gritou* *da* *varanda.*

Scream-PST.3SG from-DET.F.SG balcony

- ‘What did the lady do?

- ‘She screamed from the balcony.’

(4) *a. A* *rapariga* *estuda* *na* *universidade.*

DET.M.SG girl study-PRS.3SG at-DET.F.SG university

‘The girl studies at the university.’

b. A *rapariga* *estuda.*

DET.M.SG girl study-PRS.3SG

‘The girl studies.’

c. *– O que é que* *a* *rapariga* *faz* *na*

What DET.F.SG girl do-PST.3SG at-DET.F.SG

universidade?

university

- *Estuda.*

Study-PRS.3SG

Lit: - ‘What does the girl at the university?

- ‘She works.’

d. *– O que é que* *a* *rapariga* *faz?*

What DET.F.SG girl do-PST.3SG

- *Estuda* *na* *universidade.*

Study-PRS.3SG at-DET.F.SG university

- ‘What does the girl do?
- ‘She studies at the university.’

Adverbial Clauses from which the extractions were made

[Arguments]

(5) *A* *rapariga* *comprou* *bilhetes* *[porque*
DET.F.SG girl buy-PST.3SG tickets because
a *cantora* ***participa*** ***no*** *concerto]*.
DET.F.SG singer participate in-DET.M.SG concert
‘The girl bought tickets because the singer participates in the concert.’

(6) *A* *amiga* *vai* *vender* *o* *apartamento*
DET.F.SG friend go-PRS.3SG sell DET.M.SG apartment
[porque o *namorado* ***gosta*** ***da***
because DET.M.SG boyfriend like-PRS.3SG of-DET.F.SG
casa].
house
‘The girl is going to sell the apartment because the boyfriend likes the house.’

(7) *A* *professora* *vai* *à* *livraria*
DET.F.SG teacher go-PRS.3SG yo-DET.F.SG bookshop
[porque *o* *estudante* ***precisa*** ***dos***
because DET.M.SG student need-PRS.3SG of-DET.M.PL
livros].
books
‘The teacher is going to the bookshop because the student needs the books.’

(8) *As* *amigas* *comiam* *a* *sopa*
DET.F.PL friends eat-PST.3PL DET.F.SG soup
[enquanto ***pensavam*** ***no*** *bolo]*.
while think in-DET.M.SG cake

‘The friends ate the soup while they thought about the cake.’

[Adjuncts]

(9) *A senhora encontrou a Maria*
DET.F.SG lady find-PST-3SG DET.F.SG
[enquanto ***telefonava*** ***do*** *hospital]*.
while call-PST.3SG from-DET.M.SG hospital
‘The lady found Mary while she called from the hospital.]

(10) *A rapariga vai ao centro [enquanto as*
DET.F.SG girl go-PRS.3SG to.DET.M.SG while DET.F.PL
amigas ***trabalham*** ***na*** *loja]*.
friends work-PRS.3PL in-DET.F.SG store
‘The girl goes to the center while the friends work at the store.’

(11) *A aluna conheceu o rapaz*
DET.F.SG student meet-PST.3SG DET.M.SG boy
[enquanto ele ***estudava*** ***na*** *escola]*.
while 3SG study-PST.3SG at-DET.F.SG school
‘The student met the boy while he studied at the school.’

(12) *Os meninos foram para o*
DET.M.PL boys go-PST.3SG to DET.M.SG
escritório *[****porque*** *o avô*
office because DET.M.SG grandfather
gritou da sala].
scream-PST.3SG from-DET.F.SG livingroom
‘The boys went to the office because the grandfather screamed from the living-room.’

Type of adverbial causal clause – proving that are all Type 1

[type 1]

(13) a. *A* *rapariga* *comprou* *bilhetes* *[porque*
DET.F.SG girl buy-PST.3SG tickets because
a *cantora* ***participa*** ***no*** *concerto]*.
DET.F.SG singer participate in-DET.M.SG concert
'The girl bought tickets because the singer participates in the concert.'

b. *A* *causa* *de a* *rapariga ter* *comprado bilhetes*
DET.F.SG cause of DET.F.SG girl have bought tickets
foi *a* *cantora participar* *no*
be-PST.3SG DET.F.SG singer participate in-DET.M.SG
concerto.
concert
'The cause of the girl buying tickets was that the singer participates in the concert.'

c. *O* *facto de* *a* *cantora* *participar*
DET.M.SG fact of DET.F.SG singer participate
no *concerto* *fez* *com que*
in-DET.M.SG concert made-PST.3SG with that
a *rapariga* *comprasse* *bilhetes.*
DET.F.SG girl buy-SBJ.PST.3SG tickets
'The fact that the singer participates in the concert made the girl to buy tickets.'

d. *#A* *rapariga* *comprou* *bilhetes*
DET.F.SG girl buy-PST.3SG tickets
e *eu* *sei* *disso* *porque*
and 1SG know-PRS.1Sg that because
a *cantora* *participa* *no* *concerto.*
DET.F.SG singer participate in-DET.M.SG concert

‘The girl bought tickets and I know that because the singer participates in the concert.’

e. *#A* *razão* *por que eu* *digo* *que*
DET.F.SG reason why 1SG say-PRS.1SG that
a *rapariga* *comprou* *bilhetes é*
DET.F.SG girl buy-PST.3SG tickets be-PRS.3SG
porque a *cantora* *participa* *no*
why DET.F.SG singer participate in-DET.M.SG
concert
concerto.
‘The reason why I say that the girl bought tickets is because the singer participates in the concert.’

(14) a. *A* *amiga* *vai* *vender* *o* *apartamento*
DET.F.SG friend go-PRS.3SG sell DET.M.SG apartment
[porque *o* *namorado* ***gosta***
because DET.M.SG boyfriend like-PRS.3SG
da *casa]*.
of-DET.F.SG house
‘The girl is going to sell the apartment because her boyfriend likes the house.’

b. *A* *causa* *de a* *amiga ir* *vender*
DET.F.SG cause of DET.F.SG friend go-PRS.3SG sell
o *apartamento* *é* *o* *namorado*
DET.M.SG apartment be-PRS.3SG DET.M.SG boyfriend
gostar da *casa.*
like of-DET.F.SG house
‘The cause that the girl is going to sell the apartment is because her boyfriend likes the house.

c. *O* *facto* *de* *o* *namorado*
DET.M.SG fact of DET.M.SG boyfriend

gostar da *casa* *faz* *com* *que*
like of-DET.F.SG house make-PRS.3SG with that
a *amiga* *vá* *vender* *o* *apartamento*
DET.F.SG friend go-SBJ.3SG sell DET.M.SG apartment
'The fact that her boyfriend likes the house makes that the girl is going to sell the apartment.'

d. *# A* *amiga* *vai* *vender* *o*
apartamento DET.F.SG friend go-PRS.3SG sell DET.M.SG
apartment
e *eu* *sei* *disso* *porque*
and 1SG know-PRS.1Sg that because
o *namorado* ***gosta*** ***da*** *casa*
DET.M.SG boyfriend like-PRS.3SG of-DET.F.SG house

e. *#A* *razão* *por que eu* *digo* *que*
DET.F.SG reason why 1SG say-PRS.1SG that
a *amiga vai* *vender o* *apartamento*
DET.F.SG friend go-PRS.3SG sell DET.M.SG apartment
é *porque o* *namorado* *gosta*
be-PRS.3SG because DET.M.SG boyfriend like-PRS.3SG
da *casa.*
of- DET.F.SG house
'The reason why I say that the girl is going to sell the apartment is because her boyfriend likes the house.'

(15) a. *A* *professora* *vai* *à* *livraria*
DET.F.SG teacher go-PRS.3SG yo-DET.F.SG bookshop
[porque *o* *estudante* ***precisa***
because DET.M.SG student need-PRS.3SG
dos livros].
of-DET.M.PL books
'The teacher is going to the bookshop because the student needs the books.'

b. *A* *causa* *de* *a* *professora*
DET.F.SG cause of DET.F.SG teacher
ir *à* *livraria*
go to-DET.F.SG bookshop
é *o* *estudante* *precisar* *dos*
be-PRS.3SG DET.M.SG student need of-DET.M.PL
livros.
books
'The cause that the teacher goes to the bookshop is that the student needs the books.'

c. *O* *facto de o* *estudante* *precisar* *dos*
DET.M.SG fact of DET.M.SG student need of-DET.M.PL
livros faz *com* *que* *a* *professora* *vá*
books make-PRS.3SG with that DET.F.SG teacher go-SBJ.3SG
à *bookshop*
to-DET.F.SG livraria.
'The fact that the student needs the books makes that the teacher goes to the bookshop.'

d. *#A* *professora* *vai* *à* *livraria*
DET.F.SG teacher go-PRS.3SG to-DET.F.SG bookshop
e *eu* *sei* *disso* *porque*
and 1SG know-PRS.1Sg that because
o *estudante* ***precisa*** ***dos*** *livros.*
DET.M.SG student need-PRS.3SG of-DET.M.PL books
'The teacher goes to the bookshop, and I know that because the student needs the books.'

e. *#A* *razão* *por que eu* *digo* *que*
DET.F.SG reason why 1SG say-PRS.1SG that
a *professora* *vai* *à* *livraria*
DET.F.SG teacher go-PRS.3SG to-DET.F.SG bookshop

é	*porque o*		*estudante*	*precisa*
be-PRS.3SG	because DET.M.SG		student	need-PRS.3SG
dos	*livros.*			
of-DET.M.PL	books			

'The reason why I say that the teacher goes to the bookshop is because the boy needs the books.'

(16) a. *Os* *meninos* *foram* *para* *o*
DET.M.PL boys go-PST.3SG to DET.M.SG
escritório ***[porque*** *o* *avô*
office because DET.M.SG grandfather
gritou *da* *sala].*
scream-PST.3SG from-DET.F.SG livingroom

'The boys went to the office because the grandfather screamed from the living-room.'

b. *A* *causa* *de* *os* *meninos*
DET.F.SG cause of DET.M.PL boys
terem *ido* *para* *o* *escritório* *foi*
have-INF.3PL gone to DET.M.SG office be-PST.3SG
o *avô* *ter* *gritado* *da*
DET.M.SG grandfather have screamed from-DET.F.SG
sala.
living-room

The cause that the boys went to the office was that the grandfather screamed from the office.'

c. *O* *facto de* *o* *avô* *ter*
DET.M.SG fact of DET.M.SG grandfather have
gritado *da* *sala* *fez*
screamed from-DET.F.SG living-room make-PST.3SG
com *que* *os* *meninos* *fossem*
with that DET.M.PL boys go-SBJ.PST.3PL
para *o* *escritório.*

to DET.M.SG office

'The fact that the grandfather screamed from the living-room made that the boys went to the office.'

d. *#Os meninos foram para o escritório*
DET.M.PL boys go-PST.3SG to DET.M.SG office
e eu sei disso porque
and 1SG know-PRS.1Sg that because
o avô gritou da
DET.M.SG grandfather scream-PST.3SG from-DET.F.SG
sala.
livingroom
'The boys went to the office, and I know that because the grandfather screamed from the living-room.'

. e. *#A razão por que eu digo que*
DET.F.SG reason why 1SG say-PRS.1SG that
os meninos foram para o escritório
DET.M.PL boys go-PST.3SG to DET.M.SG office
é porque o avô gritou
be-PRS.3SG because DET.M.SG grandfather scream-PST.3SG
da sala.
from-DET.F.SG livingroom
'The reason why I say that the boys went to the office is because the grandfather screamed from the living-room.'

Adverbial Temporal Clauses – proving are all overlapping

(17) *As amigas comiam a sopa*
DET.F.PL friends eat-PST.3PL DET.F.SG soup
[enquanto ***pensavam*** ***no*** *bolo]*.
while think in-DET.M.SG cake
'The friends ate the soup while they thought about the cake.'

(18) *A senhora encontrou a Maria*
DET.F.SG lady find-PST-3SG DET.F.SG Maria
[enquanto ***telefonava*** ***do*** *hospital]*.
while call-PST.3SG from-DET.M.SG hospital
'The lady found Mary while she called from the hospital.]

(19) *A rapariga vai ao centro [enquanto as*
DET.F.SG girl go-PRS.3SG to.DET.M.SG while DET.F.PL
amigas ***trabalham*** ***na*** *loja]*.
friends work-PRS.3.PL in-DET.F.SG store
'The girl goes to the center while the friends work at the store.'

(20) *A aluna conheceu o rapaz*
DET.F.SG student meet-PST.3SG DET.M.SG boy
[enquanto ele ***estudava*** ***na*** *escola]*.
while 3SG study-PST.3SG at-DET.F.SG school
'The student met the boy while he studied at the school.'

CACs – PACs – proving they are all CACs

[Arguments]

(21) *É porque a cantora* ***participa***
be-PRS.3SG because DET.F.SG singer participate-PRS.3SG
no *concerto que a rapariga*
in-DET.M.SG concert that DET.F.SG girl
comprou bilhetes
buy-PST.3SG tickets
'It is because the singer participates in the concert that the girl bought tickets.'

(22) *É porque o namorado*
be-PRS.3SG because DET.M.SG boyfriend
gosta ***da*** *casa que*

like-PRS.3SG of-DET.F.SG house that

a *amiga* *vai* *vender* *o* *apartamento*

DET.F.SG friend go-PRS.3SG sell DET.M.SG apartment

'It is because her boyfriend likes the house that the girl is going to sell the apartment.'

(23) *É* *porque o* *estudante* ***precisa***

be-PRS.3SG because DET.M.SG student need-PRS.3SG

dos *livros* *que* *a* *professora* *vai*

of-DET.M.PL books that DET.F.SG teacher go-PRS.3SG

à *livraria*

to-DET.F.SG bookshop

'It is because the student needs the books that the teacher is going to the bookshop.'

(24) *Foi* *[enquanto* ***pensavam*** ***no***

Be-PST.3SG while think-PST.3PL in-DET.M.SG

bolo] que as *amigas* *comiam* *a* *sopa*

cake that DET.F.PL friends eat-PST.3PL DET.F.SG soup

'It was while they thought about the cake that the friends ate the soup'

[Adjuncts]

(25) *Foi* *enquanto* ***telefonava*** ***do*** *hospital*

Be-PST.3SG while call-PST.3SG from-DET.M.SG hospital

que *a* *senhora* *encontrou* *a* *Maria*

that DET.F.SG lady find-PST-3SG DET.F.SG Maria

'It was while she called from the hospital that the lady found Mary.'

(26) *É* *enquanto* *as* *amigas* ***trabalham***

Be-PRS.3SG while DET.F.PL friends work-PRS.3SG

na *loja* *que* *a* *rapariga vai*

in-DET.F.SG store that DET.F.SG girl go-PRS.3SG

ao *centro*

to.DET.M.SG center

'It is while the friends work at the store that the girl goes to the center.'

(27) *Foi* *enquanto ele* ***estudava*** ***na*** *escola*

Be-PST.3SG while 3SG study-PST.3SG at-DET.F.SG school

que *a* *aluna* *conheceu* *o* *rapaz*

that DET.F.SG student meet-PST.3SG DET.M.SG boy

'It was while he studied at the school that the student met the boy.'

(28) *Foi* ***porque*** *o* *avô*

Be-PST.3SG because DET.M.SG grandfather

gritou *da* *sala*

scream-PST.3SG from-DET.F.SG livingroom

que *os* *meninos* *foram* *para* *o*

that DET.M.PL boys go-PST.3SG to DET.M.SG

escritório

office

'It was because the grandfather screamed from the living-room that the boys went to the office.'

Appendix J

Cloze Test - Pilot Study

Complete o texto que se segue, selecionando a opção correta (há apenas uma opção certa).

Porto Tasty: um site *para quem gosta de comer*[1]

Nove estudantes da Universidade do Porto criaram um *site* para divulgar a gastronomia do Porto. O *site* está escrito em diferentes idiomas para atingir uma audiência mais vasta.

A pensar na promoção e divulgação da gastronomia do Porto, __1__, em março, o *Porto Tasty*, um *site* para __2__ gosta de comer. Este é um projeto formado por alunos que vivem __3__cidade do Porto, de diferentes nacionalidades, e está disponível em três idiomas. O *Porto Tasty*, que __4__ por ser um blogue, foi criado por nove estudantes — cinco portugueses, dois espanhóis __5__ dois brasileiros — do curso de Ciências da Comunicação da Universidade do Porto.

A nossa repórter foi __6__ Porto e falou __7__ Eduardo Ribeiro, um dos jovens que participa __8__ projeto. Eduardo sublinha que o Porto Tasty __9__ distingue de outras iniciativas semelhantes por "ser um projeto __10__ universitário, que se dedica a divulgar unicamente a gastronomia do Porto. É composto por elementos de diferentes nacionalidades __11__ feito em idiomas diferentes, o que é uma coisa __12__, atualmente, não vemos muito e que precisamos __13__impulsionar".

Semanalmente, os estudantes põem notícias __14__blogue do projeto, em três idiomas (português, inglês e espanhol), __15__a conhecer diferentes tipos de pratos e costumes gastronómicos do Porto, para __16__uma vasta audiência. "O nosso objetivo é conseguir comunicar __17__ todos os tipos de públicos".

O projeto __18__ sugerido por um professor da unidade curricular de "Públicos e Audiências", __19__ propôs, como tema, a divulgação e promoção da cidade do Porto como destino gastronómico. Os alunos concordaram __20__ o professor na escolha do nome "curto" e "simples", que __21__ numa das reuniões do grupo. Optaram pelo inglês para chegarem __22__ um público "mais internacional", confidenciou o responsável. Para além do *site*, o projeto está acessível nas redes sociais __23__, com apenas um mês de existência, conta já com algum *feedback* do público.

"À medida que vamos andando, conseguimos ter __24__ *feedback*, sugestões. Por exemplo, o Instagram agora também já __25__a ter uma audiência maior, já temos mais seguidores __26__ começam a comentar as nossas fotos, a dizer que gostam __27__ local porque __28__ conhecem e já lá estiveram", frisou. De acordo com o estudante, o *Porto Tasty* promove também o turismo, salientando que para __29__ "mais audiência" não se podem restringir a

[1] Adaptado de Agência Lusa «*Porto Tasty*: um site para quem gosta de comer» [28/04/2017 – 12:42] *in* http://p3.publico.pt/vicios/gula/23484/porto-tasty-um-site-para-quem-gosta-de-comer. Consultado em setembro de 2017. Texto adaptado e alterado.

"contactar restaurantes __30__ blogues sobre gastronomia", mas também exploram "blogues de turismo".

Um dos parceiros do projeto é o 'Viagem Livre', uma plataforma brasileira, __31__ o *Porto Tasty* publica artigos para aumentar a audiência. Para Eduardo, a expansão "ainda __32__ algo a pensar": "Já estivemos a pensar em não __33__ cingirmos ao Porto centro, mas também em ir para os arredores, por exemplo, Amarante, Matosinhos, Vila do Conde, Póvoa de Varzim. __34__ , para já, o objetivo é captar mais audiência. Ao __35__ para cá, os turistas interessam-se mais pelo Porto cidade". De momento, o financiamento do projeto é feito pelos próprios alunos.

1. a) nascesse b) nasceu c) tinha nascido
2. a) quem b) que c) a qual
3. a) na b) da c) Ø
4. a) acabou b) começou c) iniciou
5. a) mas b) Ø c) e
6. a) Ø b) ao c) do
7. a) com b) Ø c) para
8. a) Ø b) com o c) no
9. a) lhe b) se c) Ø
10. a) por b) sobre c) Ø
11. a) mas b) ainda c) e
12. a) quem b) que c) Ø
13. a) de b) Ø c) com
14. a) Ø b) do c) no
15. a) dando b) dado c) Ø
16. a) atingirmos b) atingires c) atingirem
17. a) com b) de c) Ø
18. a) era b) será c) foi

19. a) quem	b) Ø	c) que
20. a) para	b) com	c) Ø
21. a) surgisse	b) surgia	c) surgiu
22. a) com	b) a	c) Ø
23. a) e	b) Ø	c) ainda que
24. a) nenhum	b) algum	c) algo
25. a) está	b) esteve	c) esteja
26. a) quem	b) que	c) Ø
27. a) Ø	b) no	c) do
28. a) o	b) a	c) Ø
29. a) alcançaram	b) alcançavam	c) alcançarem
30. a) mas	b) ou	c) bem como
31. a) que	b) Ø	c) onde
32. a) é	b) fosse	c) seja
33. a) se	b) nos	c) Ø
34. a) Embora	b) No entanto	c) Apesar de
35. a) virem	b) verem	c) vierem

Appendix J

Pilot Study- Oral Production Task

Complete as frases com a informação disponível...

Exemplo

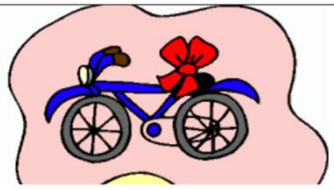


O João sonhou com uma bicicleta.

Exemplo



O João sonhou com uma bicicleta.



Que bicicleta é esta?
Esta é a bicicleta... *com que o João sonhou.*

Exemplo

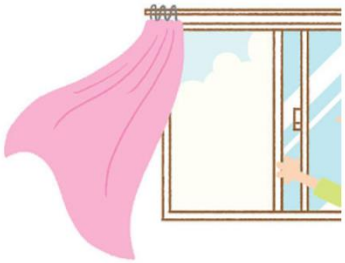


A sala estava muito quente.
A Joana abriu a janela.

Exemplo



A sala estava muito quente.
A Joana abriu a janela.



Que janela é esta?
Esta é a janela... *que a Joana abriu.*

A atividade começa aqui!



A Alice está a ler um livro.



A Alice está a ler um livro.



Que livro é este?
Este é o livro...





O José gosta de um carro.





O José gosta de um carro.



Que carro é este?
Este é o carro...



A Kate e a Angela foram
passear e comeram gelados.



A Kate e a Angela foram
passear e comeram gelados.



Que gelados são estes?
Estes são os gelados...



A Joana está a fazer sopa.
Ela precisa de uma cenoura para a sopa.



A Joana está a fazer sopa.
Ela precisa de uma cenoura
para a sopa.



Que cenoura é esta?
Esta é a cenoura...



A Luísa tinha o cabelo muito comprido.
Ela cortou o cabelo na semana passada.



A Luísa tinha o cabelo muito comprido. Ela cortou o cabelo na semana passada.



Que cabelo é este?
Este é o cabelo...





O António chegou a um jardim muito bonito.





O António chegou a um jardim muito bonito.



Que jardim é este?
Este é o jardim...



O Rui gosta de vinho tinto.
Ele bebeu vinho ao jantar.



O Rui gosta de vinho tinto.
Ele bebeu vinho ao jantar.



Que vinho é este?
Este é o vinho...





O Matias está doente.
O Matias foi ao hospital.



O Matias está doente.
O Matias foi ao hospital.



Que hospital é este?
Este é o hospital...



O Miguel atrasou-se.
O Miguel perdeu o comboio.



O Miguel atrasou-se.
O Miguel perdeu o comboio.



Que comboio é este?
Este é o comboio…





A Ana canta muito bem.
A Ana participou num espetáculo.





A Ana canta muito bem.
A Ana participou num espetáculo.



Que espetáculo é este?
Este é o espetáculo…



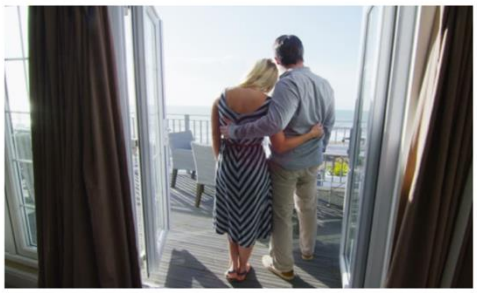
A Isabel vai mudar de telemóvel.
A Isabel quer um telemóvel novo.



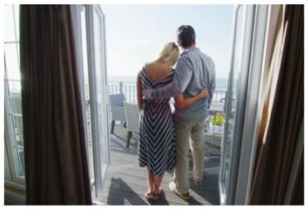
A Isabel vai mudar de telemóvel.
A Isabel quer um telemóvel novo.



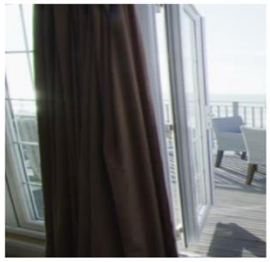
Que telemóvel é este?
Este é o telemóvel...



O Luís e a Rita vivem num apartamento muito bonito.



O Luís e a Rita vivem num apartamento muito bonito.



Que apartamento é este?
Este é o apartamento...



A Diana e a mãe foram ao mercado.
No mercado, elas compraram maçãs.



A Diana e a mãe foram ao mercado.
No mercado, elas compraram maçãs.



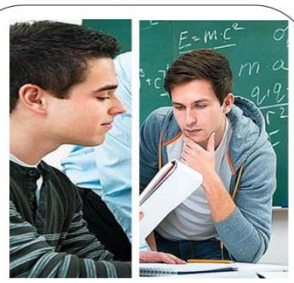
Que maçãs são estas?
Estas são as maçãs...



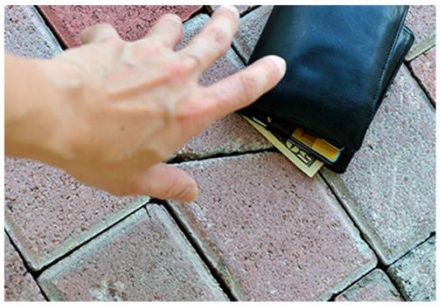
No final da aula, o professor falou
com alguns alunos.



No final da aula, o professor
falou com alguns alunos.



Que alunos são estes?
Estes são os alunos...



O António encontrou uma carteira no chão.



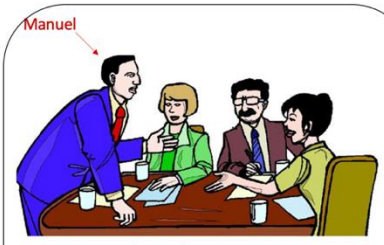
O António encontrou uma carteira no chão.



Que carteira é esta?
Esta é a carteira…



O Manuel está a participar num debate e não concorda com uma colega.



O Manuel está a participar num debate e não concorda com uma colega.



Que pessoa é esta?
Esta é a colega…

Muito obrigada!

Appendix J

Pilot Study - Written Production Task

Nota prévia: os presentes dados serão recolhidos apenas para efeitos de tratamento estatístico.
O anonimato dos participantes será garantido na análise e tratamento dos dados.

Nome: _____

Idade: _____ **Língua materna:** _____

Há quanto tempo estuda português (indique o número de anos aproximado): _____

Vai ler duas frases. Una as frases numa só, sem repetir a expressão sublinhada, como nos exemplos:

O telemóvel é caro.
O João sonha com o telemóvel.
O telemóvel*… com que o João sonha é caro.* _____

A janela é pesada.
A Joana abriu a janela.
A janela… *que a Joana abriu é pesada.* _____

A atividade começa aqui:

1. O restaurante é muito bom.
   A Luísa gosta do restaurante.
   O restaurante _____
   _____

2. Este cão está muito magro.
   A Ana encontrou o cão.
   O cão _____
   _____

3. O livro é caro.
   O Miguel precisa do livro.
   O livro _____
   _____

4. Este telemóvel tem muita memória.
   O Luís comprou o telemóvel.
   O telemóvel _____
   _____

5. O aeroporto é enorme.
   O avião chegou ao aeroporto.
   O aeroporto _____
   _____

6. Este carro é muito confortável.
   A Joana quer o carro.
   O carro _____
   _____

7. O jardim é bonito.
   O Luís vai ao jardim.
   O jardim _____

8. O telemóvel era muito caro.
   O Miguel perdeu o telemóvel.
   O telemóvel _____

9. O concurso é importante.
   A Joana vai participar no concurso.
   O concurso _____

10. Este livro é muito interessante.
    A Luísa leu o livro.
    O livro _____

11. A casa tem vista para o mar.
    O Luís vive nessa casa.
    A casa _____

12. Este bolo é delicioso.
    O Miguel comeu o bolo.
    O bolo _____

13. A rapariga é muito bonita.
    O Miguel falou com a rapariga.
    A rapariga _____

14. Esta árvore é muito antiga.
    O jardineiro cortou a árvore.
    A árvore _____

15. O deputado teve boas ideias.
    O presidente concordou com o deputado.
    O deputado _____

16. Este sumo é muito doce.
    A Ana bebeu o sumo.
    O sumo _____