RESULTATIVES WITH STATIVE ROOTS

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Abstract: An important restriction has been pointed out regarding resultative secondary predicates, namely their impossibility with stative roots (Dowty 1979, Levin & Rappaport Hovav 1995, a.o.). This paper addresses resultative verbal complexes from Mandarin Chinese, which can be constructed from statives; these examples raise important questions regarding their precise nature and the differences from languages like English where stative roots are banned from resultatives. The diagnostics examined here demonstrate that the Mandarin Chinese constructions are indeed true resultatives built from stative roots. However, only certain types of statives are permitted, more precisely those that contain complex internal structure, as contributed by a Davidsonian event argument (Maienborn 2003, 2007), a causative head, or a scalar change component. As opposed to English which can only construct resultatives from bases that exclude statives, Mandarin Chinese permits resultatives built on scalar predicates, irrespective of their stativity.

Keywords: resultative secondary predicates, stativity, Mandarin Chinese

1. Introduction

Resultative secondary predicates (ResSPs) of the type *pound flat*, as illustrated in (1), have been addressed under a variety of theoretical frameworks (see especially Levin and Rappaport Hovav 1995 or Wechsler 2005 for an overview).

(1) The worker has pounded the metal **flat**.

In this paper[1] we focus on an important property ascribed to them, namely that they should give rise to a clash with stative/non-dynamic main predicates. This restriction has been emphasized in both (lexical-)semantic and syntactic works, following the classical observations in Dowty (1979). In this long line of research, it is assumed that resultatives as in (1) must involve a process such that the adjectival ResSP indicates the endpoint, and subsequently the result, of this process. Aspectually, ResSPs encode types of events that have duration and are telic, in that they include a necessary endpoint[2]. This correctly

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[1] I would like to thank the audience at the Workshop on Modification (University of Bucharest, November 27 2021) and especially Alexandra Cornilescu and Adina Camelia Bleotu for the constructive feedback provided. Many thanks also go to Joelian Zhou and Laifa Li for their help with the data and for taking their time to go through all the examples with me during a very difficult period. All errors are my own.

[2] The classification of predicates in terms of their aspectual nature is due to research by Vendler (1957), followed by Dowty (1979). Four main categories have been identified, as schematically presented below, with event structure templates from Chang (2003: 327). See also Rappaport Hovav & Levin (1998).

(i) State: the simplest predicate type, lacks internal structure and cannot express a change in the properties of the participants; **predicate'** (x) or (x,y);

(ii) Activity: encodes ongoing events, with internal change and duration, but without a necessary temporal endpoint; [**do' (predicate** (x) or (x, y))]

(iii) Accomplishment: has duration and a necessary temporal endpoint; [**do' (predicate** (x) or (x, y))] CAUSE [BECOME (**predicate'** (y) or (z))])

(iv) Achievement: has no duration, but an instantaneous culmination or endpoint; [BECOME **predicate'** (x) or (x,y)]

Bucharest Working Papers in Linguistics XXVI, 1, 9-28, eISSN 2392-8093, ISSN-L 2069-9239
DOI: 10.31178/BWPL.26.1.1

predicts that activity predicates such as *pound*, which encode a process, should be able to host a secondary predicate, the latter signaling the result of the event. On the other hand, *stative*/*non-dynamic* roots should be excluded, as they are not processes. As Levin and Rappaport Hovav (1995) mention explicitly, this type of incompatibility is also due to a restriction in the ontology of events: there are no such aspectual types as telic states, given that states do not have an endpoint.

The clash of ResSPs with statives is borne out in English, as seen in (2), which contains various types of statives such as *be sick*, *stay*, *sit*, *lie*, etc. This sentence cannot mean that John became tired as a result of being sick, staying, sitting, lying, etc. The adjectival secondary predicate, if grammatical at all with some of these predicates, can at most be interpreted as a depictive, describing a property which holds during the whole event, but which does not result from the event, e.g. John was tired during the event of sitting.

(2) *John was **sick/stayed/sat/lay tired**.

However, even if this restriction is robust in English, what is less discussed in the literature is that in some languages stative main predicates are more easily tolerated with ResSPs. Such cases raise important questions about the limits of the ResSP constructions in human language. Here we will be examining various examples of statives as they interact with ResSPs in Mandarin Chinese. As seen in (3a), the secondary predicate (SP) *wān* ('bend') receives a resultative interpretation, even if the root *lèi* ('be tired') appears to be a stative verb. Similarly, in (3b) the secondary predicates *lèi/nì* ('tired/bored') can be interpreted as a result in Mandarin Chinese. But the initial part of the verbal complex is a positional stative predicate which cannot host a ResSP in languages like English, as we have seen in (2):

(3) Mandarin Chinese[3]

a. Zhāngsān **lèi-wān** le yāo.
Zhangsan be tired-bend PFV waist
'As a result of Zhangsan's being tired, his waist became bent.'
(Li 2008, ex. 14a, adapted)

b. Tā **dāi-lèi /nì** le.
he stay-tired/bored PFV
'As a result of his staying, he became tired/bored.'

An assumption that could be made regarding examples such as (3) is that maybe the initial predicates are not true statives, but inherently telic when it comes to their structure, and this property permits them to host ResSPs. However, as we show in this paper, these predicates do pass diagnostics that rather associate them to statives. What is, then, the best analysis for examples such as (3)? Although preliminary, the point we would like to make in this paper is that more than one strategy is needed in UG for the construction of ResSPs, besides conflation of a root with a functional projection specified as

[3]Abbreviations: CLF = classifier, DEF = definite, DOM = differential object marking, F = feminine, INCH = inchoative, LK = linker, PFV = perfective, PROG = progressive, RES = resultative, SG = singular.

BECOME/BOUNDED MOTION, which derives the English type built on processes and which excludes all stative bases.

In order to adequately derive ResSPs with statives, it is necessary to investigate in more detail the internal structure of the states that allow the resultative complex verb formation. This is due to the fact that, as we will also see in the paper, not all statives allow resultatives in Mandarin Chinese. The examination of the classes that do indicates three types: (i) statives that contain an event argument (Maienborn's Davidsonian states); (ii) statives specified with a causative component; (iii) statives lexically specified with a scale/degree component. As opposed to English, Mandarin Chinese permits a strategy of ResSP formation which delimits an eventuality through the degree scale, which is static. The highest degree on the scale is taken to specify the result thus making ResSPs available. English-type resultatives, on the other hand, are not scalar, but dynamic; they imply functional material specified as BOUNDED MOTION and which presupposes processes.

The structure of the paper is as follows. Section 2 introduces the resultative parameter, to better situate the problem with stativity. Section 3 presents various examples of ResSPs with stative roots in Mandarin Chinese; then various diagnostics are presented which support the stative nature of the matrix predicate. Section 4 examines diagnostics indicating that these constructions are indeed resultatives, while Section 5 briefly discusses previous accounts and their shortcomings when it comes to deriving the data. Section 6 introduces the typology of statives that are possible in Mandarin Chinese ResSPs and the preliminary analysis of resultativity built on the degree scale. The conclusions are in section 7.

2. The resultative parameter

ResSPs are complex constructions in which an (adjectival) secondary predicate introduces a state that holds of a participant as a result of the eventuality they are part of. Although monoclausal, canonical ResSPs involve conflation of two temporally-independent eventualities; in example (1) it is implied that the eventuality of the metal becoming flat holds as result of the eventuality of its being pounded.

ResSPs raise numerous non-trivial questions, one of them being related to the precise syntactic and semantic mechanisms regulating the co-occurrence of two eventualities under a mono-clausal structure. Importantly, this process seems to be restricted in some languages. ResSPs are well-known to give rise to the so-called "resultative parameter" (Kratzer 2005), with an extensive literature (Green 1973, Talmy 1985, Washio 1997, Rappaport Hovav & Levin 2001, Snyder 2001, Mateu 2002, 2011, Levin & Rappaport Hovav 2005, etc). On the one hand, there are languages like English or Mandarin Chinese, where adjectival ResSPs are possible, if not robust; these are the so-called "satellite-framed" languages in Talmy's (1985, 2000) terminology. On the other hand, there are also languages, the "verb-framed" ones in Talmy's typology, where adjectival ResSPs are simply not grammatical. The example below from Greek illustrates the impossibility of an adjectival ResSP[4]:

[4] These examples might (marginally) be grammatical under an irrelevant reading, namely a depictive interpretation of the adjective, i.e. the table was wiped spotless while the table was clean.

(4) Verb framed languages – no resultatives
*O Giannis skupise to piato tu **katharo**. (Greek)
the Giannis wiped the plate his clean.
Intended: 'Giannis wiped his plate clean.'
(Giannakidou & Merchant 1999, ex. 7)

Another observation generally made about ResSPs is that, in the languages that permit them, they are subject to certain universal-like constraints (see especially Giannakidou & Merchant 1999). Three such specifications are salient, as listed below. In this paper we are mostly interested in the third property (although we provide a brief description of the first two characteristics too).

(5) Adjectival ResSPs characteristics
i. Only one result is possible per (complex) event (Tenny 1994);
ii. "A resultative phrase may be predicated of the immediately postverbal NP but may not be predicated of a subject or of an oblique complement" (Levin & Rappaport Hovav 1995: 34);
iii. Primary predicate must include a process (Dowty 1979).

The first property describes the observation that languages where adjectival ResSPs are possible do nevertheless restrict them to one per clause. This correctly predicts the ungrammaticality of examples such as (6), which contains two resultatives. Importantly, this sentence cannot be interpreted as meaning that as a result of wiping the table became clean and it also became spotless.

(6) *John has wiped the table *clean spotless*.

English also illustrates the second property. The literature on resultatives has emphasized the observation that adjectival ResSPs are not well-formed if their host is an external argument (see Simpson 1983, Rothstein 1983, Levin & Rappaport Hovav 1995, a.o.). For example, the secondary predicate *tired* in (7) cannot be interpreted as a resultative (i.e. entailing that the worker got tired as a result of his pounding the metal). Only a depictive reading might be possible for some speakers, entailing that the worker was tired throughout the event of pounding the metal.[5] Similarly, a resultative on an oblique argument as in (8) is not possible. Out of these two restrictions, the one referring to obliques is stronger: there are languages, such as Mandarin Chinese, in which subjects can host ResSP; in fact, in many of the examples presented in this paper, the argument hosting the ResSP is a subject and even an agent.

[5] A reviewer points out examples such as *The water froze solid* or *The door slammed shut* or contexts of the type *They followed the prisoner to the gate*, in which resultativity appears to be constructed on the subject. The literature has pointed out numerous differences between these contexts and canonical resultatives; for example, the first two are possible in verb-framed languages that do not permit adjectival ResSPs, while the latter is not problematic cross-linguistically and moreover does not exhibit syntactic and semantic features normally associated with resultatives. Observations of this types motivate setting these cases outside the class of proper resultative secondary predicates.

(7) *The worker has pounded the metal **tired**. (under a resultative interpretation)
(8) *The hunter shot at the bears **dead**.

According to the third property, the only way ResSPs can be constructed in human languages is by modification of a matrix predicate which encodes a process. Processes include activities, achievements, and accomplishments (see fn. 2), but not states. As we have already seen in examples such as (2), this requirement is active in English and, therefore, adjectival ResSPs cannot be constructed from stative predicates. The additional examples given below (from Simpson 1983 or Levin & Rappaport Hovav 1995) further strengthen the conclusion that a stative root cannot conflate with a ResSP in English:

(9) English – no ResSPs with statives
a. *Medusa saw the hero into a stone.
(intended: as a result of her seeing him, the hero turned into a stone)
(Simpson 1983: 146, ex. 24)
b. *John stayed/sat/lay bored.
(intended: as a result of his staying/sitting/lying, John got bored;
c. *The botanist smelled the moss dry from across the room.
(intended: as a result of his smelling, the moss became dry)
(Levin & Rappaport Hovav 1995, ex. 65b)
d. *The Loch Ness monster appeared famous.
(intended – the monster got famous as a result of its appearing)
(Levin & Rappaport Hovav 1995, ex. 66a)
e. *John was sick unhappy.
(intended: as a result of his being sick, John got unhappy)

In this paper we are precisely concerned with the problem of stativity. Contrary to the putatively universal property in (5iii), which limits the presence of ResSPs to processes, we see that in Mandarin Chinese stative roots are possible. This split raises various questions. Are we dealing with true statives in Mandarin Chinese? In what sense are resultatives constructed from statives different from English ResSPs, from a formal point of view? We start in Section 3 by addressing the problem of stativity.

3. ResSPs with stative roots in Mandarin Chinese

Mandarin Chinese is an uncontroversial "satellite-framed" language, where ResSPs are robust (Lu 1977, Li & Thompson 1981, Tsao 1990, Li 1990, 1998, Sybesma 1991, 1993, 1999, Cheng & Huang 1994, Zou 1994, Lin 1996, 1998, Lin 2004, Li 2007, 2008, a.o). They also exhibit wider distribution and more complex syntactic frames than their English counterparts, as the rich literature[6] on the topic has shown. One of the crucial differences is the possibility of Mandarin Chinese ResSPs with stative roots (Li 2007, 2008 contains an extensive discussion). The two examples in (3) we started with are

[6] See especially Li (2007, 2008) for an extensive list of references.

repeated below in (10a-b). Other ResSPs with statives are in (10c)-(10f), as well as throughout the paper.

(10) Mandarin Chinese ResSPs with statives

a. Zhāngsān **lèi- wān** le yāo.
Zhangsan tired bend PFV waist.
'As a result of Zhangsan's being tired, his waist became bent.'
(Li 2007, ex.14a, adapted)

b. Tā **zuò-lèi /nì** le.
he sit-tired/bored PFV
'As a result of his sitting, he became tired/bored.'

c. Zhāngsān **è- bìng** le.
Zhangsan hungry sick PFV
'As a result of Zhangsan's being hungry, he became sick.'
(Li 2007, ex.14b, adapted)

d. Tā **kàn-lèi /nì** le.
He see-tired/bored PFV
'As a result of his seeing/looking, he became tired/bored.'

e. Zhāngsān **bìng-huāng** le Lǐsì.
Zhangsan sick nervous PFV Lisi
'Zhangsan's being sick got Lisi nervous.'
(Li 2007: 95, fn. 6, ex.i, adapted)

f. Nà jiàn shì jí- bìng le Zhāngsān.
that CLF matter worry sick PFV Zhangsan
'That matter got Zhangsan sick from his worrying.'
(Li 2007, ex.45a, adapted)

These constructions are surprising when examined against the universal properties assumed to hold in (5), especially (5)iii). At least two questions are apparent: are the main predicates indeed statives? Are we dealing with true ResSPs in these cases, or are these other types of complex predicate constructions, where stativity might not be relevant? We first examine diagnostics which demonstrate the stative character of the roots (subsection 3.1). Then in section 4 we show that these examples also pass resultativity tests.

3.1 True statives

Some researchers have proposed that despite the presence of what look like stative roots, sentences similar to (10) might not, in fact, be counterexamples to the stativity restriction. For example, Li (1998)[7] argues that the predicate *è* 'hungry' in (10c) is an

[7] For this author, ResSPs in Mandarin Chinese require a V1 which is "restricted to activity and achievement-denoting verbs" (Li 1998: 19). Other researchers avoid the issue of stativity by invoking independent factors. For example, Lin (2004: 119) assumes that sentences similar to those in (10) are "spurious verbal compounds" (p. 96) and such "double-state verb compounds…do not describe a complex bi-eventive structure consisting of a causing activity and a result state". The problem is that many of these examples do involve a causing state, as Lin (2004) also notices.

achievement. However, as Li (2007: 11, fn. 11) correctly points out, the resultative complex verb is not interpreted as 'become sick as a result of becoming hungry', but rather as 'become sick after a period of being hungry'.[8] Moreover, when analyzed in isolation, there are three important diagnostics which support the stative nature of these predicates: (i) incompatibility with progressive aspectual markers; (ii) stative behavior under perfective markers and degree material; (iii) no inchoative interpretations. I address each of these diagnostics below.

3.1.1 Stativity and progressive markers

Mandarin Chinese exhibits a progressive marker, which is spelled-out as *zài* (Li & Thompson 1981, a.o.) and which complies with a restriction generally seen with progressives, namely that it cannot attach to states. The examples in (11) illustrate the contrast between states and typical activities. Stative predicates such as *(be) tired, hungry, hot, see,* etc. are not well-formed with *zài*. On the other hand, an activity such as *run* accepts the progressive marker.

(11) States and activities with the progressive marker

a.	*Zhāngsān zài lèi. Zhangsan PROG tired Intended: 'Zhangsan is being tired.'	State
b.	*Zhāngsān zài è. Zhangsan PROG hungry Intended: 'Zhangsan is being hungry.'	State
c.	*Zhāngsān zài rè. Zhangsan PROG hot Intended: 'Zhangsan is being hot.'	State
d.	*/??Zhāngsān zài kàn. Zhangsan PROG see Intended: 'Zhangsan is seeing.'	State
e.	Zhāngsān zài pǎo. Zhangsan PROG run. 'Zhangsan is running.'	Activity

Despite their ill-formedness with the progressive marker, the states illustrated here can host ResSPs. Example (11a) shows the predicate *lei* 'tired', (11b) the predicate *e* 'hungry', (11c) the predicate *rè* 'hot', and (11d) the predicate *kàn* 'see'.

3.1.2 Interactions with the perfective marker *-le*

We now turn to another aspectual marker of Mandarin Chinese, which has given rise to intense debate, namely *le* (Li & Thompson 1981, Sybesma 1999, a.o.). When

[8] See also the examples in (16).

attached to eventive roots, *le* outputs a perfective interpretation, as seen with activity predicate *pǎo* ‘run’ in (12):

(12) Activities and the perfective marker *-le*
Zhāngsān **pǎo le**. Activity
Zhangsan run PFV
‘Zhangsan has run (and now he’s escaped).’

As Mandarin Chinese lacks overt morphology that can disambiguate lexical classes, this marker acts as a reliable test setting (adjectival) stative uses apart from verbal uses. The facts go as follows: as we see in (13), when *-le* is added to a stative root, it blocks the perfective reading, and the predicate must instead be interpreted as inchoative. Moreover, stative predicates are possible with degree markers, but crucially not in the context of *-le*, as the data in (14) show. These splits demonstrate, on the one hand, that roots like *gānjìng* ‘clean’ or *è* ‘hungry’ are stative. On he other hand, they indicate that the marker *-le* is incompatible with degrees when combining with a stative root.

(13) Statives and inchoativity
a. Fángjiān **gānjìng-le**.
room clean INCH
‘The room became clean.’
#‘The room was clean.’
b. Zhāngsān **è -le**.
Zhangsan hungry INCH
‘Zhangsan became hungry.’
#‘Zhangsan was hungry.’

(14) Statives and degrees
a. hěn **gānjìng**(*-le) de[9] fángjiān
very clean PFV/INCH LK room
‘a very clean room’
b. hěn **è** (*-le) de wǒ
very hungry PFV/INCH LK man
‘a very hungry man’

Also note that the stative roots discussed in these examples do not allow degree material when combining with a ResSP, as seen in (15). As we show in the next section, this indicates that resultativity is, in fact, built on the degree component in Mandarin Chinese. The ResSP itself takes the position of the degree, thus no other degree can be added, as a result of the constraint in (5i) which blocks the presence of more than one result in an event. The resultative construction, in turn, is possible with the perfective marker because the latter attaches to the complex *e-bing* ‘hungry-sick’, which, as expected, is not stative –

[9] ‘DE’ is a type of linker needed to connect modifiers to nominals.

as we see in the next section the resultative complex has an internal structure to which gradation and scales contribute delimitation.

(15) Statives under resultatives
*Zhāngsān hěn è- **bìng** -le.
Zhangsan very hungry sick PFV
#'As a result of Zhangsan's being very hungry, he felt sick.'
#'As a result of Zhangsan's becoming very hungry, he felt sick.'

This example points to another important observation: although stative roots are possible with inchoative markers, as in (13), when the statives are part of the resultative construction, the inchoative reading of *-le* is not possible anymore, as illustrated in the additional examples in (16). This indicates that the inchoative constructs telicity in that it entails the presence of an endpoint to the predicate. As the ResSP itself adds an endpoint, the presence of both the inchoative and the ResSP will, once again, result in a violation of the constraint in (5i), which permits only one result in an event.

(16) Resultatives and inchoativity
a. Wǒ kùn- míhú -le.
I sleepy unconscious PFV
'I was so sleepy that I became unconscious as a result.'
#'As a result of me getting/becoming sleepy, I became unconscious.'
b. Zhāngsān è- bìng -le.
Zhangsan hungry sick PFV
'As a result of Zhangsan's being hungry, he became sick'.
#'As a result of Zhangsan's becoming hungry, he became sick.'
c. Tā rè- yūn -le.
He hot faint PFV
'He fainted as a result of feeling/being hot.'
#'As a result of his getting hot, he fainted.'

To summarize, this subsection has provided three diagnostics, namely the incompatibility with the progressive marker *zài*, compatibility with degree material, and restriction to inchoative interpretations with the *le* marker; all these tests support the *stative* character of the main predicates in resultative constructions as those in (10).

Table 1. Stativity diagnostics in Mandarin Chinese

Stativity diagnostics	
Incompatibility with the progressive aspectual marker *zài*	yes
Compatibility with degree material	yes
Interactions with *le* aspectual marker – only inchoativity	yes

3.1.3 Not all statives can construct resultatives

The problem of stative ResSPs is further complicated by the observation that not all roots that would otherwise qualify as stative can construct resultatives. Going through a list of typical stative predicates across languages (Rothmayr 2009, Maienborn 2003, 2007, a.o.), we come across typical states like *admire*, *know*, *feel*, *respect*, *envy*, etc., that cannot merge with result phrases. Various ungrammatical examples are given below:

(17) statives, but no resultatives

a. *Tā bǎ wǒ **xiànmù-kuàilè** -le.
he DOM I admire happy PFV
Intended: 'As a result of his admiring me, I became happy.'

b. *Tā bǎ wǒ **zūnzhòng-kuàilè** -le.
he DOM I respect happy PFV
Intended: 'As a result of his respecting me, I became happy.'

c. *Měigè háizǐ dou **zhīdào-cōngmíng** -le.
every child all know intelligent PFV
Intended: 'As a result of their knowing, all the children got intelligent.'

d. *Wǒmén **xiāngxìn-kuàilè** -le.
we believe happy PFV
Intended: 'As a result of our believing, we became happy.'

e. *Wǒ bǎ nǐ **xiànmù-fènnù** -le .
I DOM you envy angry PFV
Intended: 'As a result of my envying you, you became angry.'

f. *Tā bǎ wǒ **ài- kuàilè** -le.
he DOM I love happy PFV
Intended: 'As a result of his loving me, I became happy.'

If we try to apply the *zài* test, which, as we saw above, signals statives, we notice that ill-formedness arises, as expected. Thus, we have evidence that these predicates must be stative; however, they are different from the other statives in that they do not accept ResSPs. An analysis of ResSPs must explain this fact too.

(18) Stativity tests

a. */??Tā zài xiànmù háizǐ.
he PROG admire child
Intended: 'He is admiring children.'

b. *Tā zài zhīdào.
he PROG know
Intended: 'He is knowing.'

c. *Tā zài bǎ jiàoshòu zūnzhòng.
he PROG DOM professor respect
Intended: 'He is respecting the professor(s).'

d. *Wǒmén zài xiāngxìn.
we PROG believe
Intended: 'We are believing.'

e. */??Tā zài ài.
he PROG love
Intended: 'He's loving.'
f. *Wǒ zài xiànmù.
I PROG envy
Intended: 'I'm envying.'

4. Resultativity diagnostics

This section addresses various diagnostics demonstrating that the examples under scrutiny here are unambiguous resultatives. These are: (i) the presence of both restitutive and repetitive readings (4.1); (ii) mono-clausal *dé*-paraphrases (addressed in 4.2); (iii) constructed telicity (shown in 4.3). These tests set aside ResSPs from other serial verbs, for example so-called "consecutive verbal complexes" of the type 'Zhangsan was hungry and then was sick'. Under the latter the presence of stative roots would not be surprising, but such constructions are not telic (see Li 2007 for further discussion).

4.1 Both restitutive and repetitive readings

A characteristic of ResSPs cross-linguistically is that they give rise to both restitutive and repetitive readings, which can be detected in contexts with the adverbial *again* (Beck and Snider 2001). These interpretive possibilities derive from the complex structure of these constructions. Even if they are mono-clausal, both the root and the resultative component are visible for sentential syntax processes. The two readings are seen in the example below:

(19) Both restitutive and repetitive readings
Tā yòu zuò nì le.
he again sit bored PFV
Lit: 'He again sat bored.'
Restitutive reading (with 'again'): the state of boredom is restored.
Repetitive reading (with 'again'): the eventuality of sitting till bored is repeated.

4.2 Paraphrases with *dé*

Another diagnostic which individualizes resultatives among the serial constructions of Mandarin Chinese is that they can be paraphrased as monoclausal configurations with the *dé* resultative marker (see also Li 2008, a.o.). We present relevant examples with both non-stative roots, as in (20), and with stative roots, as in (21). As Li (2007, 2008) correctly points out, there is evidence that *dé* configurations are monoclausal, from the positioning of the *le* marker. This latter element cannot span across an intervening sentence; therefore, in example (22), the *le* marker must be repeated after each predicate, as the complementizer *erqie* 'but also' and the correlative *budan* 'not only' have

sentential status, in the sense that they link two sentences, and not two predicates at the *v*P or VP level.

(20) Monoclausal paraphrases with *dé*
a. Zhāngsān **kū- shī** le shǒupà. Non-stative root
Zhangsan cry wet PFV handkerchief
'Zhangsan cried the handkerchief wet.'
b. Zhāngsān **kū- dé** shǒupà dōu **shī** le.
Zhangsan cry RES handkerchief all wet PFV
'Zhangsan cried (so much) that even the handkerchief got wet.'

(21) Monoclausal paraphrases with dé
a. Zhāngsān **è- bìng** le. Stative root
Zhangsan hungry sick PFV
'As a result of being hungry, Zhangsan became sick.'
b. Zhāngsān è- dé dà bìng le yīchǎng.
Zhangsan hungry RES big sick PFV one time.
'Zhangsan was so hungry that he got sick.'

(22) Zhāngsān budan **ca- *(le)** zhuozi, erqie **xi- *(le)** yifu.
Zhangsan not only wipe PFV table but also wash PFV clothes
'Zhangsan not only wiped the table, but also washed the clothes.'
(Li 2007: 100, ex. 24, adapted)

Given that the *-le* marker signals monoclausality, it cannot intervene between the two predicates. The examples below illustrate this property with both eventive resultatives, in (23a) and (23b), and stative resultatives, in (23c) and (23d):

(23) Monoclausality
a. Zhāngsān **tuī- kāi** le mén.
Zhangsan push open PFV door
'Zhangsan pushed the door open.'
b. *Zhāngsān tuī **-le** -kāi mén.
Zhangsan push PFV open door
Intended: 'Zhangsan pushed the door.'
c. Zhāngsān **è -bìng** le.
Zhangsan hungry sick PFV
'As a result of his being hungry, Zhangsan became sick.'
d. *Zhāngsān **è -le** -bìng.
Zhangsan hungry PFV sick
Intended: 'As a result of his being hungry, Zhangsan became sick.'

4.3 Constructed telicity

Yet another diagnostic supporting the resultative nature of these constructions is their telicity. Cross-linguistically, ResSP normally allow only telic time adverbials, as seen in (24). Following Vendler (1976), prepositional phrases/adjuncts headed by *in*

signal boundedness (and thus telicity), while *for XP* can only be attached to durative, unbounded predicates. In (25) below, we see that stative roots allow durative adverbials, as expected. The Predicate-ResSP unit in (26), on the other hand, is not compatible with *for* durative adverbials, allowing only the telic ones. In other words, when the Res component is merged with the stative root, the complex must act like a telic structure. As a result, the eventuality of seeing or looking (around) in (25a) can be durative (e.g. looking around for an hour), but in (26a) the complex *see tired* (becoming tired as a result of seeing or looking around) cannot be durative. This demonstrates that examples such as e.g. 26a) are true resultatives.

(24) English
  a. He pounded the metal in an hour/for an hour.
  b. He pounded the metal flat in an hour/*for an hour. [10]

(25) Stative roots are ill-formed with telicity markers
  a. √ Tā kàn le yīgè xiǎoshí.
    he see PFV one hour
    'He saw/looked (around) for one hour.'
  b. *Tā yīgè xiǎoshí jiù kàn le.
    he one hour right after see PFV
    Intended: 'He saw in an hour.'

(26) When results are added to stative predicates, telicity is obligatory
  a. Tā yīgè xiǎoshí jiù kàn lèi le.
    he one hour right after see tired PFV
    'As a result of his seeing, he became tired in an hour.'
  b. *Tā **kàn lèi** yīgè xiǎoshí le
    he saw tired one hour PFV
    'As a result of his seeing, he became tired for an hour.'

Table 2 summarizes the resultativity diagnostics we have introduced in this section.

Table 2. Resultativity Diagnostics

Resultativity diagnostics for res-stative complexes in Mandarin	
Restitutive and repetitive readings	yes
Paraphrase with *dé*	yes
Constructed telicity	yes

In a nutshell, what we see in the data above is that true resultatives in Mandarin Chinese can also be constructed from roots that pass stativity tests when used in isolation. This is unexpected given what languages like English show with respect to ResSP, and also given the general prohibition against resultatives built on states. We also see, on the

[10] The *for* phrase, if possible, forces a reiterative reading of the V-Res, that is the pounding flat eventuality was repeated for the duration of the entire hour.

other hand, that not all roots that pass stativity tests allow resultatives. The question is how to account for these facts. In the next section we review the most prominent accounts proposed for resultatives, from both a semantic and a syntactic perspective, and show that they cannot derive the data.

5. Resultativity cannot be built from stativity

5.1 Resultatives as accomplishments

One of the earliest formal accounts proposed for ResSPs is to be found in Dowty (1979), who takes these constructions to be derived accomplishments, that is processes with a necessary endpoint (see also fn. 2). Constructional resultative meanings are assumed to be mediated by operators with the semantics of CAUSE and BECOME, as in (27):

(27) John wiped the floor clean.
[**wipe´(j,f**) CAUSE BECOME (clean´(**f**))**]**

(Dowty 1979)

Crucially, this framework (and much research in lexical semantics since), sees *states* as semantic primitives, undecomposable and thus incompatible with modification by complex operators. Also given that states are not dynamic, they cannot construct accomplishments via operators such as become[11]. From this it follows that derived resultativity cannot be based on a stative root. Thus, examples such as the English ones in (2) or (9) are predicted to be ungrammatical. But then how are the Mandarin Chinese stative resultatives to be derived?

5.2 Lexical-Semantic approaches

On the lexico-semantic side, Levin & Rappaport (1995) follow the main assumption of Dowty's (1979) that the resultative phrase is taken to map an activity into an accomplishment. In this analysis it is stated explicitly that 'resultative phrases are incompatible with all statives, whether expressed by transitive or unaccusative verbs' (Levin & Rappaport 1995: 61). This type of clash is attributed to the "typology of ontological categories of eventualities"; as we have already mentioned, according to Levin & Rappaport Hovav (1995, and much subsequent work), there *cannot* be an eventuality type defined as a "delimited state". As ResSPs require delimitation, statives cannot merge with them. The only delimited eventualities are accomplishments and achievements, which, however, are always non-stative.

[11] As one reviewer points out, Rappaport Hovav & Levin (1998) show that states can be modified by the operator BECOME and derive achievements. However, resultatives are more complex in that they also involve other pieces of structure (for example, delimitation), blocking statives. This explains why statives are not possible with resultatives in English.

More generally, the restriction against statives is also entailed by accounts which do not postulate a causative component in the composition of ResSPs; the incompatibility arises instead from "temporal dependency" and "coextensiveness" requirements (Rappaport Hovav & Levin 2001) or the homomorphism mapping (Wechsler 2005).

In one of the few works acknowledging the issue of stativity, Li (2007, 2008) builds on Rappaport Hovav and Levin's observations, developing an Event Structure Model which views all resultatives as causatives. On this account, as long as pragmatic restrictions are observed, states can participate in the creation of ResSPs. This is so because they are causing states, following the template below (one of the templates assumed for resultatives):

(28) Complex Causative Event Structure Template
[[**x** <*STATE*> CAUSE [BECOME [**x** or **y** <*STATE*>]]]
(Li 2007: 117, ex. 47b)

However, even if this account predicts that statives should be possible with ResSPs, it does not explain why certain types of statives are blocked, as we have seen in the examples in (17). Here the problem is certainly not a pragmatic one; for example, admiration from others can definitely cause someone to be happy.

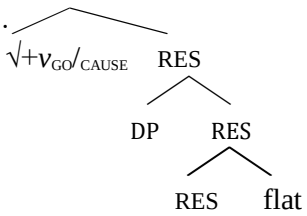
5.3 Syntactic accounts

Under canonical syntactic analyses, resultative interpretations are obtained via a dedicated process of conflation, parametrized cross-linguistically, as in (29).

(29) The grammar {disallows*, allows} conflation of a root with a null light verb during the syntactic derivation.
(Mateu 2011, a.o.)

Building on Talmy (2000), recent instantiations of the syntactic approaches (Snyder 2001, Mateu 2002, McIntyre 2004, Zubizaretta & Oh 2007, Mateu 2011, a.o.) define conflation as a process of direct/external Merge of a root which specifies the supporting event (also dubbed the manner component) with a null light verb expressing {causation/motion} in a constructional or configurational way. A schematic example is given in (30):

(30) Conflation
a. They hammered the metal flat.
b. [They [$_{vP}$[$_{v}$ √HAMMER GO/CAUSE] [$_{SC\ RES}$ the metal flat]]]
(Direct Merger)
c. …



Syntactic accounts in this direction can be applied to stative resultatives as long as suitable types of null light verbs can be identified that support conflation with stative roots, assuming that stative roots are not undecomposable primitives. But simply postulating a GO/CAUSE null verb is not enough; the analysis will run into the same problem faced by Li (2007, 2008), namely impossibility of explaining why only certain types of statives are permitted in ResSPs. Why couldn't GO/CAUSE conflate with all types of statives?

In the next section we underline two important properties of statives: (i) they are not undecomposable primitives; (ii) various types of statives can have distinct internal structures, predicting variation when it comes to the limits of resultativity.

6. Types of resultatives and their interaction with states

This section takes preliminary steps towards a better understanding of the typology of resultatives, such that statives resultatives can be integrated. We point out that a crucial ingredient is uncovering the possible internal structure of various types of statives. We show that three major types of statives are possible under resultatives in the Mandarin Chinese data: (i) statives that contain an event argument (Maienborn 2003, 2007); (ii) statives that contain a causative component (especially psych-statives); iii) statives which encode a scalar change, being lexically associated with a scale. We do not commit to any particular syntactic analysis; as long as the internal complexity of the relevant types of statives is captured, most syntactic configurations can be adapted to stative resultatives.

6.1 Not all states are born equal

Both Maienborn (2003, 2007) and Rothmayr (2009) have demonstrated that, despite appearances, not all states are born equal. Maienborn (2003, 2007) divides states into two important classes: (i) Davidsonian states – which contain an eventuality argument in Davidson's terms: *sit, stand, sleep, wait, gleam*, etc.; (ii) Kimian states, which lack an eventuality argument: *know, weight, own, resemble,* etc. Davidsonian eventualities are described as particular spatio-temporal entities with functionally integrated participants, while Kimian states are abstract objects for the exemplification of a property *P* at a holder *x* and time *t*. The more complex structure in Davidsonian states allows them to combine with manner adverbials and be located in time and space. For our purposes, these properties are important as they provide dynamic structure and delimitation; the possibility is thus open to resultativity. K(iminian) states lack these properties and thus they should not be able to derive resultatives.

Maienborn's (2003, 2007) split provides the right results for predicates like *sit, lie, stand* in Mandarin Chinese (we leave aside here the presentation of all the tests due to lack of space). But it does not derive the relevant distinctions across all the types of resultatives with statives. Two cases are relevant, namely stative psych predicates (such as *worry* vs *fear*) and "adjectival" statives (such as *tired*), which, despite potential

classification as K-states, do allow resultatives. We address psych predicates in subsection 6.2 and "adjectival" statives in subsection 6.3.

6.2 Psych statives

Much discussion (Grimshaw 1990, Pesetsky 1995, etc.) into the nature of psych predicates has emphasized the observation that despite the stative behavior of this class in many languages, its members are of two types: (i) pure statives: *fear*, *love*, *hate*, etc.; (ii) causative Psych predicates formed from statives: *frighten*, *surprise*, *amuse*, *worry*, etc. Importantly, in both English and Mandarin Chinese, result phrases are only possible with those psych statives that contain a causative component. This is not surprising; as we saw above, many accounts postulate the necessity of a causative functional projection in the realization of resultatives.

(31) English stative causative psych predicates and result phrases
a. We worried ourselves sick. stative causative[12]

b. * We feared the bears speechless. stative
(Levin & Rappaport Hovav 1995)

(32) Mandarin stative causative psych predicates and result phrases
a. Nà xiaǒhuǒzi jí bìng le. stative causative
that young guy worry ill PRF
'That young guy got ill as a result of worrying'
b. *Nǔháizǐmén hàipà bìng le shīzi. stative
girls fear sick PRF lion.
Intended: 'As a result of their fearing the lion, the girls became sick.'

6.3 Adjectival statives

What about adjectival statives such as *tired*, *hungry*, etc., which can construct ResSPs, as we have seen in (10)? These classes count as adjectival; in Mandarin Chinese they take the degree word *hěn* 'very', a category not possible with verbal statives, such as *sit*, *worry*, etc. (see Li & Thompson 1981, or Li 2007, 2008, a.o., for exemplification). But they also count as K-states, in Maienborn's (2003, 2007) taxonomy, and a causative component cannot be easily postulated for their internal structure. What allows them to create ResSPs?

We would like to propose that the crucial piece of structure in these adjectival statives that allows ResSP formation is a static scale; the secondary predicate denotes an endpoint to the scale introduced by the adjective. We build on crucial observations by Rappaport Hovav (2008) that scalar change is the basis of a fundamental lexical-aspectual distinction with eventualities, as illustrated in (33):

[12] The psych verb *worry*, if classified as stative, shows that ResSPs can use limited types of statives in English too.

(33) Events and scalar change
  a. verbs denoting events of scalar change: *warm*, *ripen*, *cool*, *fall*, *ascend*, etc.
  b. verbs which denote events of nonscalar change: *play*, *scream*, *laugh*, etc.

The verbs denoting events of scalar change are those that (lexically) specify a scale; crucially, while all dynamic verbs are potentially associated with a scale, "with some verbs this is a lexical property and with others this is not" (Rappaport Hovav 2008: 18). It has also been observed that those verbs that lexically specify a scale can have a telic interpretation even if there is no overt expression that explicitly bounds the scale. Kearns (2007) has shown that this is the case with deadjectival verbs such as *cool*, *lengthen*, *widen*, *smooth*, *flatten*, etc. The most common kind of scale that is lexicalized is a property scale, which generally corresponds to a non-derived adjective. Also, scalar verbs are gradable or entail the potential of change; additionally they are inherently telic or allow telicity alternations.

We build on this important observation to propose that the Mandarin Chinese adjectival statives permit the construction of resultativity as they contain a lexically specified scale, which introduces delimitation. An important parametrization in ResSP emerges: while in English the resultative requires the conflation of a verbal root with a functional projection BECOME/GO, in Mandarin Chinese the relevant functional projection can also be the Scale/Degree component. We can further adapt Rothstein (2004), who discusses type-shifting rules that construct a "change" verbal category (a process) by adding an unspecified result or an initial stage. Importantly, the scale can introduce a specified result.

What the Mandarin Chinese stative resultative constructions imply, in fact, is the existence of a property (*be tired*, *be worried*, *be in a seated position*, etc.) specified with a scale that allows the state's progression through the degrees of the scale until the highest point on the scale is reached and a result is obtained; for example, the highest degree of being hungry has as a result the state of getting sick. A similar explanation can be extended to spatial statives such as *stand/sit* – as the eventuality of *standing* is progressing, the highest degree can be reached such that a result is obtained (being bored, etc.). Stative predicates such as *admire*, *envy*, etc. as in (17), do not have a lexicalized scale, as these are not predicates constructed from non-derived adjectives. Moreover, they do not contain an event argument and are not inherently causativized either. Thus, resultativity cannot be constructed with them. What about psych causatives? As the latter are possible in English too, it must be the causative component which permits the construction of resultativity. We have seen that the CAUSE operator plays a fundamental role in both lexico-semantic and syntactic accounts for resultativity[13].

[13] A reviewer asks about whether other classifications of statives (mental/cognitive, be-statives, possession-statives, etc.) might play a role in the construction of resultatives from statives. Our results have not revealed other stativity parameters that might be relevant. However, this is an important aspect that certainly requires further investigation. Due to the space limitations in this paper, we leave it for further work.

7. Conclusions

The discussion in this paper has shown that stativity can construct resultativity in Mandarin Chinese as long as internal compositional structure is present in statives, such as the Davidsonian event argument, a CAUSE operator or a scale component. Scalar change can introduce delimitation, with the resultative secondary predicate being the end point. This latter strategy is at the core of an important parametrization of resultativity: on the one hand, there are languages of the English type which allow sultativity only with dynamic predicates that undergo conflation with BECOME/GO/CAUSE operators; on the other hand, there are languages like Mandarin Chinese which allow resultatives with non-dynamic predicates as long as a scale component introduces delimitation.

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