1. Introduction
Mandarin “resultative verb compounds” (henceforth RVCs) like zhui-lei ‘chase-tired’ in (1) are known to be ambiguous. Moreover, the degree of difficulty in obtaining these readings is different, with the (a) reading being the easiest to get and the (c) reading the most difficult to obtain.

(1) **Zhangsan zhui-lei-le Lisi.**

Zhangsan chase-tired-Perfective Lisi.
(a) ‘Zhangsan chased Lisi and as a result Lisi got tired.’ (the easiest reading)
(b) ‘Zhangsan chased Lisi and as a result Zhangsan got tired.’
(c) ‘Lisi chased Zhangsan and as a result Lisi got tired.’ (the hardest reading)
(d) *‘Lisi chased Zhangsan and as a result Zhangsan got tired.’

Although there have been attempts to account for the ambiguity of (1) in the literature (Gao 1997; Li 1995; Lin 1996, 1998; Wang 2001), to my best knowledge there has been no discussion of why one reading is easier to obtain than another when ambiguity with respect to RVCs arises. The main purpose of this paper is to argue against the (lexical-)syntactic accounts of the ambiguity in Mandarin RVCs and to propose a lexical-semantic account of the phenomenon. In what follows, I will first show that the (lexical-)syntactic accounts of the ambiguity in Mandarin RVCs (e.g. Gao 1997; Lin 1996, 1998; Wang 2001) are unnatural and unnecessarily complicated, and then I will propose a lexical-semantic account of the ambiguity of sentences like (1). I will show that my lexical-semantic account can not only explain the ambiguity of Mandarin RVCs but also account for the degree of difficulty in obtaining the different readings. In the final section, I will summarize the main arguments of the paper and discuss several theoretical implications of this study.

2. Lin (1998)’s Lexical-Syntactic Account
In accounting for the ambiguity of Mandarin sentences containing RVCs, such as (1), it has become common practice within the (lexical-)syntactic accounts to propose different “D-structures” for the different readings. This can be seen, for example, in work by Gao (1997), Lin (1996, 1998), and Wang (2001). Although these accounts differ in details, the reasoning behind them is the same. That is, the ambiguity must come from different D-structures, though the surface structure is the same. However, as I will demonstrate below, these accounts are unnatural and unnecessarily complicated, and the different D-structures and the complex movements proposed for each reading can hardly have any psychological reality. Due to the limit of space, I will concentrate on one of the recent (lexical-)syntactic accounts, namely Lin (1998). In what follows, I will first give a synopsis of Lin’s account and then point out some problems with this account in particular and the (lexical-)syntactic accounts in general.
2.1 A Synopsis of Lin (1998)’s Account
Lin (1998) treats RVCs as compounds, which are, by definition, words formed in the lexicon. However, she proposes that some types of RVCs are derived in the syntax. More specifically, she argues that (i) object-oriented resultative compounds [e.g. the (1a) reading] are derived syntactically through verb-movement and incorporation, (ii) subject-oriented resultative compounds [e.g. the (1b) reading] are formed in the lexicon and (iii) “causative compounds” [e.g. the (1c) reading] are syntactically derived with an abstract verb CAUS.¹

As far as the (1a) reading is concerned, Lin (1998) proposes the following D-structure.²

(2) D-structure for object-oriented compounds (Lin 1998: 141)

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¹ “Causative compounds,” as used by Lin (1996, 1998) to refer to RVCs which have a reading analogous to the (c) reading of (1), is probably not a good term, because it implies that other types of RVCs are not causative. However, as Cheng & Huang (1994) point out, all RVCs are causative in nature. While I will continue to use “causative compounds” in this paper, the readers are requested to keep in mind the causative nature of all Mandarin RVCs.

² IP is represented as ASPP by Lin because, according to her, “the only overt inflectional category [in Chinese] is aspect” (Lin 1998: 98).
The structure in (2) is obviously complex, but Lin points out that it has been simplified in one respect. That is, because lei ‘tired’ is unaccusative (or “ergative” in the terms used by Lin), its only argument (Lisi in this case) is base-generated in the position of the verb’s complement, and then moved to the subject position of the result clause at the “S-structure” to receive Case. To get the surface word order in (1) from (2), Lin proposes the following operations in addition to the movement of Lisi, which is not shown in (2). First, the lower verb lei ‘tired’ has to be incorporated into the higher verb zhui ‘chase’ to allow the aspect marker -le to be suffixed to it. Second, the aspect marker -le lowers to V1. Third, Zhangsan in NP2 has to move to the Spec of ASPP to get Case.

In (2), NP3 “is occupied by a null topic bound variable, which has to be bound outside the domain of its operator in NP1,” (Lin 1998: 119). According to Lin, what binds the variable in NP3 position is the discourse topic, which is null and occurs outside the domain of the operator. Therefore, what the D-structure in (2) represents is the reading that Zhangsan chased somebody or something and as a result Lisi got tired. The chasee, which is syntactically a variable, is only pragmatically identified as Lisi for the following reason. Pragmatically, it is only possible that the one who gets tired (Lisi in this case) is either the chaser or the chasee. As Zhangsan has been specified to be the chaser, Lisi must be understood as chasee.

Lin further says that four combinations of lexical NPs and empty categories in (2) are possible. One of them is the one represented by the tree above. That is, the direct object is null but the embedded subject is lexical. Lin states that another combination is that “the direct object in NP3 position is a lexical NP, say Lisi, while the embedded subject in NP4 position is an empty pronominal pro, which is controlled by the nearest c-commanding NP Lisi” (1998: 121). This combination is shown in (3) on the next page.

Concerning the (1b) reading, since it is subject-oriented and thus lexically formed, Lin proposes the representation in (4) on the next page, which involves theta-identification and feature percolation.

In (4), the “Theme” argument of lei identifies with the Agent role of V1 zhui. After theta-identification, the argument structure <Agent,-Theme, Patient> then percolates to the compound zhui-lei and becomes the argument structure of the whole compound. Then the identified Agent,-Theme, role is assigned to the subject Zhangsan, and the “Patient” role is assigned to the object Lisi.

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3 Two things need to be pointed out here. First, Lin (1998: 159-163) argues that subject-oriented RVCs call for a lexical account because of the lexical idiosyncrasies and arbitrary gaps found with their formation and use. However, I think there are natural explanations for these so-called “idiosyncrasies” and “arbitrary gaps.” Due to the limit of space, I have to leave out any further discussion of the matter here. The second thing that needs to be pointed out is that Lin (1998: 171) in fact shows the derivation of the subject-oriented RVC kan-lei ‘chop-tired’ in Zhangsan kan-lei-le shu [Zhangsan cut-tired-Perfective tree] ‘Zhangsan cut trees and as a result he got tired.’ In (4) I have kept Lin’s derivation for the sentence mentioned and changed kan-lei ‘chop-tired’ to zhui-lei ‘chase-tired’ and changed shu ‘tree’ to Lisi. I believe (4) is an accurate representation of Lin’s derivation for the (1b) reading.

(4) Representation of the (2b) reading (Lin 1998: 171)
As for the (1c) reading, Lin also proposes a syntactic derivation as she does for the (1a) reading. The D-structure she proposes for the “causative compound” *zhui-lei* is shown in (5) below.


![D-structure diagram]

According to Lin (1998: 206), VP₂ in (5) is headed by the lexically derived subject-oriented compound *zhui-lei* because its logical subject is not only the chaser but also the one who got tired. NP₅, the object of *zhui-lei*, is occupied by a null topic bound variable, which has to be bound outside the domain of its operator in NP₁. What binds the variable in the NP₅ position is the discourse topic, which adjoins to CP and is outside the domain of the operator in the Spec of
The subject is often the topic when there is no overt topic present. When this occurs, the variable that is bound by the topic must also refer to the subject. That is, the topic, i.e. the subject Zhangsan, binds the variable in NP5 and receives the theta-role Patient from the compound. As a result, the Causer Zhangsan also appears to be the Patient.

So far, we have only shown Lin’s account of the readings allowed in (1). To account for the bad reading of (1), Lin (1998) proposes the D-structure in (6) on the next page.

To get the (1d) reading, pro in NP6 in (6) has to be controlled by the Causer Zhangsan. However, the nearest NP which c-commands pro is Lisi in the NP4 position. Consequently, lei ‘tired’ cannot be predicated of Zhangsan and the (1d) reading thus fails to be obtained.

### 2.2 Problems with Lin (1998)’s Account and the Syntactic Accounts in General

There are several problems with Lin (1998)’s account described above. The first and the most serious one is that the D-structures proposed for the (1a, 1c and 1d) readings and the movements and incorporations involved in getting the surface form are too complex to have any psychological reality. For example, the D-structure for the causative compound in (5) involves two clauses, although the S-structure of the sentence shows no sign of double clauses. For another example, from the D-structure in (2) to the S-structure in (1), at least four movement operations have to be performed, namely, the movement of the argument of lei ‘tired’ to the subject position of the result clause, the movement of Zhangsan in NP2 to the Spec of ASPP, the movement of the lower verb lei ‘tired’ so as to be incorporated into the higher verb zhui ‘chase,’ and the lowering of the aspect marker -le to V1. To make the derivation work and to make things more complicated, the incorporation operation has to precede the operation of the lowering of the aspect marker -le. Second, it is not clear how Lin’s account can explain why the first three readings in (1) are not equally obtainable. It is unreasonable to assume that the number of the syntactic nodes of the D-structure determines the difficulty of the sentence. Even though this assumption is right, Lin’s account in fact predicts that the second reading is easier to obtain than the other two because the subject-oriented RVCs are lexically formed on Lin’s account and thus have a much simpler syntactic representation than the object-oriented RVCs and the causative compounds. Third, the purpose of the structure in (3) is not clear from Lin’s account. In particular, if (2) is the D-structure for the (1a) reading, why is Lisi in (3) base-generated in the NP3 position, not in the NP4 position? Fourth, Lin (1998) uses both “Theme” and “Patient” in (4), but it is not clear about their difference.

While the latter two problems with Lin’s account are account-specific, the first two problems are also true of other syntactic accounts of the ambiguity of some sentences containing RVCs (e.g. Gao 1997; Wang 2001). Besides this, the complicated D-structures and movements proposed make the acquisition of Mandarin RVCs tremendously difficult from the syntactic perspective. However, on my view the difficulty of RVCs lies not in syntax, but in the semantic complexity and the combination of the morphemes which make up an RVC. In a word, the syntactic accounts of the ambiguity in Mandarin RVCs are unnatural and unnecessarily complicated.
(6) D-structure for the (1d) reading (Lin 1998: 221)
3. An Alternative: A Lexical-Semantic Account

In this section, I will propose a lexical-semantic account of the ambiguity of sentences like (1). I will argue that the ambiguity falls out of the interaction of the two roles (“Causer” and “Causee”) licensed by the complex event denoted by an RVC and the theta-roles licensed by the two verbal elements of an RVC, and that the degree of difficulty in obtaining the different readings results from iconicity and one processing strategy.

As pointed out by Pustejovský (1991) and Levin & Rappaport Hovav (1995), among others, the English resultative construction expresses a complex event. The same can be said of RVCs in Mandarin. The first component of an RVC (V1) expresses a causing event and the second component (V2) a resulting event. The two components together express a complex event. Given that all Mandarin RVCs are causative in nature (Cheng & Huang 1994), it can be said that the complex event expressed by RVCs involves two participants, with one bearing the Causer role and the other the Causee role. Then in the case of an RVC which consists of a transitive V1 and an intransitive V2, there arises the question of which participant can function as the Causer argument of the RVC and which can function as the Causee argument, because in this case V1 in its separate use needs two arguments, and V2 one argument.

As far as the RVC zhui-lei ‘chase-tired’ in (1) is concerned, the first element zhui is a transitive verb that requires two arguments, which, I assume, bear the Agent role and the Patient role, respectively. And the second element lei is an unaccusative verb which requires an argument bearing the Patient role. So the question now assumes the following form: which of the three arguments can function as the Causer argument of the whole compound and which can function as the Causee argument. Since the resulting event denoted by V2 lei is a change of state event, it is reasonable to assume that what lei is predicated of must bear the Causee role. In other words, the sole argument licensed by V2 will become the Causee argument of the whole compound. Then how about the Causer argument? It seems that there is no a priori requirement that the Agent argument or the Patient argument must serve the Causer argument of the whole RVC. Furthermore, given that the whole compound licenses two event roles which are borne by two event participants and that there are two arguments licensed by V1 and one licensed by V2, argument-identification is necessary. The Patient argument of lei in zhui-lei can be identified with either the Agent argument or the Patient argument of zhui, and the Causer argument of the whole compound can be either the Agent argument or the Patient argument of zhui. Logically speaking, this gives rise to four possible combinations, which are represented in the four potential readings of (1).

The first logically possible combination is that the Agent argument of zhui serves as the Causer argument of the whole compound, and the Patient argument of zhui is identified with the Patient argument of lei, which serves as the Causee argument of the whole RVC. This combination is shown in (7). It results in the first reading of (1), that is, ‘Zhangsan chased Li and as a result Lisi got tired.’ As will be shown later, this is the most natural way of realizing the Causer and Causee arguments and it is not surprising that Mandarin allows this reading.
(7) The (a) reading of (1)

\[
\begin{array}{c}
 X & zhui & lei-le & Y \\
 \uparrow & & & \uparrow \\
 \langle \text{Agent}_1, \text{Patient}_2 \rangle & <\text{Patient}_5> \\
 \text{Zhangsan} & \text{Lisi}_i & \text{Lisi}_i \\
 \text{Causer} & \text{Causee} \\
\end{array}
\]

The second logically possible combination is that the Agent argument of *zhui* serves as the Causer argument of the whole compound, and the same argument is identified with the Patient argument of *lei*, which serves as the Causee argument of the whole RVC. This combination is shown in (8). It results in the second reading of (1), that is, ‘Zhangsan chased Li and as a result Zhangsan got tired.’ This reading is also allowed in Mandarin.

(8) The (b) reading of (1)

\[
\begin{array}{c}
 X & zhui & lei-le & Y \\
 \uparrow & & & \uparrow \\
 \langle \text{Agent}_1, \text{Patient}_2 \rangle & <\text{Patient}_5> \\
 \text{Zhangsan}_i & \text{Lisi} & \text{Zhangsan}_i \\
 \text{Causer} & \text{Causee} \\
\end{array}
\]

In the third logically possible combination, as shown in (9), the Patient argument of *zhui* serves as the Causer argument of the whole compound, and the Agent argument of *zhui* is identified with the Patient argument of *lei*, which serves as the Causee argument of the whole RVC. This combination is also allowed in Mandarin, and it gives rise to the third reading of (1), that is, ‘Lisi chased Zhangsan and as a result Lisi got tired.’

(9) The (c) reading of (1)

\[
\begin{array}{c}
 X & zhui & lei-le & Y \\
 \uparrow & & & \uparrow \\
 \langle \text{Agent}_1, \text{Patient}_2 \rangle & <\text{Patient}_5> \\
 \text{Lisi}_i & \text{Zhangsan} & \text{Lisi}_i \\
 \text{Causer} & \text{Causee} \\
\end{array}
\]
The final logically possible combination is that the Patient argument of *zhui* serves as the Causer argument of the whole compound, and the same argument is identified with the Patient argument of *lei*, which serves as the Causee argument of the whole RVC. This combination is shown in (10), and the reading resulting from this combination, namely, the (1d) reading ‘Lisi chased Zhangsan and as a result Zhangsan got tired,’ is not allowed in Mandarin.

(10) The (d) reading of (1)

\[
\begin{array}{c}
X \quad zhui \quad lei-le \quad Y \\
\text{<Agent}_{1}, \text{Patient}_{2}> \quad <\text{Patient}_{3}> \\
\text{Lisi} \quad \text{Zhangsan}_{i} \quad \text{Zhangsan}_{i} \\
\text{Causer} \quad \text{Causee}
\end{array}
\]

Note that the four different combinations result in the same surface form. On the assumption that the Causer role is thematically higher than the Causee role and that the thematic hierarchy of the theta-roles must align with the structural prominence of the syntactic arguments (Grimshaw 1990; Jackendoff 1972, 2002; Li 1990, 1993, 1995), the Causer argument will be realized in the subject position and the Causee argument in the object position. In all the logically possible readings of (1), *Zhangsan* is realized in the subject position and *Lisi* in the object position, and the sentence form resulting from this realization is the form in (1).

Therefore, on my account the four logically possible readings of (1) falls out of the interaction of the Causer and Causee roles licensed by the complex event denoted by an RVC and the theta-roles licensed by the two verbal elements of an RVC. Now it is time to ask why the first three readings in (1), which are allowed in Mandarin, are not equally obtainable, and given the readings allowed, why the fourth logically possible reading is not allowed. The answer to these two questions, I think, lies in the consideration of iconicity and one processing strategy below.

The processing strategy I will propose is called the Animate Subject as Agent or Experiencer Strategy, which goes as follows:

(11) Animate Subject as Agent or Experiencer Strategy (ASAES)

Unless there is any other evidence, interpret the animate subject as the Agent or Experiencer of the verb or verb compound.

“Other evidence” in (11) is of three types. The first type is contextual cues; the second is structural cues, e.g. the passive morpheme; and the third type is related to the principle below.

(12) Intransitive Subject as Patient Principle (ISPP)

The subject of an intransitive verb or verb compound which encodes a change of state must be interpreted as Patient.
There is a lot of evidence for the strategy in (11). For example, in a simple transitive sentence in (13), the subject has to be interpreted as Agent because its referent is animate and the verb in the sentences requires an Agent argument and a Patient argument. Crucially, (13) cannot mean ‘Lisi killed Zhangsan.’

(13) Zhangsan sha-le Lisi.
Zhangsan kill-Perfective Lisi.
‘Zhangsan killed Lisi.’

For another example, the subject NP ta fuqin ‘his father’ in (14) is interpreted as Experiencer, as its referent is animate and the verb in the sentence requires an Experiencer argument and a “Stimulus” argument. Crucially, (14) cannot mean ‘He loves his father.’

(14) Ta fuqin ai ta.
he father love he
‘His father loves him.’

Furthermore, the ungrammaticality of (15) given in Fellbaum 1986 shows that the strategy in (11) is at work. This is because the middle construction requires the parser to interpret the subject of (15) as Patient, but the Animate Subject as Agent or Experiencer Strategy requires that the subject be interpreted as Agent, given that handle, in its apparently intransitive use, is not a verb encoding a change of state. The conflict between these two requirements results in the ungrammaticality of the sentence.

(15) *The boss handles easily. (Fellbaum 1986: 12)

Now let’s come back to the different readings of (1). Given the Animate Subject as Agent or Experiencer Strategy, we should expect that the first two readings should be easier to obtain than the other two logically possible readings. This is because in the first two readings the subject is interpreted as the Agent argument of zhui ‘chase,’ thus obeying the strategy in (11). However, in the other two readings Zhangsan is interpreted as the Patient argument of zhui, thus violating the Animate Subject as Agent or Experiencer Strategy.

Then the remaining questions are why the first reading is easier to get than the second reading, and why the fourth logically possible reading is not allowed. I think the answer to the first question is related to iconicity. Recall that in the first reading the Agent argument of the first subevent denoted by the first verbal element of the RVC is realized as the Causer argument of the whole compound, and the Patient argument of V1 is identified with the Patient argument of V2, which is realized as the Causee argument of the whole RVC. This realization of the Causer and Causee arguments is iconic to the complex event denoted by the whole compound. Therefore, the reading as a result of this realization is the easiest one.4

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4One may argue that the (1a) reading is easiest to obtain simply because the object-oriented reading of Mandarin sentences containing RVCs are the most frequent one encountered. However, it is not clear to me whether the frequent occurrence of the object-oriented reading is because of the natural way of realizing the Causer argument and Causee argument of the compound, or vice versa.
As for why the fourth reading is not allowed in Mandarin, I think this is not due to any syntactic reasons but to the fact that this reading is the reverse of the (a) reading. In the (a) reading, Zhangsan chased Lisi and as a result Lisi got tired, and in the (d) reading, Lisi chased Zhangsan and Zhangsan got tired. Although human languages tolerate ambiguity to some extent, they seem to ban this kind of ambiguity, presumably for the purpose of communication. In fact, the unavailability of the reading ‘Lisi killed Zhangsan’ for (13) and the unavailability of the reading ‘He loved his father’ for (14) are, to a large extent, due to this ban. If this explanation is on the right track, then given that the (a) reading of (1) is allowed in Mandarin, it is reasonable for the language to ban the (d) reading.

To summarize, the four logically possible readings of (1) fall out of the interaction of the Causer and Causee roles licensed by the complex event denoted by an RVC and the theta-roles licensed by the two verbal elements of an RVC. The degree of difficulty in obtaining the first three readings of (1) results from iconicity considerations and the working of the Animate Subject as Agent or Experiencer Strategy. The (1a) reading is easiest to obtain because it not only reflects the most natural way of realizing the Causer and Causee arguments of the compounds, but also conforms to the Animate Subject as Agent or Experiencer Strategy. On the other hand, the (1c) reading is the most difficult to get because it is not only partly in opposition to the natural way of realizing the Causer and Causee arguments, but also in violation of the interpretative strategy in (11). Therefore, the lexical-semantic account I proposed can not only explain the ambiguity of Mandarin RVCs but also account for the degree of difficulty in obtaining the different readings. Compared with the (lexical-)syntactic account, my account is more natural and more plausible.

4. Summary and Theoretical Implications

In this paper, I have argued that the (lexical-)syntactic accounts of the ambiguity in Mandarin RVCs are unnatural and unnecessarily complicated. In particular, the D-structures proposed for the different readings and the movements and incorporations involved in deriving the surface form are too complex to have any psychological reality. I have also argued that the ambiguity of some sentences containing RVCs can be accounted for by recognizing the interaction of the Causer and Causee roles licensed by the complex event denoted by an RVC and the theta-roles licensed by the two verbal elements of an RVC. Finally, I have argued that the degree of difficulty in obtaining the different readings of (1) results from iconicity considerations and the working of the Animate Subject as Agent or Experiencer Strategy. This explanation is closely tied to my lexical-semantic account of the ambiguity of (1).

This study has the following theoretical implications. First, division of labor should be maintained and syntax should be made simpler. It has become common practice for many generative linguists to propose abstract and complex underlying structures (and then propose complicated movements to derive the surface form). “Regrettably, such strategies have become so commonplace in certain circles of generative syntax that many linguists no longer recognize

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5 One may argue that the (1c) reading ‘Lisi chased Zhangsan and as a result Lisi got tired’ is the reverse of the (1b) reading ‘Zhangsan chased Lisi and as a result Zhangsan got tired.’ Then given the (1b) reading is allowed, why isn’t the (1c) reading banned? I think the answer to this question is intrinsically related to the fact that the (1a) reading is the most natural reading of Zhangsan zhui-lei-le Lisi, while the (1d) reading is the most natural reading of Lisi zhui-lei-le Zhangsan. It is probably because these two readings are the first coming to a speaker’s mind that the expressing of the two readings in the same form Zhangsan zhui-lei-le Lisi is not allowed. On the other hand, the (1b) reading of Zhangsan zhui-lei-le Lisi is not the most natural reading of (1), and it is probably because of this that it is more tolerable to use the same form to express this reading and its reverse reading, namely the (1c) reading.
their unnaturalness; indeed they may even think highly of the analysis on the grounds that it shows us more about the abstractness of Universal Grammar” (Jackendoff 2002: 169). On the other hand, many linguistic phenomena, such as the ambiguity of some Mandarin sentences with RVCs, can have a better and more natural explanation by paying more attention to semantics and pragmatics, because the complexity of some of these phenomena lies not in syntax, but in semantics. Second, both the thematic roles licensed by a verb and the roles licensed by the combination of the components of an RVC or by a construction need to be recognized. Finally, event complexity, argument structure, and syntactic structure interact in principled ways. In the case of RVCs, the complex event denoted by an RVC requires a Cause argument and a Causee argument, both of which have to be syntactically realized. And the realization of these two arguments has to conform to the alignment requirement that the thematic hierarchy of the theta-roles (in this case, the two event roles licensed by an RVC) must align with the structural prominence of the syntactic positions.
References


