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Input, triggering and poverty of the stimulus in the second language acquisition of Japanese passives

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This article adopts an input perspective in examining a poverty-of-the-stimulus (POS) learning situation in second language acquisition (SLA). Analysis of grammaticality judgement data from 81 English-speaking and 85 Chinese-speaking learners of Japanese isolates triggering input that informed English learners of subtle semantic properties of the *ni* direct passive underdetermined by second language (L2) input. The study shows a sufficient correlation in the case of English learners between acquisition of the *ni* direct passive's triggering properties (available through input) and acquisition of its POS properties (unavailable through input). Importantly, those properties are direct consequences of affectivity, an underlying semantic property of the *ni* direct passive. That correlation does not obtain in the case of Chinese learners due to a positive first language (L1) effect. Additional corroborating evidence comes from acquisition of another Japanese passive, the *ni yotte*, for which no correlation was found between its non-triggering and non-POS properties for either English or Chinese learners as those properties are available through input. The article proposes that English learners' computation of a target-like conceptual representation of the triggering input leads to the restructuring of their lexical-conceptual representation of the *ni* direct passive.

Keywords: second language acquisition, poverty of the stimulus in L2, triggering input in L2, L2 lexical conceptual structure, Japanese passives

I Introduction

In generative grammar-based second language acquisition (SLA) there is growing recognition of the need for further, systematic study of input (Carroll, 2001; Gregg, 2001). Studies available thus far have concentrated on the effectiveness of positive or negative input in the acquirability of second language (L2) forms or properties. Inagaki (2001; 2002) suggests that L2 positive evidence must be both available and robust (frequent and unambiguous) for learners' utility; Trahey and White (1993) and Trahey (1996) examine the effectiveness of various input types and ways of input provision on re-setting a verb movement parameter value; a series of papers by White (1991; 1992) and Schwartz and Gubala-Ryzak (1992) debate the utility of negative evidence in L2 verb movement parameter re-setting; and Carroll and Swain (1993) consider the effectiveness of negative input of differing degrees of explicitness.¹ The present study examines the articulation of input and acquisition where typically it has been found weakest: in a poverty-of-the stimulus (POS) situation. Using grammaticality judgement data on English and Chinese learners' acquisition of the Japanese *ni* direct and *ni yotte* passives, the analysis isolates triggering input that informed English learners of *ni* direct passive properties underdetermined by input. The article proposes that the relevant input triggered the restructuring of English learners' lexical-conceptual representation of the *ni* direct passive.

Learning situations wherein information necessary for acquisition cannot be reliably extracted from input have proven instrumental in advancing the epistemology of L2 knowledge representation. They appear in an extensive array of semantic or lexico-semantic studies, including, among others, Dekydtspotter *et al.* (1997), Dekydtspotter *et al.* (1999/2000), Slabakova (1999; 2003), Dekydtspotter and Sprouse (2001), Dekydtspotter *et al.* (2001), Montrul and Slabakova (2002) and Slabakova and Montrul (2002; 2003) (for overviews, see Juffs, 2000; White, 2003). Unsurprisingly, no empirical relationship has been established between input and the L2 learning outcomes examined in those studies.² Dekydtspotter and Sprouse (2001: 16), for instance, found it 'unlikely

¹ For a different take on input, see Carroll's (2005, reprinted from 1999) investigation of beginning learners' initial sensitivity to and utility of phonological, morphological and semantic cues in auditory stimuli when learning French gender attribution.

² However, for examination of a correlation between the difficulty learners experience arriving at L2-like semantics-syntax correspondences for English verbs and the frequency of verbs in textbook materials for English as a second language, see Juffs, 1998.

that the input could be rich enough to reliably (i.e. measurably) inform learners' of the asymmetry in possible interpretations of French adjectival restrictions of *wh*-quantifiers with respect to tense. They argue that English learners' acquisition of those properties resulted from the interaction of a relevant French functional lexicon acquired by the learners, operations of the universal human language computational system, and a universal syntax–semantics interface.

When an L2 property is acquired in the absence of immediate evidence there nevertheless must exist some input that informs learners of an underlying property enabling the learning. At issue is how directly and particularly the acquired property and that input are related to the underlying property. In the epistemology-oriented studies noted above, the two are indirectly and generally related to an underlying property. But when the relation is direct and particular enough, it should be possible to identify a learning correlation and, on the basis of that, isolate the triggering input, as hypothesized in the following: Suppose a semantic property, A, of an L2 form is absent from input, while another property, B, of the same form is present; and learners cannot arrive at knowledge of A or B via their first language (L1) grammar or by general learning principles.³ Moreover, both properties are direct, narrowly-constrained consequences of the L2 form's underlying property which is absent from learners' L1 grammar. Then learners can acquire the input-unavailable property A as a result of their having derived knowledge of the form's underlying property through acquisition of input-available property B. Consequently, it should be possible to find evidence for a learning correlation between properties A and B. Existence of that correlation can be corroborated with evidence that there is no learning correlation between two semantic properties, C and D, of a linguistic form similar to that exhibiting A and B. Properties C and D of the second linguistic form are counterparts to properties A and B of the first form, except that both C and D exist in input.

Those learning situations are locatable in English and Chinese learners' acquisition of two Japanese passive types, the *ni* direct and the *ni yotte*. The study shows that English learners with sensitivity to the

³ The learning situation for property A constitutes a POS problem as it involves underdetermination of a subtle, abstract L2 property in terms of L2 input, learners' L1 grammar and explicit information provided in instruction which feeds into general learning principles (White, 2003: 22–23). See also Thomas' (2002) historical overview of the poverty-of-the stimulus argument and Carroll's (2001: Chapter 6) critique of the logical problem of SLA. Hawkins (2001) discusses limitations in studies on poverty-of-the stimulus in SLA.

input-unavailable properties of the *ni* direct passive (termed ‘POS’ properties), had already acquired knowledge of its input-available properties (termed ‘triggering’ properties). Crucially, both the POS and the triggering properties are direct and particular consequences of *af-fectivity*, the *ni* direct passive’s underlying semantic property lacking in the English passive. Although corroborating that finding in English learners, the study shows the same correlation does not obtain in the case of Chinese learners due to a positive L1 effect. Furthermore, data on the acquisition of the *ni yotte* passive show no correlation between its two properties, termed ‘non-triggering’ and ‘non-POS’, for either English or Chinese learners. Those properties result from the *ni yotte* passive’s lack of affectivity and both are available to learners through input. Importantly, the fact that the *ni* direct and *ni yotte* passive sentences used in the study are minimal or near minimal pairs makes data from the two learning situations comparable.

The article concludes with a discussion of how learners acquired the *ni* direct POS and the *ni yotte* non-POS properties. I propose that the triggers for those interlanguage (IL) grammar changes are located in the conceptual representations of relevant sentences of both passives. Learners acquired those properties by computing a target-like conceptual representation of the relevant input, with affectivity consequently included in the lexical–conceptual structure (LCS) of the *ni* direct passive verb and excluded from the LCS of the *ni yotte* passive affix.⁴

II Japanese, English, and Chinese passives⁵

Three passive types occur in Japanese: the *ni* direct, the *ni yotte* and the *ni* indirect. A single passive type exists in English,⁶ with two types in

⁴ An anonymous *Second Language Research* reviewer notes a connection between the present study and the Input Processing model (VanPatten, 2002; 2004; VanPatten *et al.*, 2004), which stresses the critical role of semantico-conceptual representations in learning. Studies in that model provide empirical evidence of an initial form–meaning connection made through semantics to syntax mapping when learners understand the meaning of the linguistic form. For a critique of the model, see DeKeyser *et al.*, 2002; Carroll, 2004.

⁵ For L2 studies on the acquisition of Japanese passives by English learners, see Watabe *et al.*, 1991; Tanaka, 1992; 1993; Hara, 2002; Hara and Ma, 2004; by Chinese learners, see Feng, 1993; Yang and Akahori, 1998; Hara and Ma, 2004. For L2 studies on acquisition of the English passive by Japanese learners, see Watabe *et al.*, 1991; Masuko, 1996; Izumi and Lakshmanan, 1998; by Chinese learners, see Han, 2000.

⁶ Following Jackendoff (1990) and Emonds (2000), this article adopts the analysis that the difference between the *be* and the *get* passives is introduced at the Phonetic Form level. For an analysis of the *be* and

Chinese: the *bei* short and the *bei* long. (For the Japanese passives, see, among others, Kuno, 1973; Kuroda, 1979; Shibatani, 1990; Hoshi, 1994; 1999; Watanabe, 1996; for the English passive, see Jackendoff, 1990; Emonds, 2000; for the Chinese passives, see Li and Thompson, 1981; Ting, 1995; Shi, 1997.) Table 1 classifies the passives on the basis of affectivity (discussed below) and syntactic passivization. Excluding the Japanese *ni* indirect and the Chinese *bei* long passives not treated in this study, all others involve passivization. Semantically, only the *ni* direct and the Chinese *bei* short resemble one another in affectivity, a property absent from both the *ni yotte* and the English passive. Example sentences follow:

- 1) Japanese passives:
 - a. *Ni* direct passive:
 John-ga Bill-ni but-are-ta.
 John-NOM Bill-by hit-PASS-PAST
 'John was affected by being hit by Bill.'
 - b. *Ni yotte* passive:
 John-ga Bill-ni yotte but-are-ta.
 John-NOM Bill-by hit-PASS-PAST
 'John was hit by Bill.'
- 2) English passive:
 John was hit by Bill.
- 3) Chinese *bei* short passive:
 Zhangsan bei da-le.
 Zhangsan PASS hit-ASP
 'Zhangsan was hit.'

The sole surface difference between the *ni* direct sentence (1a) and the *ni yotte* sentence (1b) is the morphological marking of *ni* vs. *ni yotte*. Looking past that, Kuroda (1979), inspired by Inoue (1976), detected a more fundamental distinction, arguing that the *ni* direct passive carries

Table 1 Japanese, English, and Chinese passives

	Passive types	Affectivity	Passivization
Japanese	<i>ni</i> direct	+	+
	<i>ni yotte</i>	-	+
	<i>ni</i> indirect	+	-
English	<i>be/get</i>	-	+
Chinese	<i>bei</i> short	+	+
	<i>bei</i> long	+	-

get passives as alike with respect to the passive subject position, see also Haegeman, 1985; Fox and Grodzinsky, 1998. For an alternative analysis of the *get* passive arguing that its syntactic subject position is not theta role-free, see Lasnik and Fiengo, 1974.

an affective connotation lacking in the *ni yotte* (see also Masuoka, 1982). Affectivity in the *ni* direct connotes an entity or person (denoted by the syntactic passive subject) under the ‘influence’ of the logical subject of the passivized verb. That is, the syntactic passive subject experiences a direct effect from what has been performed by the logical subject (Inoue, 1976: 83).⁷

Because of the affectivity constraint on the *ni* direct, when its passive subject is inanimate it is compatible with a perfective reading (which facilitates the passive’s affectivity reading),⁸ but incompatible with non-perfective readings (which hinder an affectivity reading). That contrast in reading compatibility is manifested in verbal affix *ta*-marked *ni* direct passive sentences. That affix signifies either a perfective or a simple past reading and, depending on how it is interpreted, an inanimate subject *ni* direct is rendered either grammatical (4a) or ungrammatical (4b):

- 4) a. Perfective reading:
 Bosnia no mati-ga NATO-gun-ni koogeki-s-are-ta.
 town in Bosnia-NOM NATO-by attack-PASS-PERF
 ‘A town in Bosnia is in the state of having been affected by an attack by NATO.’
- b. Past reading:
 *Hamlet-wa Shakespeare-ni kak-are-ta.
 Hamlet-TOP Shakespeare-by write-PASS-PAST
 ‘Hamlet was written by Shakespeare.’

The verbal construction ‘gerund + *iru*’ also gives rise to a similar grammaticality contrast for an inanimate subject *ni* direct passive. That construction expresses either a perfective or a progressive reading, with an inanimate subject *ni* direct passive grammatical in a perfective reading (5a), but ungrammatical in a progressive reading (5b):

- 5) a. Perfective reading:
 Mondai no zyuuyoosee-wa kokumin-ni yoku
 the importance of the issue-TOP the people-by fully
 rikai-s-arete iru.
 understand-PASS-PERF
 ‘The importance of the issue is in the state of having been affected by being

⁷ Rather than defining affectivity, Kuroda (1979) demarcates various linguistic contexts whose semantic effects enhance affectivity in the *ni* direct passive. It must be stressed that although affectedness is related to affectivity, the former is a subset of the latter; for in-depth discussion of affectedness, see Tenny, 1992: 8–11.

⁸ According to Shirai (2000: 335, 342), the perfective reading of a sentence entails construing the sentence not only in terms of the event or state denoted by its verb but also in light of the relevance of that event or state to the current situation at the time of speech.

fully understood by the people.’

b. Progressive reading:

*Kono atarasii computer no program-wa Paul-ni tukur-arete **iru**.
 this new computer program-TOP Paul-by make-PASS-PROG
 ‘This new computer program is being made by Paul.’

In contrast, the inanimate subject *ni yotte* passive is compatible with both perfective and non-perfective readings since affectivity is absent from it. The *ta ni yotte* passive with an inanimate subject is grammatical in perfective and past readings:

6) a. Perfective reading:

Bosnia no mati-ga NATO-gun-ni yotte koogeki-s-are-ta.
 town in Bosnia-NOM NATO-by attack-PASS-PAST
 ‘A town in Bosnia has been attacked by NATO.’

b. Past reading:

Hamlet-wa Shakespeare-ni yotte kak-are-ta.
 Hamlet-TOP Shakespeare-by write-PASS-PAST
 ‘Hamlet was written by Shakespeare.’

Similarly, the inanimate subject *iru ni yotte* is grammatical in perfective and progressive readings:

7) a. Perfective reading:

Mondai no zyuuyoosee-wa kokumin-ni yotte yoku
 the importance of the issue-TOP the people-by fully
 rikai-s-arete iru.
 understand-PASS-PERF
 ‘The importance of the issue has been fully understood by the people.’

b. Progressive reading:

Kono atarasii computer no program-wa Paul-ni yotte tukur-arete iru.
 this new computer program-TOP Paul-by make-PASS-PROG
 ‘This new computer program is being made by Paul.’

Crucially, the properties of incompatibility of an inanimate subject *ni* direct passive with past and progressive readings constitute negative constraints. They are unavailable through naturally-occurring input, and it is unlikely they are discussed in classroom instruction. Examination of Japanese language textbooks confirms no mention of those properties. Indeed, a thorough linguistic characterization of the affectivity underlying those properties has yet to appear in the literature.

In contrast, the properties of compatibility of an inanimate subject *ni yotte* passive with past and progressive readings are exemplified in both natural and classroom input. In this analysis, the aforementioned properties of the *ni* direct are termed ‘POS’ properties and those of the *ni yotte* are referred to as ‘non-POS’ properties to underscore their contrasting availability through input. Importantly, for the purpose of comparing learning

of the *ni* direct and *ni yotte* passives, the passive sentences used in the study which manifest the POS and non-POS properties are minimal pairs differing only in the *ni*- vs. *ni yotte*-markings; compare (4a–5b) to (6a–7b).

Two additional passive properties relevant to this study are the ‘triggering’ properties of the *ni* direct and the ‘non-triggering’ properties of the *ni yotte*. They too are a function of the presence or absence of an underlying affectivity constraint and both properties exist in input. Furthermore, the passive sentences (included below) exemplifying the triggering/non-triggering properties meet requirements for primary linguistic data: they are simple and available to learners (for discussion of primary linguistic data, see White, 1992; 2003). Those sentences are also minimal or near minimal pairs.

As shown in (8a), one triggering property of the *ni* direct is its compatibility with an adversative reading due to the affectivity reading requirement. In (8b), however, the *ni* direct is incompatible with the expression of a favourable effect on its passive subject (Kuno, 1973; Howard and Niyekawa-Howard, 1976; Kuroda, 1979; Shibatani, 1990):

- 8) a. Adversative reading:
 Mary-wa mukasi no kare-ni ni-zikan mo
 Mary-TOP ex-boyfriend-by a long time of two hours
 mat-are-te komat-ta.
 wait-PASS-GERUND become upset-PAST
 ‘Mary had been waited for by her ex-boyfriend for a good two hours (and this greatly upset her).’
- b. Favorable (non-adversative) reading:
 *Mary-wa mukasi no kare-ni ni-zikan mo
 Mary-TOP ex-boyfriend-by a long time of two hours
 mat-are-te uresikat-ta.
 wait-PASS-GERUND happy-PAST
 ‘Mary was happy for her ex-boyfriend to have been waiting for her for a good two hours (and this upset her).’

Adversative readings of the *ni* direct occur in input, and that property is treated in L2 instruction.

A second *ni* direct triggering property is its compatibility with a personally-involved expression. Native verbs in Japanese are suitable for describing a personally-involved event from a subjective viewpoint and fit well with the *ni* direct passive (Kuroda, 1979; Jacobsen, 1992), as shown in (9):

- 9) Mary tyan-wa itu mo kibisii ootoosan-ni homer-are-ta.
 little Mary-TOP always strict father-by flatter-PASS-PAST
 ‘Little Mary was affected by being flattered by her always strict father.’

This *ni* direct property exists in natural input and is explicitly taught in classroom instruction (Tanaka, 1992).

Turning to the non-triggering properties of the *ni yotte*, one is its incompatibility with an adversative reading. As exemplified in (10), a strong adversative connotation produces an anomaly in the *ni yotte* since it lacks affectivity:

- 10) ?*Mary-wa mukasi no kare-ni yotte ni-zikan mo
 Mary-TOP ex-boyfriend-by a long time of two hours
 mat-are-te komat-ta.
 wait-PASS-GERUND become upset-PAST
 'Mary had been waited for by her ex-boyfriend for a good two hours (and this greatly upset her).'

Though unavailable through natural input, this property is possibly taught in the classroom as an instance of dissimilarity between the *ni yotte* and the *ni* direct passives. Furthermore, to the extent that an adversative reading is a subjective interpretation of a state of affairs, its incompatibility with the *ni yotte* passive follows from a second non-triggering property: the congruence of the *ni yotte* with an expression from an objective viewpoint. That property, exemplified in (11), is brought out clearly by use of Sino-Japanese verbs which are preferred in formal or objective speech and writing and thus appropriate for the *ni yotte* (Kuroda, 1979; Jacobsen, 1992):

- 11) Mary Johnson-wa journalist-ni yotte syoosan-s-are-ta.
 Mary Johnson-TOP journalists-by laud-PASS-PAST
 'Mary Johnson was lauded by journalists.'

In contrast, a deeply-involved personal expression signalled by a native Japanese verb renders the *ni yotte* passive unnatural:

- 12) ?* Mary tyan-wa itu mo kibisii otoosan-ni yotte homer-are-ta.
 little Mary-TOP always strict father-by flatter-PASS-PAST
 'Little Mary was affected by being flattered by her always strict father.'

The congruence of the *ni yotte* with an objective expression is exemplified in natural input and explicitly taught in classroom instruction (Tanaka, 1992).

Summarizing to this point, the POS properties are the incompatibility of an inanimate subject *ni* direct passive with past and progressive readings; the triggering properties are the compatibility of the *ni* direct passive

with an adversative reading and a subjective, personally-involved expression. The non-POS properties of the inanimate subject *ni yotte* passive are its compatibility with past and progressive readings; the non-triggering properties of the *ni yotte* passive are its incompatibility with an adversative reading and congruence with an expression from an objective viewpoint. Table 2 summarizes the *ni* direct and *ni yotte* properties according to their availability through input.

Turning to the English passive, it is generally held that it – e.g. (2) – is synonymous with its active counterpart (i.e. *Bill hit John*), and insensitive to an affectivity reading constraint.⁹ The semantic and syntactic representations of the English passive are identical to those of the *ni yotte* passive (for a semantic analysis of the English passive, see Jackendoff, 1990; for syntactic analyses, see Chomsky, 1981; Emonds, 2000).

The Chinese *bei* short passive, on the other hand, resembles the *ni* direct passive. First, the *bei* short typically carries an adversative reading (Li and Thompson, 1981; Hashimoto, 1988). While the active sentence (13a) means the person in question simply learned about the matter, its passive counterpart (13b) is tinged with an adversative connotation (from examples (24) and (25) in Hashimoto (1988) with slight modifications):

- 13) a. Active:
 Ta zhidao-le na jian shiqing.
 s/he learn about-ASP that CL matter
 'S/he learned about that matter.'
- b. *Bei* short passive:
 Na jian shiqing bei zhidao-le.
 that CL matter PASS learn about-ASP
 'Unfortunately, that matter became known.'

Table 2 Input availability of passive properties

<i>ni</i> direct		<i>ni yotte</i>	
POS	–	Non-POS	✓
Triggering	✓	Non-triggering	✓

Note: – signifies unavailability, ✓ availability.

⁹ As an anonymous *Second Language Research* reviewer notes, due to the lexical meaning of *hit*, it may not be readily apparent that the English passive sentence (2) carries no affectivity connotation. Passive sentences such as *John was seen by Bill* and *John was thought by Bill to be intelligent* may show more clearly the lack of affectivity in the English passive.

Second, just as the *ni* direct requires an affectivity reading, the Chinese *bei* short must express *disposal*, which refers to how the logical object of a verb is dealt with or manipulated in an event or state described by the *bei* short sentence (Li and Thompson, 1981: 468). Compare the following two *bei* short passive sentences: (14) is example (35) in Chapter 16 of Li and Thompson (1981) with slight modification, and (15) is repeated from (3):

- 14) *Lisi bei hen-le.
 Lisi PASS hate-ASP
 'Lisi was hated.'
- 15) Zhangsan bei da-le.
 Zhangsan PASS hit-ASP
 'Zhangsan was hit.'

According to Li and Thompson, (14) is unacceptable because it cannot be read with a sense of disposal since how *Lisi* was dealt with or manipulated cannot be construed from the meaning of the verb, *hen* 'hate'. In contrast, (15) is grammatical because the effect on *Zhangsan* of being hit is construable. Hence the reading requirements of affectivity in the *ni* direct and of disposal in the *bei* short constrain the range of acceptable passive sentences such that some kind of effect on the passive subject must obtain as a result of the state of affairs described by the passive sentence.¹⁰

In sum, first, the English passive exhibits no affectivity reading constraint such as that imposed on the *ni* direct; the Chinese *bei* short passive expresses disposal, similar to affectivity. Learning that an inanimate subject *ni* direct passive is incompatible with non-perfective readings (POS properties) poses a POS problem for English learners (discussed below) but not for Chinese learners. Second, there are additional semantic properties of the *ni* direct that arise from its affectivity constraint but which are available through input to learners (triggering properties). Third, the *ni yotte* passive (with no affectivity) is identical to the English passive, but there is no *ni yotte* passive type in Chinese. Fourth, the *ni yotte* learning situation differs from that of the *ni* direct only in that all *ni yotte* properties

¹⁰ In terms of the grammaticality contrasts between the perfective and the two non-perfective readings, the Chinese *bei* short behaves similarly to the *ni* direct passive (Ma, personal communication). The *bei* short passive counterpart to the perfective reading of the inanimate subject *ni* direct passive (4a) is acceptable, whereas the *bei* short counterparts to (4b) and (5b) – i.e. the non-perfective readings – sound unnatural. The *bei* short passive with a perfective reading, similar to (5a), is also acceptable with an adversative reading.

under investigation (non-POS and non-triggering) are available to learners through input. (See Table 2, which summarizes input availability of the properties of the *ni* direct and *ni yotte* passives.)

III Predictions

The purpose of Prediction 2, central to the study, is to isolate L2 input that enables English learners to overcome the POS problem as stated in Prediction 1. Predictions 3 and 4 corroborate the expected findings on English learners. For all four Predictions, Chinese learners' data provide additional supporting evidence. The article adopts the Full Transfer Full Access Hypothesis (Schwartz and Sprouse, 1994; 1996; Schwartz, 1998).¹¹

- 1) English learners can acquire knowledge of the incompatibility of an inanimate subject *ni* direct passive with non-perfective readings (POS properties) even though those properties are unavailable through L2 input, L1 knowledge or indirect negative evidence. Chinese learners can learn the POS properties as well.
- 2) There will be a sufficient correlation between acquisition of the *ni* direct passive triggering properties and acquisition of its POS properties in the case of English learners but not in the case of Chinese learners.
- 3) Chinese learners can acquire knowledge of the compatibility of an inanimate subject *ni yotte* passive with non-perfective readings (non-POS properties). English learners can learn the non-POS properties as well.
- 4) There will be no correlation between acquisition of the *ni yotte* non-triggering properties and acquisition of its non-POS properties for either Chinese or English learners.

In the main, Prediction 1 bears on the acquirability of the *ni* direct POS properties by English learners; Prediction 3 pertains to the acquirability of the *ni yotte* non-POS properties by Chinese learners. For English learners to develop sensitivity to the subtle, input-unavailable POS properties

¹¹ The findings of the present study are consistent with the Representational Deficit Hypothesis (RDH) (Hawkins and Chan, 1997; Hawkins, 2003). The RDH predicts the acquirability by English and Chinese learners of the Japanese passive properties under investigation. At issue is the availability not of language-specific formal syntactic features, but of universal abstract linguistic knowledge and universal linguistic computations that together derive affectivity or not.

of the *ni* direct passive – (4b) and (5b) – they must expunge from their L1-based IL grammar passive sentences permissible in English but impermissible in Japanese. That is necessary because non-perfective readings of an inanimate subject *ni* direct passive are ungrammatical, whereas the English passive counterpart is grammatical. Chinese learners must acquire the input-available non-POS properties of the *ni yotte* passive – (6b) and (7b) – by expanding their L1-based IL grammar to admit those passive sentences prohibited in Chinese but allowed in Japanese. That is necessary because an inanimate subject *ni yotte* passive is grammatical in a non-perfective reading, while its Chinese *bei* short passive counterpart is ungrammatical. In short, the English learner's task is a contraction of the grammar without direct or indirect evidence, a *prima facie* case of a POS learning situation.¹² Conversely, the Chinese learner's task is an expansion of the grammar on the basis of L2 input. Finally, neither Chinese learners' acquisition of the *ni* direct POS properties nor English learners' acquisition of the *ni yotte* non-POS properties should be problematic since both groups can rely on L1 grammar to arrive at knowledge of the relevant properties.

Predictions 2 and 4 encompass the central issue addressed in the study. The following hypothesis motivates Prediction 2: because the *ni* direct POS properties are absent from L2 input, and since English learners cannot rely on their L1 grammar for knowledge of those properties (see footnote 20), they must derive knowledge of the POS properties from other sources, including the input-available triggering properties of the *ni* direct; see (8a), (8b) and (9). That is possible because the POS and the triggering properties alike are direct and particular manifestations of the *ni* direct's affectivity. Thus it is expected that English learners who are sensitive to

¹² An anonymous *Second Language Research* reviewer offers an alternative view of English learners' acquisition of the POS properties. At the core, the reviewer sees their arriving at knowledge of affectivity as the result of general learning principles operating on passive sentences manifesting the triggering properties. That scenario is unlikely because, in order for a generalization formed by general learning principles to be affectivity-like, it must also accommodate the dissimilar linguistic phenomena through which the POS properties arise. But it is implausible that English learners could make any linkage between the 'adversity' and 'personally-involved' readings of passive expressions (the triggering properties), on the one hand, and the constraints on tense–aspect in an inanimate subject passive (the POS properties), on the other, because of the distinctness of the two. The generalization based on general learning principles thus could not be affectivity-like. In Section VI, an analysis is proposed that implicates abstract linguistic knowledge and computations.

the POS properties have already acquired the triggering properties.¹³ That sufficient learning correlation is not expected in the case of Chinese learners due to their ability to achieve sensitivity to the *ni* direct POS properties via the similarity between the restrictions on the readings of the *ni* direct and the *bei* short passives.

Prediction 4 has been formulated to test the assumption underlying Prediction 2 and to underscore the expected findings from English learners expressed in the latter. Suppose there are two distinct manifestations of an underlying L2 form and both manifestations are available in natural or classroom input. No correlation should obtain in learning those two manifestations, whether there is an L1 counterpart to the L2 form or not. This should be the case because learners have positive evidence for each of the two manifestations. Acquisition of the non-POS – (6b) and (7b) – and the non-triggering – (10), (11) and (12) – properties of the *ni yotte* passive exemplify this. Thus, it is expected there will be no learning correlation between these two manifestations for either English or Chinese learners.

IV The study

1 Participants

The study included 81 English-speaking and 85 Chinese-speaking learners of Japanese, with 31 Japanese native speakers (NSs) as controls. Table 3 provides information on the non-native speaker (NNS) participants who were classified into intermediate, advanced and highly advanced groups on the basis of their scores on part of the Japanese Language Proficiency Test (JLPT) taken during the data collection procedure. There is a significant difference in group mean scores ($F(5, 160) = 219.95, p < .001$). The English and Chinese groups in one proficiency level do not differ from one another but differ from groups in other levels. The English-speaking participants were undergraduate and graduate students in the USA, a majority of whom were in Japan-related fields. The Chinese-speaking participants were all enrolled in high intermediate to advanced Japanese

¹³ It is possible that there are English learners who have acquired knowledge of the triggering properties but who show no sensitivity to the POS properties. That is, a necessary correlation may not hold. One cannot assume that learners' acquisition of the triggering properties immediately leads to sensitivity to the POS properties; there may be a time lag in that process.

Table 3 NNS participants' proficiency test scores and Japanese learning experiences

Lls	Proficiency levels	<i>n</i>	Average JLPT scores: percentage (ranges)	Average length of study: years	Visiting experience: group percentage (duration)
English	Highly advanced	25	95.0 (100–88)	9.74	92 (4.2 years)
	Advanced	36	74.3 (84–64)	4.16	75 (20 months)
	Intermediate	20	45.6 (60–32)	4.32	65 (9.9 weeks)
Chinese	Highly advanced	36	92.8 (100–87.5)	5.47	*
	Advanced	43	76.9 (83.3–62.5)	2.66	*
	Intermediate	6	54.9 (58.3–45.8)	1.75	*

Note: * The Chinese participants had resided in Japan for three to four months minimally at the time of data collection. Due to their misunderstanding of a relevant questionnaire item, exact information is unavailable.

language courses at institutions in Japan in preparation for entering undergraduate or graduate programs there (some of them had already done so).

2 Materials¹⁴

The materials included a grammaticality judgement test in which the participants were instructed to assess the acceptability of sentences using a five-point rating scale: acceptable, somewhat acceptable, not sure, somewhat unacceptable and unacceptable. Each sentence appeared with the five rating options on a sheet of paper the size of an index card. On the sheet were no other sentences establishing semantic or pragmatic contextualization for the passive sentence being tested because that was provided in the passive sentence itself, as shown in the section on passives. The presentation style allowed the questionnaire to present all test sentences in the same format, including those exemplifying semantic or syntactic passive properties. That was expected to alleviate a priming effect on any particular aspect of the passives under investigation. Vocabulary notes were provided on the sheets when it was felt that NNS participants might be unfamiliar with certain lexical items.

The test contained 62 passive sentences: 46 exemplified semantic properties,¹⁵ and 16 syntactic ones. There were 22 distractors. The complete

¹⁴ The materials come from a broader study investigating English and Chinese learners' acquisition of both semantic and syntactic properties of Japanese passives. For a detailed description of participants and materials, see Hara, 2002; Hara and Ma, 2004.

¹⁵ In consideration of the Aspect Hypothesis (Shirai and Andersen, 1995; Shirai and Kurono, 1998), verbs used in this study to investigate learners' knowledge of the *ni* direct POS and the *ni yotte* non-POS

questionnaire thus comprised 84 sentences, approximately half of which were acceptable and the other half unacceptable. (That ratio held for the passive sentences used in this study as well.) There were two sentence tokens for each of the semantic and syntactic properties under investigation. (For a complete list of passive sentences used in the study, see Appendix 1.) Standard measures were taken to reduce extraneous judgement variability, including provision of detailed instruction on judging the acceptability of sentences (for discussion of such measures, see Bley-Vroman *et al.*, 1988; Birdsong, 1989; Schütze, 1996).

Additional materials for the NNS participants included a background information questionnaire, and a pre-test comprised of (1) part of the JLPT and (2) a vocabulary test. (The vocabulary test was not utilized in the study.) The NNS participants spent 1–1.5 hours completing all the materials, and they did so individually.

V Results

1 Group and individual results on acquisition of the ni direct passive properties

Group results confirm that, despite the POS problem, English learners can attain sensitivity to the *ni* direct POS properties and Chinese learners have little difficulty acquiring them. Individual results show that there is a sufficient learning correlation between the triggering and the POS properties of the *ni* direct passive in the case of English learners. That finding is underscored by absence of the same correlation for Chinese learners.

If Prediction 1 is correct, learners' grammaticality ratings of non-perfective readings of an inanimate subject *ni* direct passive should be significantly lower than their ratings of perfective readings of that passive type. Figure 1 displays the mean grammaticality ratings for the perfective and past readings of the *ta ni* direct alongside ratings for the perfective and progressive readings of the *iru ni* direct, with a maximum score of '2' and a minimum of '-2'. (For descriptive statistics, see Table 6 in Appendix 2.) Mean rating scores for the English groups correlate with

properties were chosen from each of the following verb classes: activity, achievement and accomplishment. No reliable verb class effect was found on learners' ratings of the perfective, past or progressive readings of the passives.

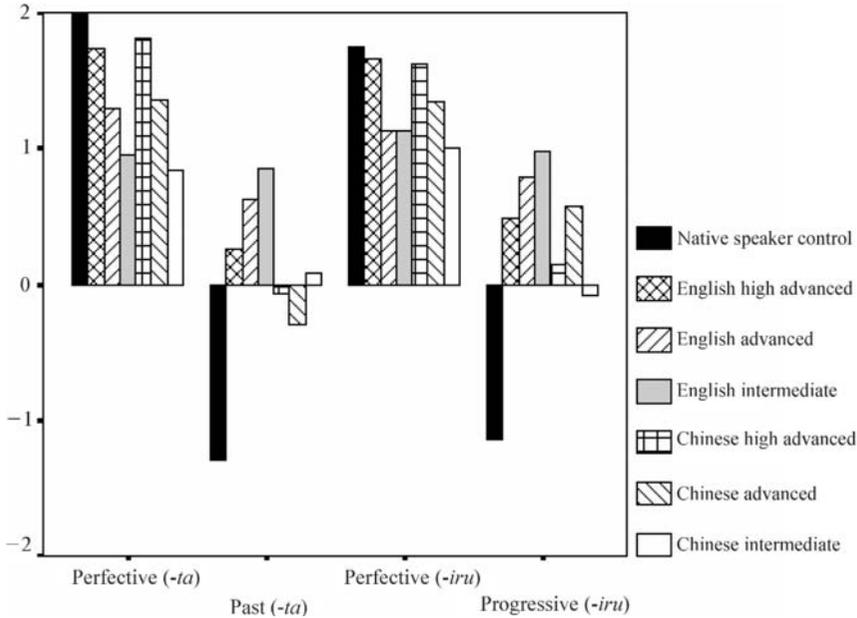


Figure 1 Mean judgement scores for the *ni* direct passive

proficiency levels: the more advanced they were, the more reluctantly they accepted the past and progressive readings as grammatical. All Chinese groups appear sensitive to the incompatibility of an inanimate subject *ni* direct with non-perfective readings.

The results of repeated-measures ANOVAs show the statistical reliability of the NS group's clear rating differentiation between perfective and non-perfective readings of the *ni* direct: this group rated the former as grammatical and the latter as ungrammatical ($F(1, 30) = 400.1, p < .001$ for the *ta* passive; $F(1, 30) = 174.8, p < .001$ for the *iru* passive). The English highly advanced group reliably rated non-perfective readings of the *ni* direct lower than perfective readings ($F(1, 24) = 26.7, p < .001$ for the *ta* passive; $F(1, 24) = 20.9, p < .001$ for the *iru* passive), suggesting the group's (developing) sensitivity to the *ni* direct POS properties. The English advanced group made significantly differentiated ratings between the perfective and past readings of the *ta* passive ($F(1, 35) = 5.6, p = .023$), but failed to do so in rating the *iru* passive ($F(1, 35) = 1.95, p = .171$). The English intermediate group failed to differentiate between the perfective and non-perfective readings ($F(1, 19) = .137, p = .716$ for the *ta* passive; $F(1, 19) = .299, p = .591$ for

the *iru* passive). Results from the English advanced and intermediate groups thus indicate their difficulty acquiring the *ni* direct POS properties.

The Chinese highly advanced and advanced groups had no such difficulty learning the POS properties, as their grammaticality ratings are reliably differentiated between perfective and non-perfective readings of the *ni* direct (highly advanced: $F(1, 35) = 58.9, p < .001$ for the *ta* passive and $F(1, 35) = 35.6, p < .001$ for the *iru* passive; advanced: $F(1, 42) = 44.1, p < .001$ for the *ta* passive and $F(1, 42) = 11.96, p = .001$ for the *iru* passive). Yet the Chinese intermediate group failed to make significantly differentiated ratings ($F(1, 5) = 1.26, p = .312$ for the *ta* passive; $F(1, 5) = 4.57, p = .086$ for the *iru* passive), apparently due to its high rating variability and small size of six learners. In sum, the above group results confirm acquirability of the *ni* direct POS properties by the English highly advanced group and by the Chinese highly advanced and advanced groups.¹⁶

Individual results provide evidence suggesting that, when English learners have sensitivity to the *ni* direct POS properties, they have already acquired its triggering properties. That sufficient learning correlation does not obtain in the case of Chinese learners. The evidential criterion for deriving individual results that would confirm sensitivity to the POS properties is learners' correct ratings, as ungrammatical, of the non-perfective inanimate subject *ni* direct passive. For English learners, the ungrammaticality of that passive type was what they had to learn. If they took it as similar to the affectivity-free English passive, they might rate it as grammatical. If Chinese learners started with their L1 grammar, their rating the non-perfective inanimate subject *ni* direct passive as ungrammatical would suggest their sensitivity to the POS properties, since similar properties resulting from an affectivity-like reading restriction exist in the Chinese *bei* short passive.

¹⁶ An inspection of the responses of individual learners in those groups indicates there are learners who clearly showed sensitivity to POS properties. Out of the total number of 25 English highly advanced learners, five individuals (20%) correctly accepted both tokens of the perfective *ta ni* direct and correctly rejected both tokens of the past *ta ni* direct. Ten out of the total 36 Chinese highly advanced learners (27.8%) consistently accepted the grammatical perfective *ta* passive and consistently rejected the ungrammatical past *ta* passive. Out of the total 43 Chinese advanced learners, 11 (25.6%) behaved in the same way. An examination of individual responses to the *iru ni* direct reveals similar patterns, although with reduced percentages, reflecting greater difficulty with that *ni* direct passive type (see Hara, 2002). The percentages of learners who consistently accepted the perfective *iru* passive and consistently rejected the progressive *iru* passive are 12% of the total number

Evidence for knowledge of the triggering properties comes from contrastive grammaticality ratings on paired grammatical/ungrammatical sentences exemplifying those properties. Because triggering properties are manifested in grammatical sentences with an animate passive subject, similar to unmarked *ni* direct passive sentences, it is possible that learners might correctly rate as grammatical the *ni* direct passive exemplifying the triggering properties even though they are insensitive to those properties. For that reason, a total of three pairs of grammatically contrastive sentences were formed for analysis: one pair had a *ni* direct sentence with an adversative reading (grammatical) vs. a *ni* direct sentence with a favourable reading (ungrammatical); (8a) and (8b). The other two pairs each had a *ni* direct sentence with a personally-involved reading (grammatical) vs. a *ni yotte* sentence with a personally-involved reading (ungrammatical); (9) and (12).¹⁷

The correlation at issue can be established by showing the following: numerous learners who correctly rated the *ni* direct passive exemplifying the POS properties as well as the paired passive sentences exemplifying the triggering properties; zero learners (ideally), or a statistically significant small number of them, who succeeded in rating as ungrammatical the *ni* direct exemplifying the POS properties, and failed to make contrastive grammaticality ratings on any passive pair exemplifying the triggering properties. Table 4 presents 2×2 contingencies for English and Chinese learners' ratings of passive sentences exemplifying the POS and the triggering properties, with each learner contributing one data point in the table. The rows designate the number of learners who rated the POS *ni* direct passive sentences as ungrammatical at least once and how many

of English highly advanced learners, and 19.4% and 9.3% of the total number of Chinese highly advanced and advanced learners, respectively.

¹⁷ Two out of a total of six passive sentences used for that analysis were *ni yotte* passive sentences. Inclusion of the *ni yotte* sentences introduced an additional variable, the presence or absence of knowledge of that passive. Yet including those sentences imposed a stricter condition for establishing the correlation at issue. As noted next in the text, critically important to Prediction 2 was the significantly small number of learners who demonstrated sensitivity to the *ni* direct POS properties without making contrastive grammaticality ratings on any of the paired passive sentences exemplifying the triggering properties. The inclusion of the *ni yotte* passive could only increase, not decrease, the number of such learners since, if they had not yet learned the *ni yotte* passive, then they would randomly rate those two *ni yotte* passive sentences, even though they might correctly rate a *ni* direct passive member of the pair. That works against obtaining the correlation at issue. For evidence that the *ni yotte* passive was acquired after the *ni* direct passive, see Hara, 2002; Hara and Ma, 2004; see also the group results for learners' difficulty with the *ni yotte* passive.

Table 4 Contingencies for English and Chinese learners (the *ni* direct passive)

English learners			Chinese learners		
POS properties	Triggering properties		POS properties	Triggering properties	
	0	1–3		0	1–3
* <i>Past reading</i> :			* <i>Past reading</i> :		
0	18	28	0	5	15
1–2	6	29	1–2	13	52
* <i>Progressive reading</i> :			* <i>Progressive reading</i> :		
0	18	30	0	6	25
1–2	6	27	1–2	12	42

Note: * signifies ungrammaticality.

The underlined numbers signify the number of times each learner responded correctly to the POS and triggering property sentences.

failed to do so. The columns show how many learners made contrastive grammaticality judgements on at least one triggering sentence pair and how many never did.

Whereas 29 English learners (35.8% of the total 81) correctly rated both the past reading of the *ni* direct and the paired sentences exemplifying the triggering properties, as few as only six English learners (7.4%) correctly rated the *ni* direct past reading as ungrammatical but failed to make correct contrastive grammaticality ratings on any of the passive pairs exemplifying the triggering properties. Similarly, 27 English learners (33.3%) showed sensitivity to the *ni* direct progressive reading POS property as well as knowledge of the triggering properties. But only six (7.4%) exhibited sensitivity to the former and no knowledge of the latter. Six is a significantly smaller number of learners than the other data in the table for the past reading ($\chi^2(1) = 4.609, p = .032$), and it approaches a significant level for the progressive reading ($\chi^2(1) = 3.5, p = .061$).¹⁸ Therefore, when English learners showed sensitivity to the POS properties, they were likely also to exhibit knowledge of the triggering properties. The sufficient correlation at issue obtains in the case of English learners.

In contrast, 52 Chinese learners (61.2% of the total 85) correctly rated both the *ni* direct past reading and the paired sentences exemplifying the

¹⁸ The Goodman–Kruskal tau values are .057 for the past and .043 for the progressive readings, confirming that the observed distributional differences are due to the significantly smaller numbers of English learners who demonstrated sensitivity to the POS properties but failed to exhibit knowledge of the triggering properties.

triggering properties; 13 Chinese learners (15.3%) correctly rated the *ni* direct past reading as ungrammatical but failed to rate correctly any of the triggering property sentence pairs. Likewise, 42 Chinese learners (49.4%) showed sensitivity to the *ni* direct progressive reading POS property and knowledge of the triggering properties; 12 (14.1%) exhibited sensitivity to the former and no knowledge of the latter. Critically, no statistically significant correlation obtains in the case of Chinese learners' acquisition of the two property sets ($\chi^2(1) = .229, p = .632$ for the *ta ni* direct; $\chi^2(1) = .097, p = .755$ for the *iru ni* direct).

2 Group and individual results on acquisition of the *ni yotte* passive properties

Group results confirm English and Chinese learners can acquire the *ni yotte* non-POS properties. Individual results show there is no learning correlation between the *ni yotte* non-triggering and non-POS properties for either English or Chinese learners.

In accordance with Prediction 3, grammaticality ratings of the perfective and non-perfective readings of an inanimate subject *ni yotte* passive should not differ significantly in the case of either English or Chinese learners. Figure 2 presents the mean judgement scores for the perfective and past readings of the *ta ni yotte* passive alongside those for the perfective and progressive readings of the *iru ni yotte* passive. (For descriptive statistics, see Table 7 in Appendix 2.) The NS controls made no significantly differentiated grammaticality ratings on perfective and non-perfective readings of the *ni yotte* ($F(1, 30) = 1.85, p = .184$ for the *ta* passive; $F(1, 30) = .521, p = .476$ for the *iru* passive). Nor did the English highly advanced group ($F(1, 24) = .795, p = .382$ for the *ta* passive; $F(1, 24) = 1.56, p = .224$ for the *iru* passive), suggesting knowledge of the *ni yotte* non-POS properties. The English advanced and intermediate groups also made statistically indistinguishable ratings on perfective and non-perfective readings (advanced: $F(1, 35) = .051, p = .822$ for the *ta* passive and $F(1, 35) = .580, p = .451$ for the *iru* passive; intermediate: $F(1, 19) = 2.07, p = .167$ for the *ta* passive and $F(1, 19) = .006, p = .940$ for the *iru* passive). But it is likely that the success of the English advanced and intermediate groups in rating the two readings is more apparent than real, as there is evidence that the advanced group attained only limited knowledge of the *ni yotte* passive

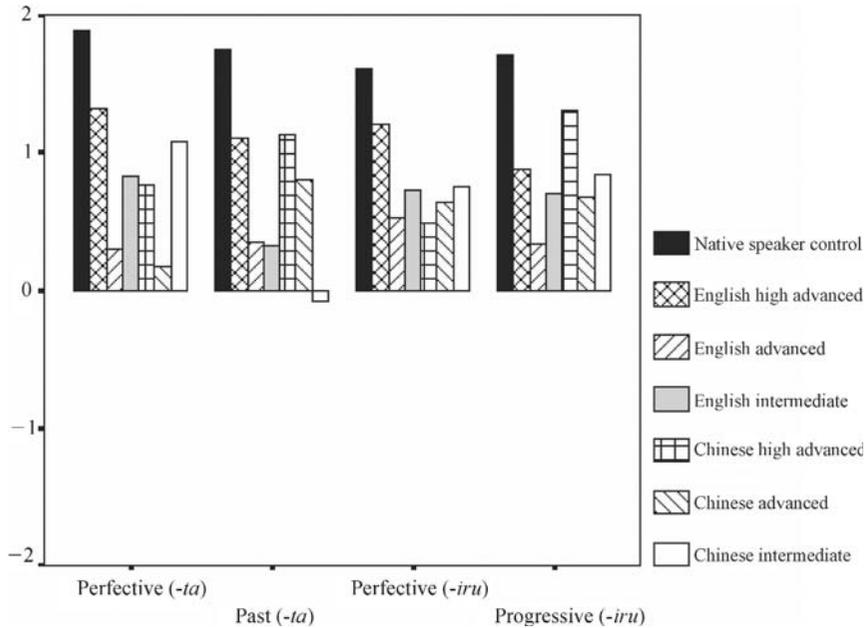


Figure 2 Mean judgement scores for the *ni yotte* passive

and the intermediate group even less (Hara, 2002).¹⁹ In all, the acquirability of the *ni yotte* passive non-POS properties is confirmed for the English highly advanced group.

Group results involving the Chinese learners provide evidence for the acquirability of the *ni yotte* non-POS properties. The Chinese highly advanced group rated the *ta ni yotte* perfective and past readings with no significant differentiation ($F(1, 35) = 2.44, p = .127$), indicating knowledge of that passive property. The group rated the *iru ni yotte* perfective and progressive readings as grammatical, on average. But, unexpectedly, they rated the *iru ni yotte* progressive significantly higher than the perfective reading (1.31 vs. .49) ($F(1, 35) = 10.4, p = .003$). Suppose that at a certain learning stage Chinese learners take the *ni yotte* as similar to the Chinese *bei* short passive, then one would expect to find that those learners would rate the *iru ni yotte* progressive lower than the perfective, since the progressive, not the perfective, is unreconcilable with the reading requirement for the *bei* short passive.

¹⁹ Their difficulty is attributable to: (1) paucity of available input for the *ni yotte* passive and (2) a problem recognizing the *ni yotte* noun phrase as the logical subject of a passivized verb in the passive.

Significant (and likewise unexpected) differentiation also shows up in the Chinese advanced group's ratings of the *ta ni yotte* passive ($F(1, 42) = 10.5, p = .002$), with the past rated higher than the perfective (.80 vs. .17). The parallel patterns of highly advanced learners differentiating the *iru ni yotte* readings and of advanced learners differentiating the *ta ni yotte* readings suggest a developmental pattern (examined in Section VI).

In view of Chinese highly advanced learners having rated the *iru ni yotte* progressive higher than the perfective reading, the advanced group's indistinguishable ratings of the two readings of the *iru ni yotte* ($F(1, 42) = .022, p = .884$) suggests that the advanced learners had not yet reached the same learning stage as their highly advanced counterparts. The intermediate group showed statistically indistinguishable ratings for the two readings of the *ta ni yotte* ($F(1, 5) = 1.49, p = .276$) and of the *iru ni yotte* ($F(1, 5) = .02, p = .892$), as they did in rating other passive types. Overall, the acquirability of the *ni yotte* non-POS properties is confirmed for the Chinese highly advanced group.

Consistent with Prediction 4, individual results show there is no learning correlation between the non-triggering and non-POS properties of the *ni yotte* passive in the case of either English or Chinese learners. That is expected because both properties are available to learners through L2 input. In testing Prediction 4, learners' ratings as grammatical of the non-perfective inanimate subject *ni yotte* were taken as evidence for knowledge of the non-POS properties. Also, three grammatically contrastive pairs of passive sentences were formed for the non-triggering properties: two of the pairs each had a *ni yotte* sentence with an objective reading (grammatical) vs. a *ni yotte* sentence with a personally-involved reading (ungrammatical); (11) and (12). The third pair had a *ni* direct sentence with an adversative reading (grammatical) vs. a *ni yotte* sentence with an adversative reading (ungrammatical); (8a) and (10). Only correct grammaticality ratings of both sentences in each pair were counted as successful ratings.

Table 5 shows 2×2 contingencies for English and Chinese learners' acquisition of the *ni yotte* non-POS and non-triggering properties. Numerous English learners (31, i.e. 38.3% of the total 81) showed knowledge of the past reading non-POS and the non-triggering properties. Many English learners (36, i.e. 44.4%) evinced knowledge of

Table 5 Contingencies for English and Chinese learners (the *ni yotte* passive)

English learners			Chinese learners		
Non-POS properties	Non-triggering properties		Non-POS properties	Non-triggering properties	
	0	1-3		0	1-3
<i>Past reading:</i>			<i>Past reading:</i>		
	0	5	9	0	3
	1-2	36	31	1-2	26
<i>Progressive reading:</i>			<i>Progressive reading:</i>		
	0	13	9	0	4
	1-2	28	31	1-2	25

Note: The underlined numbers signify the number of times each learner responded correctly to the non-POS and non-triggering property sentences.

the past reading non-POS property, but not of the non-triggering properties. The same pattern holds for English learners' acquisition of the progressive reading non-POS and the non-triggering properties: 31 and 28 learners (38.3% and 34.6%), respectively. The large numbers of 36 and 28 contrast sharply with the significantly small number of six English learners who showed sensitivity to the *ni* direct POS properties but no knowledge of its triggering properties. No significant correlation exists in English learners' acquisition of the *ni yotte* non-POS and non-triggering property sets ($\chi^2(1) = 1.5, p = .220$ for the past reading; $\chi^2(1) = .868, p = .352$ for the progressive reading).

Similarly, numerous Chinese learners (51, i.e. 60% of the total 85) showed knowledge of the past reading non-POS and the non-triggering properties. Many Chinese learners (26, i.e. 30.6%) evinced knowledge of the past reading non-POS, but not of the non-triggering properties. The same pattern appears for Chinese learners' acquisition of the progressive reading non-POS and the non-triggering properties: 48 and 25 learners (56.5% and 29.4%), respectively. There is no statistically significant correlation in Chinese learners' acquisition of the two property sets ($\chi^2(1) = .045, p = .832$ for the past reading; $\chi^2(1) = .004, p = .951$ for the progressive reading).

In sum, there is a sufficient correlation between the triggering and POS properties of the *ni* direct passive only in the case of English learners. No correlation appears between the non-triggering and non-POS properties of the *ni yotte* passive for either English or Chinese learners.

VI Discussion

1 What source(s) inform English learners about the POS properties of the *ni* direct passive?

Three possible sources can inform English learners about the POS properties of the *ni* direct passive:

- L2 input exemplifying those properties;
- L1 knowledge of the English passive;
- L2 input exemplifying the *ni* direct triggering properties.

Theoretical and pedagogical considerations raised in Section II rule out L2 input as a likely source of direct evidence for the POS properties. The empirical findings of this study support that. If knowledge of the restriction of the *ni* direct passive to perfective readings were directly inferable from input – just as Chinese learners receive input exemplifying the *ni yotte* non-POS properties – one would have to explain why there is a correlation between acquisition of the *ni* direct triggering properties and acquisition of its POS properties in the case of English learners, but no correlation between the *ni yotte* non-triggering and non-POS properties for Chinese learners.

Second, English has no equivalent to the *ni* direct passive type (Kuroda, 1979; Jackendoff, 1990; Emonds, 2000), and this is reflected in the difference in the acquisition of the POS properties of the *ni* direct passive by the English and Chinese subjects. Group results show that English learners had great difficulty acquiring the POS properties while Chinese learners did not. Individual results demonstrate a learning correlation between the triggering and POS properties in the case of English learners but not in the case of Chinese learners.²⁰

²⁰ The possibility of English learners approximating knowledge of POS properties by L1- or L2-based analogy is remote. First, a grammatical perfective inanimate subject *ni* direct – (4a) and (5a) – is uninformative for English learners. Due to the L1 effect, English learners are likely to take the *ni* direct passive as equivalent to the English passive and to interpret *ni* direct sentences like (4a) and (5a) as affectivity-free. Second, it is unlikely that superficial knowledge of the triggering properties enables English learners to analogously discover the POS properties (see footnote 12). Third, it is doubtful that English learners' acquisition of the *ni* indirect passive influences their learning of the *ni* direct passive. The direction of influence is likely to be reversed. For evidence that English learners acquire the *ni* indirect passive after acquiring the *ni* direct passive both semantically and syntactically, see Hara, 2002;

The single remaining possibility – that of L2 input providing the triggering properties – is thus a strong candidate for the source that informed English learners of the POS properties. That conclusion and the findings of the study are consistent with the hypothesis of this study. Suppose two (surface) properties of an L2 form meet the following conditions:

- one property is input-available, the other unavailable;
- both are absent from learners' L1;
- both arise from an underlying property of the L2 form; and
- the connection between the underlying property and the two properties is direct and particular.

It is then possible to isolate triggering input. Of all four learning situations under investigation, only English learners' acquisition of the *ni* direct triggering and POS properties satisfies the above conditions.

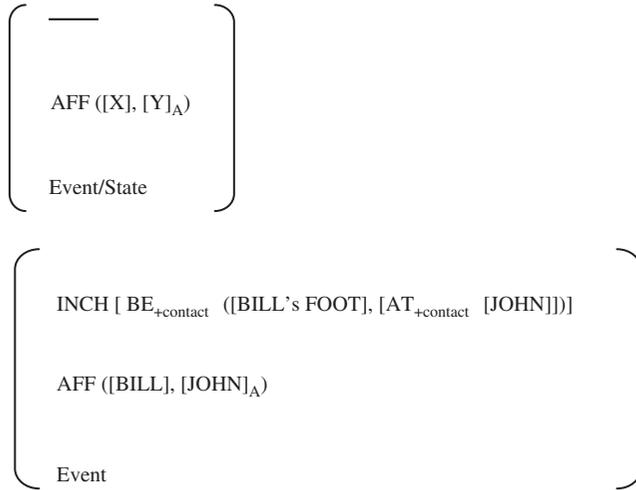
2 *English learners' acquisition of the lexical–conceptual structure of the ni direct passive verb*

What changed in English learners' IL grammatical systems as they incorporated input exemplifying the triggering properties into their IL grammars? I propose that English learners acquired sensitivity to the POS properties as a consequence of arriving at an L2-like *ni* direct passive lexical–conceptual representation incorporating affectivity. That lexical–conceptual restructuring was triggered as they came to understand the meanings of the *ni* direct passive's triggering properties and computed a two-layered conceptual representation of the relevant input.

Extending to Japanese passives Jackendoff's (1983; 1990; 1991; 1996) lexical–conceptual approach, the LCSs of the *ni yotte* passive affix *rare* and of the *ni* direct passive verb *rare* are provided in (16) and (17), along with example sentences of the two passives and their conceptual representations (simplified for readability; for a full account, see Jackendoff, 1990). First, consider the LCS of the *ni yotte* passive affix:

Hara and Ma, 2004. Tanaka (1993: 111) also notes the great difficulty English learners encounter learning the *ni* indirect passive.

- 16) a. *Ni yotte* passive affix *rare*:



- b. John-ga Bill-ni yotte ker-are-ta.

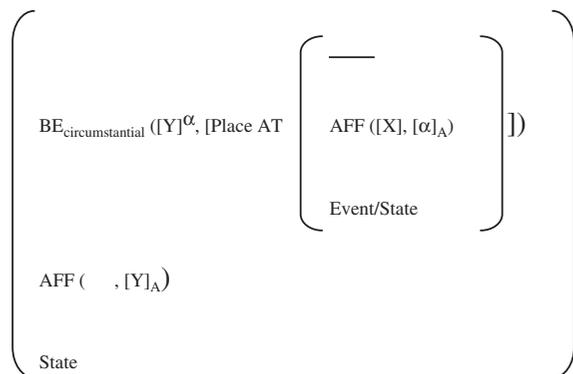
Jackendoff's LCS consists of two tiers: the thematic tier (concerned with motion and location) and the action tier (expressing an Actor–Patient relation), corresponding to the first and second lines of (16a), respectively. The solid line in the thematic tier represents an event or state in which the Things, [X] and [Y], are conceptualized in terms of their motion and location relative to one another. The 'AFF ([X], [Y]_A)' in the action tier signifies that the Thing, [X], is Actor (the first argument of the 'affect' functor) and the Thing, [Y], is Patient (the second argument). The subscript 'A' attached to [Y] signifies that [Y] is linked to its appropriate syntactic position via linking theory (Jackendoff, 1990: Chapter 11). The lack of a subscript on [X] signifies that it is not linked to any syntactic position. Note that this LCS is identical to that of the English passive affix *-en* (Jackendoff, 1990: 179–81). The conceptual representation of the *ni yotte* passive sentence is illustrated in (16b). The first line indicates that motion of *Bill's foot*

²¹ The variable 'α' in the second Event/State is bound by the Experiencer argument [Y] in the BE_{circumstantial} functor; this is an LCS account of the phonetically null logical object of the passivized verb of the *ni* direct passive (for discussion of the null element, see Hoshi, 1994). As such, the *ni* direct and *ni yotte* passives appear identical on the surface except for the *ni-* vs. *ni yotte-* markings.

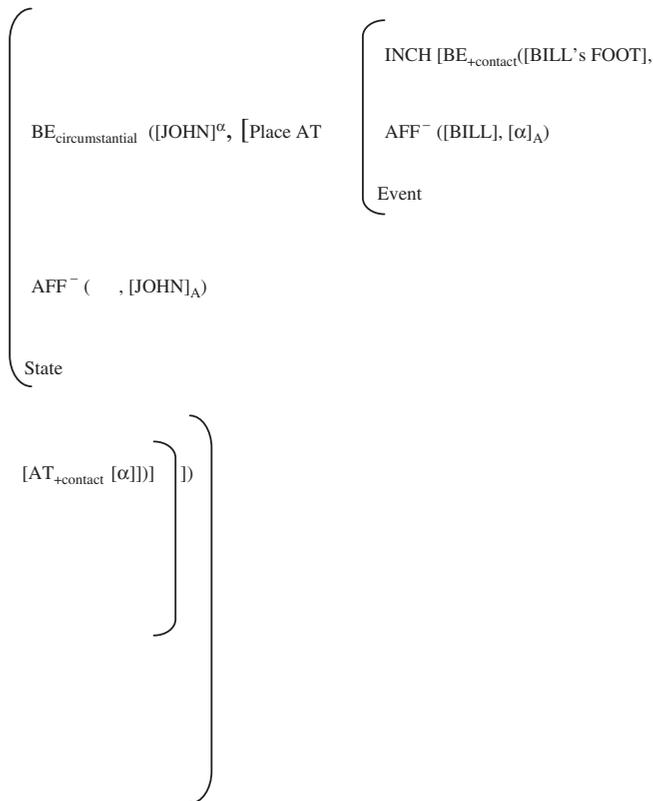
(the Theme) culminated in contact with *John* (the Goal). The second line shows *Bill* (the Actor) performed that action and *John* (the Patient) was affected by it.

The LCS of the *ni* direct passive verb follows in (17a):²¹

17) a. *Ni* direct passive verb *rare*:



b. *John-ga Bill-ni ker-are-ta.*



Its LCS is comprised of two layers of Event/State, with the second layer essentially identical to the LCS of the *ni yotte* passive affix. The first layer of the passive verb consists of the BE_{circumstantial} and AFF functors. The circumstantial functor denotes that the Experiencer, [Y], is located at the Event or State which is defined by the second layer of the LCS. The AFF functor states that [Y] is an experiencer affected by being located at that subordinate Event or State. (With only the Experiencer/Patient present, the Actor argument of that AFF functor is unfilled.) In this way, the augmentation captures the affectivity carried by the *ni* direct passive. For illustration, (17b) shows that *John's* being located at the event wherein the motion of *Bill's foot* culminated in contact with *John*, affected *John* negatively (as indicated by the superscript ‘-’ attached to the first AFF).

What English learners needed to recognize to acquire knowledge of the *ni* direct passive's affectivity was that its LCS contains a layer of circumstantial and AFF functors above the LCS of their L1 English passive affix *-en*. Although the syntactic reflex of those functors is not encoded in a way accessible to L2 learners (see footnote 21), semantic consequences of those functors are present in input, including the triggering properties. Moreover, the triggering properties are encodable in sentences that are simple and available to learners, important features of primary linguistic data (White, 1992; 2003). Once recognition of those (and other) properties led English learners to posit the first layer of the *ni* direct passive verb's LCS in their representation,²² sensitivity to the POS properties was likely to follow, albeit without direct or indirect evidence.

3 Development in the acquisition of the event structure of the *ni yotte* passive by Chinese learners

Chinese learners rated the non-perfective readings higher than the perfective reading of an inanimate subject *ni yotte* passive, a pattern opposite to what would be expected if they transferred properties of the Chinese *bei* short passive. I suggest that Chinese learners initially constructed a non-L2-like *ni yotte* passive LCS. Consequently, it was not

²² The presence of the BE_{circumstantial} functor in the English control structure – e.g. *Bill kept Fred composing quartets* (Jackendoff, 1983: 198, (10.23b)) – should have aided English learners posit the first layer of the LCS of the *ni* direct passive verb.

assigned a simplex event structure; rather, it consisted of a complex event structure consistent with that of the *ni* direct (which in turn should be similar to that of the *bei* short passive). As a result, Chinese learners assigned to the *ni yotte* event structure a temporal interpretation complementary to that of the *ni* direct.

The *ni* direct passive is comprised of a complex event structure; the *ni yotte* passive is a simplex one.²³ In the event structures of both passives in (18), *e* represents the variable for an event type (see Pustejovsky, 1992; Grimshaw and Vikner, 1993):

- 18) a. *Ni yotte* passive: [*e*]
 b. *Ni* direct passive: [*e*₁, *e*₂]

Levin and Rappaport Hovav (1999) and Rappaport Hovav and Levin (2001) claim that two interpretations of a complex event structure are possible in terms of the temporal relation of its subevents:

- the subevents – e.g. *e*₁ and *e*₂ in (18b) – are temporally dependent and coextensive;
- no such temporal dependency exists.

An example of the former is *Tracy waltzed to the other side of the ballroom* (example (16) in Levin and Rappaport Hovav, 1999: 207): Tracy's crossing the ballroom started when her dancing began, and the dancing continued until Tracy reached the other side of the ballroom. An example of a temporally independent relation is *Casey's piano playing woke the baby* (example (28a) in Levin and Rappaport Hovav, 1999: 211): Casey's act of playing the piano may have gone on for a while before the baby was awakened (for a similar, formal treatment, see also Jackendoff, 1990: Chapter 10).

In order for an inanimate subject *ni* direct passive to be grammatical, the temporal relation between its subevents must be independent. For instance, the *ni* direct passive – (5a) repeated below as (19) – is taken

²³ If a sentence is paraphrasable using two distinct verbs, it is likely to consist of a complex event structure (Levin and Rappaport Hovav, 1999; Rappaport Hovav and Levin, 2001). The *ni* direct passive (17b) is paraphrasable as 'John was *affected* by being *kicked* by Bill', while the *ni yotte* passive (16b) means 'John was *kicked* by Bill'. For a further list of constraints on the assignment of a complex event structure to a sentence, see Levin and Rappaport Hovav, 1999: 212.

only to express the state of affairs arising as a result of the people's grasping the importance of the issue:

- 19) Mondai no zyuuyoosee-wa kokumin-ni yoku
 the importance of the issue-TOP the people-by fully
 rikai-s-arete iru.
 understand-PASS-PERF
 'The importance of the issue is under the state affected by having been fully understood by the people.'

Although the 'gerund + *iru*' construction allows a temporally coextensive interpretation, (19) cannot refer to a situation concurrent with the ongoing process of the people's understanding the issue. When the inanimate subject *ni* direct passive allows only a temporally coextensive interpretation, it is rendered ungrammatical as shown in (4b) and (5b) in Section II. That is, that passive type will not be read with a temporally coextensive interpretation, although it is a linguistically possible interpretation of a complex event structure.

I propose that at a certain stage of learning, Chinese learners interpreted an inanimate subject *ni yotte* passive in a temporally coextensive relation in an effort to differentiate the *ni yotte* from the *ni* direct passive. As such, they accepted the past and progressive readings of the *ni yotte* as grammatical, but were reluctant to do the same for its perfective readings. The past and progressive readings are congruent with the temporally coextensive interpretation whereas the perfective readings are not. Therefore, Chinese learners' LCS of the *ni yotte* passive affix mirrored that of the *ni* direct passive verb. They differentiated the *ni yotte* and the *ni* direct in terms of temporal interpretations of a complex event structure while maintaining a *ni* direct-like LCS for both passives. Chinese learners' recognition of the lack of an affectivity-like connotation in the *ni yotte* (as exemplified in the non-POS, the non-triggering or other properties) eventually may have led them to reanalyse the *ni yotte* affix from (17a) to (16a).

VII Conclusions

In conclusion, this study has empirically isolated input serving as a catalyst for IL grammar change, with a deductive consequence for

learners' acquisition of L2 properties underdetermined by input. That is possible:

- when one can identify an input-available property and an input-unavailable property, both of which directly and particularly result from a single LCS representation underlying the two; and
- when an L1 effect and the possibility of general learning principles can be excluded from the learning situation.

Finally, I would suggest that pinning down triggering input in a POS situation narrows the range of possible learning processes that researchers can hypothesize as responsible for learners' overcoming a POS problem.

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Appendix 1 Test items

1. The perfective and past (-ta) ni direct passive:

- 1) Bosnia no mati-ga NATO-gun-ni koogeki-s-are-ta.
'A town in Bosnia is under the state affected by having been attacked by NATO.'
- 2) Kimitu syorui-ga tekikoku no spy-ni nusum-are-ta.
'The secret documents are under the state affected by having been stolen by a spy from the enemy country.'
- 3) *Hamlet-wa Shakespeare-ni kak-are-ta.
'Hamlet was written by Shakespeare.'
- 4) *Kaigi-ga gityoo-ni hazime-rare-ta.
'A meeting was started by the chairperson.'

2. The perfective and progressive (-iru) ni direct passive:

- 5) Mondai no zyuuyoosee-wa kokumin-ni yoku rikai-s-arete iru.
'The importance of the issue is under the state affected by having been fully understood by the people.'
- 6) Internet-wa sekaizyuu no hitobito-ni tukaw-arete iru.
'The internet is under the state affected by having been used by people all over the world.'
- 7) *Kono atarasii computer no program-wa Paul-ni tukur-arete iru.
'This new computer program is being made by Paul.'
- 8) *Han-tyuugoku-seehu-undoo-ga Dalai Lama-ni tuzuke-rarete iru.
'The anti-Chinese government movement is being carried on by the Dalai Lama.'

3. The perfective and past (-ta) ni yotte passive:

- 9) Bosnia no mati-ga NATO-gun-ni yotte koogeki-s-are-ta.
'A town in Bosnia has been attacked by NATO.'

- 10) Kimitu syorui-ga tekikoku no spy-ni yotte nusum-are-ta.
'The secret documents have been stolen by a spy from the enemy country.'
- 11) Hamlet-wa Shakespeare-ni yotte kak-are-ta.
'Hamlet was written by Shakespeare.'
- 12) Kaigi-ga gityoo-ni yotte hazime-rare-ta.
'A meeting was started by the chairperson.'

4. The perfective and progressive (-*iru*) *ni yotte* passive:

- 13) Mondai no zyuuyoosee-wa kokumin-ni *yotte* yoku rikai-s-arete iru.
'The importance of the issue has been fully understood by the people.'
- 14) Internet-wa sekaizyuu no hitobito-ni yotte tukaw-arete iru.
'The internet has been used by people all over the world.'
- 15) Kono atarasii computer no program-wa Paul-ni yotte tukur-arete iru.
'This new computer program is being made by Paul.'
- 16) Han-tyuugoku-seehu-undoo-ga Dalai Lama-ni yotte tuzuke-rarete iru.
'The anti-Chinese government movement is being carried on by the Dalai Lama.'

5. The adversative and favourable (non-adversative) *ni* direct passive:

- 17) Mary-wa mukasi no kare-ni ni-zikan mo mat-arete komat-ta.
'Mary had been waited for by her ex-boyfriend for a good two hours (and this greatly upset her).'
- 18) *Mary-wa mukasi no kare-ni ni-zikan mo mat-arete uresikat-ta.
'Mary was happy for her ex-boyfriend to have been waiting for her for a good two hours (and this upset her).'

6. The adversative *ni yotte* passive:

- 19) ?*Mary-wa mukasi no kare-ni yotte 2-zikan mo mat-arete komat-ta.
'Mary had been waited for by her ex-boyfriend for a good two hours (and this greatly upset her).'

7. The Japanese native verb *ni* direct passive:

- 20) Mary tyan-wa itu mo kibisii otoosan-ni home-rare-ta.
'Little Mary was affected by being flattered by her always strict father.'
- 21) Bill-wa kawaii musuko-ni koros-are-ta.
'Bill was being killed, to his sorrow, by his own beloved son.'

8. The Sino-Japanese and Japanese native verb *ni yotte* passive:

- 22) Mary Johnson-wa journalists-ni yotte syoosan-s-are-ta.
'Mary Johnson was applauded by journalists.'
- 23) John Smith-wa America no CIA-ni yotte satugai-s-are-ta.
'John Smith was murdered by the CIA.'
- 24) ?*Mary tyan-wa itu mo kibisii otoosan-ni yotte home-rare-ta.
'Little Mary was affected by being flattered by her always strict father.'
- 25) ?*Bill-wa kawaii musuko-ni yotte koros-are-ta.
'Bill was being killed, to his sorrow, by his own beloved son.'

Appendix 2**Table 6** Judgement scores for the *ni* direct passive

Groups	<i>n</i>	Perfective (- <i>ta</i>)		Past (- <i>ta</i>)		Perfective (- <i>iru</i>)		Progressive (- <i>iru</i>)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Native speaker control	31	1.98	0.090	-1.290	0.920	1.74	0.575	-1.15	1.04
English high advanced	25	1.74	0.765	0.260	1.49	1.66	0.774	0.48	1.30
English advanced	36	1.29	1.07	0.625	1.56	1.13	1.16	0.79	1.19
English intermediate	20	0.95	1.04	0.850	1.17	1.12	0.856	0.98	1.08
Chinese high advanced	36	1.81	0.564	-0.069	1.34	1.63	0.721	0.14	1.43
Chinese advanced	43	1.36	1.09	-0.291	1.31	1.35	0.877	0.57	1.28
Chinese intermediate	6	0.83	0.816	0.083	1.16	1.00	0.837	-0.08	1.46

Table 7 Judgement scores for the *ni yotte* passive

Groups	<i>n</i>	Perfective (- <i>ta</i>)		Past (- <i>ta</i>)		Perfective (- <i>iru</i>)		Progressive (- <i>iru</i>)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
Native speaker control	31	1.89	0.381	1.74	0.561	1.61	0.602	1.71	0.574
English high advanced	25	1.32	0.828	1.10	1.130	1.20	1.020	0.88	1.170
English advanced	36	0.29	1.220	0.35	1.320	0.53	1.320	0.33	1.410
English intermediate	20	0.82	0.893	0.33	1.120	0.72	1.060	0.70	1.250
Chinese high advanced	36	0.76	1.420	1.12	0.857	0.49	1.350	1.31	1.170
Chinese advanced	43	0.17	1.510	0.80	1.240	0.64	1.610	0.67	1.320
Chinese intermediate	6	1.08	0.736	-0.08	1.800	0.75	1.290	0.83	0.683