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How Chinese Learners Acquire Motion Expressions in English

Abstract: This study examines how Chinese adult learners of English acquire characteristic motion event expressions in English with an aim of determining which force mainly drives the rate and the progress of second language acquisition. 36 Chinese learners of English, as compared to a group of English monolingual speakers, were requested to describe voluntary motion events showing varied types of manner and path information (e.g. *The man jumped across the tracks*). Their utterances were analyzed at two levels: a) verb type (manner verb, path verb, general verb) at the lexical level and b) verb-supporting elements (particles, prepositional phrase, zero) at the grammatical level. The results of statistical analyses such as chi-square and one-way ANOVA reveal that although, in general, Chinese learners of English can acquire the typical patterns of motion expression in English, those of intermediate and low proficiencies use specific manner verbs and path particles at a significantly low frequency as compared to English monolinguals. These results show that second language learners have not fully dispensed with the constraints of their native language, suggesting, in general, that language-specific factors play an important role in second language acquisition.

Keywords: language-specific influence; manner verb; motion event expression; path particle; second language acquisition

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1 Motion Expressions and Second Language Acquisition

In the past forty years or so, the verbal expression and mental conceptualization of motion events (e.g. *The man climbed up the hill*) have remained an intensely researched topic in the field of cognitive linguistics. Despite the

fact that human beings' observation of motion events (and spatial events in general) is constrained by biological traits and thus possesses universality, the verbal representation of the same events shows considerable variation across languages and cultures. Characteristics as such have important implications for several disciplines such as linguistic typology, psycholinguistics, and, in particular, second language (L2) acquisition.

Traditional practice in L2 acquisition focuses on error analysis and the “inter-language” of L2 learners across proficiencies. Under the cognitive lens, however, the task is to pin down the main driving force in L2 acquisition – cognitive universality or language-specific factors? This concerns a classical question in linguistics and philosophy, that is, what is the relationship between language and thought? Following the linguistic relativity hypothesis (Whorf 1956; Hunt and Agnoli 1991; Hunt and Banaji 1988), the habitual pattern of language use can influence the way we think about the world. A mild version of such a hypothesis, as proposed by Slobin (1996), argues that a native language we learn in childhood is not a neutral coding system of an objective reality, but instead a system that has trained its speakers from early on to pay attention to specific aspects of events and experience when talking about them. In this light, for adult second language learners, learning a new language may entail acquiring a new way of thinking. Further, the thinking pattern which is fostered in one's childhood and is closely associated with one's native language will be particularly difficult to reconstruct when one acquires an additional language in adulthood.

Within this context, this study aims to examine how Chinese learners of English at three levels of proficiency (advanced, intermediate, and low) acquire the typical way of using motion expressions in English. If the effect of linguistic relativity is attested, then L2 learners should have considerable difficulty in getting rid of the constraints of their native language and fully acquiring the target language patterns. By contrast, if language cannot exert an important influence on our thought, then L2 learners should be able to redirect their thinking patterns and learn typical motion expressions in the target language with relative ease and high efficiency.

2 Motion Event Typology and the Expression of Motion Events in a Second Language

Talmy (1985, 2000) observes that world languages show highly systematic

patterns in encoding motion events. A typical motion event includes several key semantic elements: the protagonist in movement (Figure), the background against which the movement occurs (Ground), the motion itself (Motion), the trajectory followed (Path), the specific way an entity moves (Manner), and sometimes the provoking force that enables the movement (Cause). Represented by English and most Germanic languages, some languages tend to express manner of motion in the main verb and path in verb particles (satellite-framed language; e.g. *A boy jumped down the stairs*). In contrast, other languages such as Spanish and most Romance languages usually put path in the main verb and manner (if at all) in peripheral elements of a clause (verb-framed language, e.g. ‘A boy descended the stairs by/while walking’). Chinese, however, is widely considered to have typological properties of both types (i.e. equipollently-framed language as proposed by Slobin [2004]; see also Beavers et al. 2010; Chen and Guo 2009; Filipovic 2007; Ji et al. 2011; Talmy 2009). The above-exemplified event, if expressed in Chinese, can assume either the form of ‘*Nan2hai2 tiao4xia4 lou2ti1*’ (‘The boy jumped down the stairs’) or ‘*Nan2hai2 tiao4zhe xia4 le lou2ti1*’ (‘The boy went down the stairs by jumping’).

Previous literature on L2 acquisition of motion expressions produces some controversial results. A close look at these findings suggests that the rhythm of acquisition can be influenced by multiple factors (see, for instance, Athanasopoulos 2015a, 2015b; Cadierno 2004, 2010; Czechowska and Ewert 2011; Engemann 2012; Filipovic 2011; Hohenstein et al. 2006). To illustrate, Cadierno and Ruiz (2006) and Navarro and Nicoladis (2005) examine whether, and how, speakers of satellite-framed languages (English and Danish, respectively) acquire patterns of motion expression in verb-framed Spanish. They find that these L2 learners can generally fully learn the lexicalization pattern in the target language, that is, acquiring the mapping of which semantic components of motion events onto which grammatical categories (i.e. encoding path of motion in the main verb). However, when exploring how English learners of French encode caused motion events (e.g. *The boy rolled the ball across the street*), Hendriks et al. (2008) reveal that the factor of task complexity might affect the progress of acquisition. Although English learners of French can generally learn to conflate path with motion itself in the main verb, they tend to express manner in the verb as well, thus making their production tinted with a clear non-idiomatic flavor (e.g. ‘to push ascending’).

Ji and Hohenstein (2014a, 2014b) investigate how Chinese learners of English acquire the target pattern of motion expressions. They report that the nature of motion events under examination (i.e. voluntary vs. caused) seems

to have an impact on the rate as well as the outcome of acquisition. Although L2 learners across proficiencies (including beginners) can generally acquire how to encode voluntary motion events in English, even those of advanced proficiency have difficulties in acquiring the characteristic pattern of caused motion expressions in English. As compared to voluntary motion expressions, caused motion events present a much more complex set of semantic ingredients such as the cause of the motion, different types of manner information (e.g. manner of the causing agent, manner of the provoked entity), and different types of path (e.g. path of the agent, path of the moving entity). Encoding such complex events requires more cognitive resources on the part of the L2 learners and a greater burden of switching the thinking pattern tied with one's native language. Therefore, even the utterances of L2 learners of high proficiency show clear evidence of L1 transfer.

In this context, the current study continues to extend the languages covered to include equipollently-framed Chinese, a language that has been relatively under-researched in previous literature, and explores how L2 learners acquire the typical verb conflation pattern in motion expressions in English.

3 Research Methods

In this section, specific research methods are introduced including the recruitment of participants, the procedure of the experiment, the design of experimental stimuli, and the specific way the collected data was segmented and coded.

3.1 Participants

Participants were recruited from among Chinese university students who take English as their second language and acquire it mainly from classroom teaching and learning.

A total of 36 L2 learners were recruited, along with a control group of English monolinguals (group ENNA: 12 gender-balanced students). The English proficiency levels of L2 learners were determined using the China National English Test for College Students. Those who passed Band 4 were classified as beginners (group CEBE: 12 gender-balanced students); those who passed Band 6 were considered as intermediate learners (group CEME: 12 gender-balanced students); and those who passed Band 8 (for English major students) had

reached the advanced level (group CEAD: 12 gender-balanced students).

3.2 Procedures

The experiment was administered in a quiet room on campus. The participants were requested individually to verbally describe what they saw. A female experimenter was present, but she did not interrupt the narration of the participants unless the latter did not provide any specific information regarding motion events (e.g. lack of clear manner or path information).

3.3 Materials

The stimuli for the experiment included 16 video clips, each of 5 seconds in duration. These video clips illustrate motion events showing different types of manner and path information (e.g. *The boy jogged along a row of trees*; *The boy jumped down the stairs*). The manner types include *walking* (and specific ways of *walking* such as *limping* and *sneaking*), *running* (and specific ways of *running* such as *jogging*), *jumping* (and specific ways of *jumping* such as *hopping*), and *climbing* (as well as *crawling*). The path types have four varieties: a) path along the vertical dimension: *up* and *down*; b) path involving crossing a boundary: *in*, *out of*, *across*; c) path of deixis: *towards* and *away from*; and d) path parallel to Ground: *around* and *along*. The Figure was the same across all video clips, which were played to the participants on a computer in two orders, with Order B being the reverse of Order A.

3.4 Data Coding

The utterances of the participants were recorded and transcribed by the experimenter. The analysis was conducted in units of clause. In most cases, participants produced only one clause. In a few situations where more than one clause was given, we coded either the clause with the greatest number of motion components (e.g. *He climbed up the cave* [manner + path: target clause], and *he finally went up* [path only]), or the first naturally occurring clause in the case of multiple clauses with an equal number of semantic ingredients (e.g. *He climbed* [manner only: target clause] and *finally went up* [path only]).

Each clause was analyzed with respect to two levels. Firstly, at the lexical level, we examined in detail the type of verbs used and coded the verbs into

three groups: a) manner verbs (e.g. He *jogged* across the street), b) path verbs (e.g. He *crossed* the street), and c) other verbs (i.e. those indicating a general notion of movement only: *go*, *move*, etc.). Secondly, at the grammatical level, we took a close look at the verb-supporting elements and coded them into three types: a) path particles (e.g. He is jogging *across* the street); b) prepositional phrases indicating a location rather than a concept of translocation (e.g. He is jogging *on the street*); and c) bare verbs with no concept of path encoded (e.g. He is *jogging*).

In addition, previous studies (Ji 2014) suggest that Chinese monolingual speakers, as compared to their English counterparts, tend to use manner verbs in conjunction with specific manner modifiers in the form of gerunds, adverbials, adverbs, or prepositional phrases (e.g. He is *crawling* into the cave *on all fours*; He is *limping* into the bedroom *slowly and carefully as if he has injured his leg*). Therefore, we also examined whether L2 learners across proficiencies show some L1 influence by retaining a similar tendency.

4 Results

In this section, we explore three specific questions with an aim of determining whether Chinese L2 learners of English can generally acquire the lexicalization pattern of motion expressions in English (i.e. manner verb + path particle).

Question 1: Is there an association between types of verb used (i.e. manner verb, path verb, other verbs) and levels of proficiency of L2 learners (i.e. ENNA, CEAD, CEME, CEBE)?

Question 2: Is there an association between types of path-encoding elements (verb particles, prepositional phrases, zero) and levels of proficiency of L2 learners (i.e. ENNA, CEAD, CEME, CEBE)?

Question 3: Is there any significant difference in the proportion of use of manner modifiers across L2 learners of different proficiencies (i.e. ENNA, CEAD, CEME, CEBE)?

Statistical analyses such as the chi-square test and the one-way ANOVA were conducted. Simple effect analyses (e.g. mainly z-tests) were further conducted as follow-up where applicable.

4.1 Verb Types and Proficiencies of L2 Learners

A chi-square test was performed to investigate whether there is an association

between verb types and L2 learners' proficiencies. The results revealed that there was indeed a significant association between the two variables: $\chi^2(6)=17.113, p<0.009$. In other words, there was a significant difference in the proportion of types of verbs used and the level of acquisition the L2 learners had reached. The z-tests with Bonferroni corrections further showed that, regarding the use of manner verbs, English monolinguals opted for specific manner verbs at a significantly higher frequency as compared to L2 learners of intermediate and low proficiencies: ENNA ($M=15.83, SD=0.577$) > CEME ($M=14.58, SD=1.165$); CEBE ($M=14.75, SD=1.485$). With respect to other verbs (i.e. general verbs such as *go, move*), L2 learners of intermediate and low proficiencies used this type of verb with no specific manner information significantly more frequently than monolinguals of English: CEME ($M=1.00, SD=0.853$); CEBE ($M=1.00, SD=1.414$) > ENNA ($M=0.08, SD=0.289$). The four groups did not differ significantly in their proportion of use of path verbs: ENNA and CEAD ($M=0.08, SD=0.289$), CEME ($M=0.42, SD=0.793$), and CEBE ($M=0.25, SD=0.452$) (see Fig. 1).

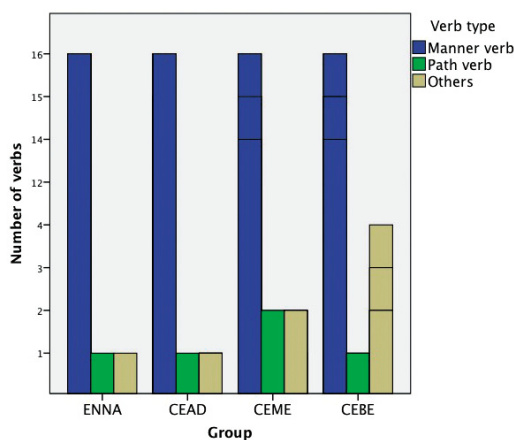


Figure 1: Use of verb types and L2 proficiencies

A qualitative look at the data suggests the same pattern. Take as an example one stimulus illustrating a boy tiptoeing down the roof of a barn. English monolinguals and advanced Chinese learners of English tended to use specific manner verbs, whereas L2 learners of low proficiencies opted for general verbs, sometimes along with prepositional phrases or adverbials encoding manner information to compensate for the low semantic density in the verb, as

demonstrated below.

- (1) a. Bonny *crept* down from the roof of the barn. [ENNA01]
- b. He *sneaked* down the barn. [CEAD08]
- c. Bonny *go[es]* down the roof *like a thief*. [CEME12]
- d. Bonny *going[goes]* down [the] barn. [CEBE08]

4.2 Path-encoding Elements and Proficiencies of L2 Learners

A chi-square analysis was conducted to examine the association between proportions of varied path-encoding grammatical elements and levels of acquisition in L2 learners. It was found that there was a significant association between the two factors: $\chi^2(6)=23.782, p<0.001$. The z-tests with Bonferroni corrections further revealed that English monolinguals used verb particles to encode path information at a significantly higher frequency as compared to L2 learners across proficiencies: ENNA ($M=15.67, SD=0.651$) > CEAD ($M=14.25, SD=1.422$), CEME ($M=14.08, SD=2.109$), and CEBE ($M=13.67, SD=1.073$). In relation to this, the L2 groups used prepositional phrases to encode a static location (rather than a dynamic translocation) significantly more frequently than English monolinguals: ENNA ($M=0.33, SD=0.651$) < CEAD ($M=1.33, SD=1.155$), CEME ($M=1.58, SD=1.730$), and CEBE ($M=2.25, SD=1.215$). Both monolingual and bilingual participants only used bare verbs (i.e. absence of path-encoding elements) occasionally (see Fig. 2).

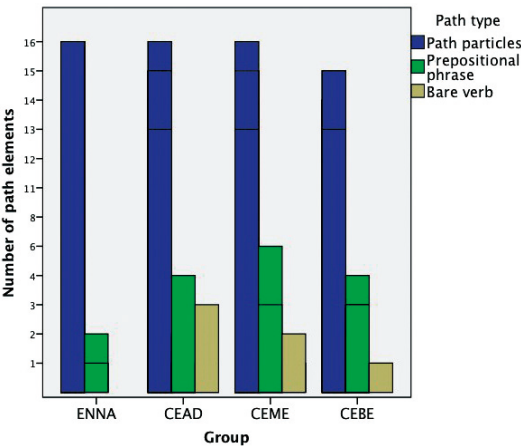


Figure 2: Use of Path-encoding elements and L2 proficiencies

The propensity of using prepositional phrases to indicate a static location in place of the trajectory of motion can be clearly witnessed from the production of L2 learners across proficiencies. The stimulus examined in the following example depicts a boy jogging along a row of trees in the park. The frequency of use of path itself decreased significantly with decreasing L2 proficiencies.

- (2) a. Bonny ran *along* the line of trees. [ENNA01]
- b. He runs *beside* the pine trees. [CEAD09]
- c. Bonny is running *in front of* the row of trees. [CEME12]
- d. Bonny is running *aside* [beside] the tree. [CEBE11]

4.3 Use of Manner Modifiers across Groups

A further analysis was conducted to see whether L2 learners of English have eliminated the L1 influence of using specific manner verbs and manner modifiers at the same time. A one-way independent ANOVA was performed to test any significant differences in the proportion of utterances using manner modifiers across participant groups (ENNA, CEAD, CEME, CEBE). The results suggest that the four groups differed significantly in their frequency of use of additional manner specification: $F(3, 44) = 5.014, p < 0.004$. Post hoc comparisons with LSD corrections further showed that all L2 learners across all proficiencies used significantly more manner modifiers than English monolinguals: ENNA ($M = 1.33, SD = 0.888$) < CEAD ($M = 3.00, SD = 1.859, p < 0.010$), CEME ($M = 3.67, SD = 1.303, p < 0.000$), and CEBE ($M = 2.75, SD = 1.815, p < 0.027$). The proportions of manner modifiers, however, did not differ significantly across the three L2 groups.

The L1 influence of encoding manner information via multiple grammatical devices and at varied loci across a clause is frequently attested in utterances produced by Chinese learners of English, even at the advanced stage of acquisition.

- (3) a. Bonny *limped* into this bedroom. [ENNA02]
- b. *Stumbling*[ly], he *walked slowly* into the bedroom. [CEAD09]
- c. Bonny *walked* in[to] the bed[room] *in* [a] *strange way as if he was injured*. [CEME02]
- d. Bonny *walked* into his bedroom *as if he has broken his leg*. [CEBE08].

In summary, as regards verb types, the L2 learners across proficiencies, just

like English monolinguals, predominantly encoded specific manner information in the main verb and only occasionally used verbs to express path. However, except for the advanced learners, L2 participants of low and intermediate proficiencies did not use manner verbs sufficiently frequently as compared to English monolinguals. Meanwhile, they still used main verbs to merely indicate a general notion of movement from time to time, a phenomenon virtually absent in English monolinguals. Further, with respect to path particles, all groups of L2 learners used verb particles to express path significantly less frequently than did English monolinguals. Instead, they chose to use prepositional phrases to indicate a general location only, rather than specifying the trajectory of translocations. In addition, as discussed earlier, Chinese as an equipollently-framed language shows a strong tendency toward “double encoding” of given motion components. For instance, Chinese monolinguals not only use specific manner verbs but also further provide additional details of manner outside the main verb in gerunds or adverbs. Our results show that such an L1 influence is clearly attested in L2 learners across proficiencies, suggesting that the L2 learners seem to have difficulties fully eliminating the constraints of their L1.

5 Discussion and Conclusions

This study employed quantitative analyses to explore whether, and how, Chinese L2 learners acquire the characteristic pattern of motion expressions in English from a cognitive perspective. It is hypothesized that if a universal cognitive mechanism mainly guides the rhythm of acquisition, then L2 learners should acquire the target language without particular challenges. Instead, if language-specific factors have a larger role to play in the process of acquisition, then L2 learners should have difficulties completely shaking off their L1 constraints and fully acquiring the target pattern.

The most up-to-date statistical tools such as the chi-square and one-way independent ANOVA tests were utilized to analyze the data collected. Our findings indicate that the L2 learners did not fully acquire the target pattern of [manner verb + path satellite] in English motion expressions. Although they mainly used manner verbs and path particles as compared to other verb forms and path-encoding elements, their frequency of doing so was significantly lower than monolingual speakers of the target language. More importantly, the L2 learners failed to eliminate the most distinctive feature of “double

encoding” in their source language and still retained the tendency to encode a given motion component such as manner through multiple grammatical devices (e.g. main verb, gerund, adverb).

It is worth mentioning that these results are obtained in a pair of languages sharing at least some typological features (i.e. both have satellite-framed properties). Despite this facilitating force, the adult Chinese learners of English have particular difficulties in shaking off their L1-related thinking pattern and moving toward a new way of thinking in an L2 during the process of their acquisition. These findings are generally consistent with the claims of the linguistic relativity hypothesis, thus suggesting that the spatial language we speak has a shaping effect on the encoding of our spatial cognition, and in the particular domain of L2 acquisition, language-specific factors have an indispensable role to play.

Findings such as these offer fresh insights into several important issues. First of all, why do previous studies suggest that a general acquisition of lexicalization patterns of motion events in a typologically opposing language is possible (speakers of satellite-framed languages can generally acquire motion expressions in verb-framed languages, e.g. Cadierno and Ruiz 2006; Navarro and Nicoladis 2005), whereas our own results show that even the acquisition of motion expressions in a typologically close language (e.g. the acquisition of English motion expressions by Chinese learners) can be far from mature? One explanation may be that previous studies focus on whether and how the general pattern of the mapping of semantic components onto grammatical categories can be acquired whereas the current study puts more emphasis on the acquisition of specific linguistic devices at both the grammatical and lexical levels (e.g. specific manner verbs, path particles, or prepositions). It seems that at the general level the regularity of correspondence between semantic and grammatical categories may be learned with no huge cognitive burdens involved, but at the finer level of lexical and grammatical items, a complete and accurate acquisition seems to require a longer time to achieve. This also explains why advanced learners generally have target-like verbal performance as compared to beginners and learners of intermediate proficiency. The former apparently have longer years of learning experience.

Secondly, task-specific requirements may have an influence on research findings. Ji and Hohenstein (2014b) investigated how adult Chinese learners across proficiencies (high, intermediate, low) acquire a specific type of caused motion expressions involving accompanied movement (e.g. *The boy rolled a ball across the street [and himself went across the street with the ball]*) in the context of a communicative task (e.g. “Describe these motion events

as detailed as possible to an imagery listener”). They found that in terms of the frequency of expressing types of motion components within a clause (e.g. manner of motion, path of motion, cause of motion, etc.), there was no significant difference between learner groups and monolingual speakers. However, when examining in what pattern the chosen motion components were distributed across a clause, the learner groups employed a much “looser” pattern to organize semantic information as compared to monolingual speakers, producing, from time to time, atypical syntactic constructions to encode caused motion episodes (e.g. ‘going across a street while rolling a ball’ in Chinese vs. *rolling a ball across the street* in English). The similarity in type and number of motion components encoded most probably results from adult participants’ full awareness that for communicative purpose, a maximal number of semantic ingredients need to be expressed. The grammatical devices utilized to satisfy this communicative requirement, however, dramatically differed between L2 learners and monolingual speakers, thus suggesting that a full acquisition of the target language pattern is yet to be achieved and is constrained, in fact, by varied linguistic as well as contextual factors.

Last but not least, studies along the current research line may lead to a question beyond the mere linguistic level: To what extent is the process of L2 acquisition accompanied by a switch (or reintegration) of one’s thinking mode, and further, to what extent will the L2 learners conceptualize motion events in a different way from their monolingual counterparts? Inquiries into such questions will directly test the linguistic relativity hypothesis and will have to address, among other things, three questions: a) whether, and how, the motion language we speak influences our conceptualization of motion events in a systematic way; b) in which way(s) such an influence takes place (e.g. memory recall, similarity judgment); and c) how strong the influence can be (e.g. influence on habitual behavior, influence on mental conceptualization, influence on language-engaged activities only). Further investigations into these aspects will greatly help reveal the nature of the relationship between language and thought in general (see, for instance, Pinker 1994; Slobin 2004; Sternberg 2001).

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Appendix

Descriptions of sixteen voluntary motion stimuli

1. The boy is riding a horse up the hill.
2. The boy is walking on stilts across the tennis court.
3. The boy is driving a car towards the hill.
4. The boy is skating around a sculpture.
5. The boy is tiptoeing down the roof of a barn.
6. The boy is limping into a bedroom.
7. The boy is swaggering along a row of benches.
8. The boy is hopping away from a fountain.
9. The boy is jogging along a row of trees.
10. The boy is skipping away from a snowy slope.
11. The boy is crawling into a cave.
12. The boy is walking down the stairs.
13. The boy is jumping around a flower stand.
14. The boy is walking towards a house.
15. The boy is running across the tennis court.
16. The boy is climbing up a cave.