# On the development of second language learners' English motion constructions – a longitudinal usage-based classroom investigation

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**List of Papers**

*This dissertation is based on the following papers.*

Paper 1 (LEC):
Li, P., Eskildsen, S. W., & Cadierno, T. (forthcoming). Tracing an L2 learner's motion constructions over time—A usage-based classroom investigation. *Modern Language Journal*.

Paper 2 (PL1):
Developing L2 constructions to express motion in English: A usage-based case study of a classroom Chinese learner.

Paper 3 (PL2):
A usage-based classroom investigation on the development of a Chinese learner's motion constructions in L2 English.

**English Summary**

Informed by cognitive linguistics, the present study traces the individual developmental trajectory of motion constructions in a second language (L2) from the perspective of usage-based linguistics (UBL). A key motivation is that previous second language acquisition (SLA) research on motion constructions has tended to be cross-sectional; as such, little is known about the developmental aspects of L2 motion constructions. Drawing on Talmy's (2000) motion event typological approach, the study aims to investigate the individual learning trajectory of L2 motion event expressions and examine the locally situated and contingent nature of language learning.

The data come from a longitudinal audio–video database of classroom interaction – *The Multimedia Adult English Learner Corpus* (MAELC) at Portland State University. Three informants are included in the present study: an adult Spanish-Speaking Mexican learner (Carlos) of L2 English and two adult Chinese learners (Lan and Ya) of L2 English. The study uses both quantitative and qualitative methodologies. The quantitative methodology investigates productivity by applying type–token analysis and by analyzing the learners' lexical means to express motion events over time. The qualitative methodology examines the locally contextualized nature of L2 learning through a conversation analysis-informed microanalysis (Eskildsen, 2012).

The thesis consists of three closely related research papers. Research paper 1 (co-authored with S. Eskildsen & T. Cadierno, henceforth LEC), *Tracing an L2 learner's motion constructions over time – A usage-based classroom investigation*, investigated the individual development of English motion constructions by the Spanish learner, Carlos. Building on LEC, research paper 2 (henceforth PL1), *Developing L2 constructions to express motion in English: A usage-based case study of a classroom Chinese learner*, examined the learning of English motion constructions by the Chinese learner, Lan, and compared the learning outcomes between Lan and Carlos. Research paper 3 (henceforth PL2), *A usage-based classroom investigation on the development of a Chinese learner's motion constructions in L2 English*, built on LEC and PL1 by including another Chinese learner, Ya, in the investigation and compared the learning

outcomes between Ya and Lan. The role of usage events was further addressed in PL1 and PL2.

The results of the investigation showed that the three learners developed their motion constructions from initially relying on limited linguistic items to express Motion and Path of motion towards using more varied linguistic means over time. Later emergent linguistic patterns were observed to be built upon previous experience. However, motion constructions within individual motion inventories differ from learner to learner. *Go(/going/goes/went)* and *come (came/coming)* were found to be the two most frequently used verbs to express Motion, while the preposition *to* occurred most frequently for the expression of Path. It was also found that certain linguistic items that encode Path tend to initially revolve around a specific verb-island (Tomasello, 1992), but would later be generalized to be combined with other motion verbs as learning advances. *Go* patterns were shown to develop towards a general increase in the degree of productivity across the three learners, while fluctuations in the type–token ratios were observed in Lan and Ya's *come* patterns. Although no ultimate abstract schema that sanctions the totality of motion constructions seemed to emerge, *go to x* occurred as an utterance schema across the three learners, while *come to x* was observed only in Carlos and Lan. Furthermore, potential cross-linguistic influence from the learners' L1 was also observed (e.g., Lan's use of *he running go home* in PL1). In addition, by tracing the occurrence of motion constructions (i.e., *went to x* in PL1 and *come to x* in PL2) in classroom interactions, the study showed that affordance (van Lier, 2000) plays an important role in language development and that both language and language learning are locally situated and adaptive to the interactional environment in the classroom (e.g., Eskildsen, 2012).

The aforementioned findings in the present study aligned with the usage-based perspective on language learning and led to a number of issues that were fundamental to L2 developmental research. First, proposed in traditional interlanguage studies, the issue of developmental sequences was challenged because none of the three learners were found to follow a universal order in developing motion constructions. Great variations were observed for different learners at different points in time. However, the UBL

proposed item-based path of learning was identified for the three learners. Second, as schematic patterns (e.g., *go to x*) emerged on the basis of exemplars (e.g., *go to the bedroom, go to the Mexico*), language learning is thus viewed as a bottom-up process rather than being governed by grammatical rules. This also implies that grammar cannot be separated from lexis. As Tomasello (2003, p. 41) expressed, there are "two faces of grammar: smaller elements and larger patterns." Smaller elements can be the linguistic items while larger patterns include the schematic categories and constructions. Third, previous learning experiences have an impact on the constructing process of an L2, as learners' experience of using linguistic forms makes such linguistic resources more available to be used later on (e.g., Eskildsen, 2009, 2012; N. Ellis, 2002; Tomasello, 2000). For example, Lan's initial *went to*-expression (i.e., *went to restaurant*) was an immediate picking up from the teacher's speech. This expression recurred in a free and spontaneous manner at a later point in time, and an utterance schema *went to x* eventually emerged over time. Fourth, the present study provided interactional evidence showing that usage events prompt learning (e.g., Lan's learning of *went to* construction in PL1 and Ya's learning of *come to* construction in PL2), implying that acquisition and use cannot be kept apart. In addition, the potential cross-linguistic influence of the learners' first language (L1) on the learning of L2 English motion constructions (e.g., Carlos's use of *turn the left/right* in LEC) suggests that L1 has an impact on L2 development. However, due to the limited number of informants examined in the present study, the issue of cross-linguistic influence may better be tackled by including more informants of various L1s in future studies.

**Dansk Resumé**

Denne undersøgelse er inspireret af den kognitive lingvistik og følger udviklingen af 'motion constructions' (da. bevægelseskonstruktioner) i individuelle lørneres andetsprogstilegnelse (L2) fra et 'usage-based' (da. brugsbaseret) perspektiv. En vigtig motivation bag undersøgelsen er at tidligere andetsprogstilegnelsesforskning i 'motion constructions' typisk har været udformet som tværsnitsundersøgelser, og det er derfor kun ganske lidt man ved om de mere udviklingsmæssige aspekter af 'motion constructions' i L2. Med udgangspunkt i Talmys (2000) typologiske tilgang sigter studiet mod at undersøge den individuelle udvikling af L2-udtryk for 'motion events' samt at undersøge sprogindlæringens lokalt situerede og betingede karakter.

Undersøgelsens empiriske data stammer fra en longitudinal audio/video-database med klasseværelsesinteraktion – *The Multimedia Adult English Learner Corpus* (MAELC) ved Portland State University. Der indgår tre informanter i undersøgelsen: en voksen spansktalende mexicansk L2-engelsk lørner (Carlos) og to voksne kinesiske L2-engelsk lørnere (Lan og Ya). Undersøgelsen anvender kvantitative og kvalitative metoder. Den kvantitative metode består af type/token-analyse og analyse af lørnernes leksikalske midler over tid og kortlægger udviklingen i lørnernes sproglige produktivitet, mens den kvalitative metode er en konversationsanalysebaseret mikroanalyse, som anvendes til at undersøge sproglæringens lokale kontekstualisering (Eskildsen, 2012).

Denne afhandling består af tre nært beslægtede forskningsartikler. 1. forskningsartikel (medforfattere: S. Eskildsen & T. Cadierno) *Tracing an L2 learner's motion constructions over time – A usage-based classroom investigation* (herefter LEC) undersøger den individuelle udvikling af engelske 'motion events' hos den spanske lørner Carlos. Med udgangspunkt i LEC undersøger 2. forskningsartikel *Developing L2 constructions to express motion in English: A usage-based case study of a classroom Chinese learner* (herefter PL1) indlæring af engelske bevægelseskonstruktioner hos den kinesiske lørner Lan og sammenligner læringsresultaterne mellem Lan og Carlos. Den 3. forskningsartikel *A usage-based classroom investigation on the development of a Chinese learner's motion constructions in L2 English* (herefter PL2) bygger på LEC og

PL1 ved at inkludere en anden kinesisk lørner, Ya, i undersøgelsen og sammenligne Ya og Lans læringsresultater. PL1 og PL2 behandler endvidere den lokale kontekstualisering af sproglæringen ved at undersøge relevante 'usage events' (da. brugsbegivenheder) i nærmere detaljer.

Undersøgelsens resultater viser at de tre lørnere udviklede deres 'motion events' fra i begyndelsen at bero på begrænsede sproglige elementer, når de skulle udtrykke 'motion' (da. bevægelse) og 'path of motion' (da. bevægelsesretning), til over tid at bruge mere varierede sproglige ressourcer. Senere udviklede sproglige mønstre byggede på tidligere erfaringer. Men 'motion constructions' inden for lørnernes individuelle 'motion inventories' (da. bevægelsesinventarer) adskiller sig fra lørner til lørner. De engelske bevægelsesverber *go* (*going*, *goes*, *went*) og *come* (*came*, *coming*) var de to mest anvendte verber til at udtrykke bevægelse, mens præpositionen *to* forekom hyppigst med henblik på at udtrykke retning. Studiet viser også at visse sproglige elementer, der angiver retning, har en tendens til i første omgang at dreje sig om et bestemte enkelte verber (såkaldte verb-island constructions; Tomasello, 1992), men vil senere blive generaliseret til at blive kombineret med andre bevægelsesverber efterhånden som læringen skrider frem. *Go*-mønstre viste sig at udvikle sig i retning af en generel stigning i graden af produktivitet på tværs af de tre lørnere, mens der blev observeret variation i type/token ratioer i Lan og Yas *come*-mønstre. Selvom der ikke syntes at udvikle sig noget ultimativt abstrakt skema, der kunne sanktionere alle 'motion constructions', forekom *go to x* 'gå til x' som et ytringsskema på tværs af de tre lørnere, mens *come to x* 'kom til x' kun blev observeret hos Carlos og Lan. Der blev endvidere observeret mulig tværlingvistisk påvirkning fra lørnernes L1 (fx Lans brug af *he running go home* 'han løber går hjem' i PL1). Endvidere, ved at følge forekomsten af 'motion constructions' (dvs. *went to x* 'gik til x' i PL1 og *come to x* 'kom til x' i PL2) i klasseværelsesinteraktioner, viste undersøgelsen at sproglige elementer i omgivelserne (såkaldte 'affordances'; van Lier (2000) spiller en vigtig rolle i den sproglige udvikling, og at både sprog og sprogindlæring er lokalt placeret og adaptivt til det interaktionelle miljø i klassen (fx Eskildsen, 2012).

De førnævnte resultater fra denne undersøgelse stemmer overens med det brugsbaserede perspektiv på sprogindlæring og fører til en række spørgsmål som er grundlæggende for L2 udviklingsforskning. For det første bliver spørgsmålet om udviklingsmæssige sekvenser, der foreslås i traditionelle intersprogundersøgelser, udfordret fordi ingen af de tre lørnere følger en universel orden i udviklingen af 'motion constructions'. Der er derimod stor variation mellem de forskellige lørnere på forskellige tidspunkter. Den brugsbaserede lingvistik foreslår imidlertid en 'item-based' (da. enkeltgenstandsbaseret) læringsvej, og denne blev identificeret for de tre elever. For det andet, eftersom skematiske mønstre (fx *go to x*) opstod på baggrund af eksempler (fx *go to the bedroom*, *go to the Mexico*), bliver sprogindlæring således anset som en nedefra og op-proces snarere end at den bliver styret af grammatiske regler. Dette indebærer også at grammatik ikke kan adskilles fra ordforråd. Som Tomasello (2003, s. 41) udtrykker det, der er "two faces of grammar: smaller elements and larger patterns". Mindre elementer kan være de sproglige elementer, mens de større mønstre omfatter de skematiske kategorier og konstruktioner. For det tredje har tidligere læringserfaringer en indvirkning på L2 konstruktionsprocessen eftersom lørnernes erfaringer med at bruge sproglige former gør sådanne sproglige ressourcer mere tilgængelige for at blive brugt senere (fx Eskildsen, 2009, 2012; N. Ellis, 2002; Tomasello, 2000). For eksempel var Lans indledende *went to* udtryk (dvs. *went to restaurant*) en øjeblikkelig opsamling fra lærerens tale. Dette udtryk optrådte igen på en fri og spontan måde på et senere tidspunkt, og et ytringsskema *went to x* udviklede sig over tid. For det fjerde giver denne undersøgelse interaktionel evidens ved at vise at 'usage events' afstedkommer læring (fx Lans tilegnelse af *went to* konstruktion i PL1 og Yas tilegnelse af *come to* konstruktion i PL2), hvilket indikerer at tilegnelse og brug ikke kan holdes adskilt. Hertil kommer at undersøgelsen antyder at lørnerens førstesprog (L1) kan have en tværsproglig påvirkning på tilegnelsen af L2-engelske 'motion constructions' (fx Carlos' brug af *turn the left/right*). Det er svært at sige noget generelt om L1 påvirkning på L2 med det begrænsede antal informanter der er i denne undersøgelse. Det anbefales derfor at man inkluderer flere informanter med forskellige L1 i fremtidige studier.

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## Chapter 1: Introduction

Time changes, and so do people's acquisition and use of a second language (L2) in real situations. People use language every day to socialize and communicate. They learn languages not only within a certain period of time but also over their entire lifespan through engagements in all sorts of social interactions. Language learning takes place everywhere, such as in the classroom, in a restaurant, or at home. One of the settings that can provide a learning environment is the L2 classroom as it includes a variety of communicative activities in which L2 learners use the target language to talk about their daily lives, express their emotions, describe motion of an object moving from one place to another, etc.

This dissertation does not deal with the historical change of a given language itself; rather, it is concerned with how the individual learning of an L2 changes and develops over time, limited to the linguistic expressions on the semantic domain of motion in L2 English. Thus, it is about the change and development within the learner language, and more specifically, it deals with how L2 inventories of motion constructions within individual learners of English develop over time.

### 1.1 Points of departure and motivation of the present study

Initially, research in the field of second language acquisition (SLA) studies has tended to be descriptive, in which the main focus has been on the description of the learner errors (e.g., Corder, 1967) and later on a learner's ability to acquire a certain linguistic aspect of the target language (e.g., Dulay et al., 1982). Cognitive studies normally do not attribute to social factors in describing learning. Although studies such as Selinker & Douglas (1985) and Tarone (2000) brought in the notion of "context" in studying interlanguage development, the focus has still been on the linguistic structures and the cognitive processes underlying language learning (Eskildsen, 2008). Following a debate generated by Firth & Wagner (1997) on the integration of cognitive and social scopes of second/foreign language use, other researchers have started to be more aware of integrating social dimensions in SLA research (e.g., Hellermann, 2006, 2007; Kanagy, 1999; Lantolf, 2000, 2005; N. Ellis & Larsen–Freeman, 2006).

Following a call by Larsen–Freeman (2004) for the need to examine the interactional evidence showing that language learning is taking place, a number of usage-based SLA studies demonstrating that language learning is socially contingent started to grow (e.g., Eskildsen, 2009, 2011, 2012; Larsen–Freeman, 2006). Usage-based linguistics (UBL) challenges traditional studies of interlanguage development as it views learning as bottom-up and non-reductive, rejecting developmental sequences, the built-in nature of grammatical rules, and the dichotomy of grammar and lexis. Moreover, it views all linguistic units as psycholinguistically identical and that linguistic structures emerge from people's experience of using languages in real situations. Usage-based studies provided a deeper understanding on the developmental perspectives in a wider array of linguistic aspects in SLA, such as the meaningful discourse (Mellow, 2006), *can*-patterns (Eskildsen, 2009), negation patterns (Eskildsen, 2012), and multi-word units (Yuldashev et al., 2013), showing a developing linguistic inventory with variability and non-linearity and bringing out a complex and dynamic picture of language development (e.g., de Bot et al., 2007, 2013). However, there is a wide array of research areas, such as the semantic domain of motion, which have been well examined in cross-sectional studies while leaving a great space for explorations from a developmental perspective. In a recent volume investigating the link between longitudinal research and advanced L2 capacities, Ortega & Byrnes (2008) expressed the need to address developmental trajectory going towards advancedness in L2 learning.

Along such a developmental vein on tracing the development of linguistic constructions and integrating investigations of interactions in the process of L2 acquisition, the present research connects two strands of research that have not been closely linked in previous SLA research, i.e., a usage-based approach to the study of L2 learning and an investigation into the development of motion constructions drawing on Talmy's (2000) motion-event typological framework. Such a longitudinal research on the learning trajectory of motion constructions is also informed by Becker & Carroll (1997) on exploring longitudinal learning of spatial relations, more recent works by N. Ellis & Ferreira–Junior (2009a, 2009b) on the development of verb-argument constructions, and Stam (2010) on the longitudinal development of co-expressions of motion in both speech and gestures. However, the present research is not a mere replication of the

aforementioned studies because N. Ellis and Ferreira–Junior (2009a, 2009b) did not look at the individual learning trajectory of motion constructions, while Stam (2010) looked at the individual learning trajectory of a Spanish learner of English but used elicited methods in data collection. Instead, the present study is a longitudinal investigation on motion event expressions where non-elicited classroom data were used to examine the developmental trajectory within three individual learners of L2 English with two different first language (L1) backgrounds, i.e., Spanish and Chinese.

### 1.2 Research aims and research questions

Drawing on UBL, the aim of the present research is to explore how L2 inventories of motion constructions develop within individual learners in the classroom, thus contributing to a better understanding on the longitudinal aspects of how form-meaning pairings of motion constructions develop in a usage-based fashion. Informed by Eskildsen's (2012) investigation into the role of usage events on L2 development, it further explores the locally situated and contingent nature of language learning. Furthermore, as the learners in the present study come from two different L1 backgrounds, another aim is to investigate the potential cross-linguistic influence between the learners' L1 on their acquisition of motion constructions in an L2.

Six research questions are thus raised:

1. What kind of linguistic material is used by the learner to express Motion, Path, and Ground in the L2 motion inventory across time and what are the kinds of associations between the linguistic items that encode Motion and Path/Ground over time?
2. Are different patterns of motion constructions becoming increasingly productive over time?
3. Is there any interactional evidence showing that the emergence of motion constructions is locally contingent and situated?
4. What are the similarities or differences in the learning trajectory of motion constructions between the Spanish learner and the Chinese learner?
5. What are the similarities or differences in the learning trajectory of motion constructions between the two Chinese learners?

6. Is there any cross-linguistic influence from the learners' L1s on the learning motion constructions in L2 English?

The above-mentioned research questions are tackled in the three research papers. Research Paper 1 (henceforth LEC) mainly dealt with research questions 1 and 2; research Paper 2 (henceforth PL1) addressed research questions 1, 2, 3, and 4; and research Paper 3 (henceforth PL2) focused on research questions 1, 2, 3, and 5. Research question 6 has not been directly addressed in the three papers, but the three case studies did briefly discuss the observations of the potential cross-linguistic influences in the individual learning of motion constructions in L2 English.

### 1.3 Outline of the dissertation

The dissertation is organized as follows. Chapter 2 presents the theoretical backgrounds of the usage-based linguistics/cognitive linguistics approach to language acquisition and Talmy's (2000) motion event typological approach and its application to SLA studies. Chapter 3 discusses the methodologies employed in the three research papers. Chapter 4 provides a summary of each study, and Chapter 5, as a linkage, raises and discusses some issues on language development in relation to the three research papers. The dissertation concludes in Chapter 6 with limitations of the present study and provides suggestions and implications for future SLA research on motion constructions.

### 1.4 Terminological clarifications

The terms "language learning" and "language acquisition" are used interchangeably in the present study when referring to the process of getting knowledge. However, the thesis only uses the term "learning" when talking about learning as a social activity (Kasper & Wagner, 2011).

Other terms that are used interchangeably are "usage event," "context," and "the interactional environment," which refer to the situations in which language learning or use is taking place.

"Utterance schema," a term employed by Tomasello (2003) and later used by, e.g., Eskildsen (2008, 2009, 2012), refers to the semi-fixed schematic template with a fixed part and an open slot, such as *go to x*.

"Affordance" refers to the linguistic expressions that are picked up by the learner from the immediate interactional environment, such as a teacher's or peer's speech, writings on the blackboard, or the textbook (van Lier, 2000).

## Chapter 2: Theoretical Background

### 2.1 UBL and SLA

This chapter consists of two parts. The first part introduces the general theoretical perspectives and findings on UBL within the framework of cognitive linguistics. It does not aim to give an exhaustive overview of all the theoretical assumptions and empirical studies in UBL. Rather, it aims to present a brief outline of the UBL assumptions and findings on language learning and how these UBL findings evolve in the context of cognitive linguistics. The second part briefly outlines recent usage-based studies in second language acquisition research. As a comparison to traditional studies on interlanguage development, the third part discusses the extent to which UBL informed studies on L2 development differ from traditional SLA studies.

#### 2.1.1 Introduction to UBL

People use languages to communicate. How do they acquire a language? One of the traditional approaches to language acquisition is represented by Chomskyan's Universal Grammar (UG) approach, which assumes that there is an innate mechanism of an abstract universal grammar in the brain. Thus, learning from a UG perspective is a top-down and reductive process that requires the breaking down of the already built-in abstract rules, such as grammar, into more concrete items, such as words or phrases. In contrast, the usage-based model holds the idea that language learning is a non-reductive and bottom-up process, with more abstract linguistic categories built upon experiences and many instances of using concrete linguistic items. The term UBL in the thesis specifically refers to the cognitive grammar approach within the context of cognitive linguistics (Langacker, 1991, 2000; Tomasello, 2000, 2003), which views all linguistic expressions as psycholinguistically identical and focuses on the close interconnection between linguistic forms and their underlying meanings.

However, it should be acknowledged that usage-based theories to language acquisition are not limited to cognitive linguistics, but cover a variety of approaches such as emergentist and frequency-based approaches (e.g., Bod et al., 2003; Bybee & Hopper, 2001; Larsen–Freeman, 2006; N. Ellis, 2002), Dynamic Systems Theory (DST) (e.g.,

De bot et al., 2007, 2013), and Computational Unified Model (MacWhinney, 2008). Different usage-based approaches are not isolations on their own; rather, they complement each other while focusing on different aspects of language acquisition. For example, a UBL approach in cognitive linguistics focuses on viewing the linguistic system as a whole, while a usage-based DST approach is more interested in the interactions among different sub-systems (de Bot et al., 2013). All these usage-based theories share the same tenets, which view linguistic constructions as meaningful form-meaning pairings, linguistic system as emergent, and linguistic knowledge as rooted in people's experiences of using the language in real situations.

#### *2.1.1.1 Tracing the roots of UBL*

The term UBL first appeared in Langacker (1987) as a description of Cognitive Grammar. It was later elaborated in Langacker (1988, 1991, 2000) and in many other research literatures that focus on theoretical (e.g., Archard, 1997; Barlow & Kemmer, 2000), empirical (e.g., Tomasello, 2003), and methodological (e.g., Tummers et al., 2005) issues in cognitive linguistics.

From the perspective of UBL, linguistic knowledge is viewed as a structured inventory (Langacker, 1987) of different linguistic units as form–meaning parings. These linguistic units are conventionalized as constructions through people's encounters of language use in different usage events. The term "usage event" is used to refer to the real situations in which language learning or use is taking place. Constructions can be simple (e.g., verb) or complex, such as the English present progressive construction (e.g., subject auxiliary verb verb*ing*), and they can be concrete (e.g., *I go to the bank*) or abstract (e.g., pronoun verb preposition noun phrase). Linguistic knowledge consists of a continuum of constructions at different levels of abstraction, which can include morpheme, word, or even larger categories, such as utterances at sentence or discourse level. Such a cognitivist view denies the traditional idea that linguistic form and its underlying meaning are separable and linguistic rules are pre-defined; instead, it suggest that grammatical rules are formed on the basis of many experienced and interrelated exemplars. Language learning can thus be interpreted as "the piecemeal learning of

many thousands of constructions and the frequency-biased abstraction of regularities within them" (N. Ellis & Larsen–Freeman, 2006, p. 565).

#### *2.1.1.2 Item-based, piecemeal, and bottom-up learning*

The UBL findings that language learning is item-based, piecemeal, and bottom-up derive from studies on the development of linguistic systems in child first language acquisition (L1A) (e.g., Dabrowska, 2000; Lieven, 2009; Lieven & Tomasello, 2008; Tomasello, 1992, 2000, 2003). These studies challenge the traditional view of language learning operating on a word by word learning mechanism, as children do not strictly follow the acquisition order of initially one-word and later two-or-more-words stages. Rather, early children's speech consists of a great number of "frozen phrases" (Lieven et al., 1992), such as *lemme-do-it, gimme-it* (Tomasello, 2003). These expressions may be regarded as chunks at the beginning – they seem to function as a single item for the children. These chunks may be broken down into a schema, such as *let x do it*, as a result of more frequent uses of, e.g., *lemme-do-it, let-her-do-it, let-him-do-it, let-them-do-it*. Thus, language learning is viewed as a bottom-up process as schematic representations arise from language use. This view differs from the nativist-linguistic perspective, which regards language learning as building up expressions from already acquired words and proposes grammatical rules as a pre-built-in system (Lieven & Tomasello, 2008). Rather, the bottom-up process is slow and piecemeal and goes from an initial reliance on concrete items (e.g., *lemme-do-it, let-her-do-it*) towards more schematic and abstract constructions (e.g., *let x do it, let x verb it*). It is also an inductive process, as contrasting the UG perspective which views concrete linguistic expressions as learned on the basis of abstract grammatical knowledge (Lieven & Tomasello, 2008).

Furthermore, UBL views that language learning and abstraction share the same process (Tomasello, 2000). As expressed in Tomasello (2000, p, 238), "linguistic knowledge – however abstract it may ultimately become – derives in the first instance from the comprehension and production of specific utterances on specific occasions of use." However, not all linguistic schemas will reach a final abstractness as grammatical rules (e.g., Fillmore, 1989), indicating no end-state of language learning (Larsen–Freeman, 2005).

### 2.1.2 UBL in SLA

Learning an L2 does not completely follow the same route as learning an L1 (N. Ellis, 2003; MacWhinney, 1992). Achard & Niemeier (2004, p. 6) pointed out that L2 learning, like L1 learning, involves learning from specific contexts of using the constructions that "represent the linguistic conventions of the target language" for the expression of particular situations and events (N. Ellis & Cadierno, 2009). Apart from the similarities between L2 learning and L1 learning, L2 development may be built on well-developed L1 knowledge, which, in turn, may lead to a transfer of syntactic structure in the L2 from the L1. As N. Ellis & Cadierno (2009, p. 112) expressed, "during L2 development, L2 constructions are in direct competition with those of the learners' L1, thus laying the ground for potential cross-linguistic influences between the two languages." Furthermore, the kind of input that learners receive also differs while learning an L2 as compared with learning an L1. As Tomasello & Brooks (1999) and N. Ellis & Laporte (1997) put it, the development of L1 knowledge normally comes from a natural scaffolding from caregivers while the L2 input received in a classroom learning environment may be distorted (N. Ellis, 2003).

Despite the aforementioned differences between SLA and L1A, researchers working from the UBL perspective have hypothesized that learning an L2 may follow a similar item-based learning trajectory, that is, going from formulaic expressions towards more productive and abstract patterns. Longitudinal studies are thus needed to test the UBL findings in L1A as applied to SLA. N. Ellis (2003) called for the need of collecting longitudinal data in SLA in order to chart the development of construction learning, and Ortega (2009) has likewise suggested the need for future studies to track the development of L2 knowledge in different linguistic fields.

Recently, a number of UBL-informed studies on L2 development have provided empirical support to the bottom-up, piecemeal, and item-based learning trajectory as has been observed in L1A. These studies do provide developmental evidence in L2 learning as going from formulas via low-scope patterns to gradual productive and abstract patterns (e.g., Eskildsen & Cadierno, 2007; Eskildsen, 2009, 2012; Mellow, 2006; N. Ellis & Ferreira-Junior, 2009a, 2009b; Yudashelve, et al., 2013). Interested in

investigating the individual learning trajectories of L2 motion constructions, the present study uses the term "recurring expressions" to refer to motion expressions that include more than one word and occur more than once in individual motion inventories. Other studies have used the terms "multi-word expressions" (Eskildsen, 2009, 2012) and "multi-word units" (Yudashelve, et al., 2013), for example, to refer to the same thing.

Furthermore, although studies have addressed the added value of UBL-informed studies in the vein of cognitive linguistics as compared with studies based on a UG approach (e.g., Eskildsen, 2008; 2009), the differences between UBL-informed L2 developmental studies and traditional studies on interlanguage development have not been explicitly clarified. Ortega (2013) addressed the need to conduct more research and provide more clarifications on the differences between the UBL view of language development and traditional studies on interlanguage development. How exactly do UBL-based SLA studies differ from traditional studies on interlanguage development?

### 2.1.3 UBL in SLA vs. traditional studies on interlanguage development

This section discusses a number of dimensions that differentiate UBL studies in SLA from traditional studies on interlanguage development.

The term interlanguage was firstly adopted by Selinker (1972) to refer to the interim grammar built along the development towards target language competence. It is a separate linguistic system that differs from the native language and the target language, and it is viewed to be activated in a latent psychological structure whenever an individual attempts to produce sentences in the target language. Such a notion of a built-in device finds kinship in Chomskyan theory, which suggests an innate rule guiding language learning. L2 developmental studies, especially those in the 1970s–1980s, are mainly built on the notion of interlanguage (e.g., Cancino et al., 1978; Stauble, 1978).

The first difference between UBL studies in SLA and studies on interlanguage development is related to the perspective on formulaic expressions, which have been treated differently in terms of the role that these expressions play on language learning. Traditional studies on interlanguage development normally regard formulaic uses as

noises and exclude such uses from the analysis (e.g., Cancino et al., 1978; Schumann, 1979). R. Ellis (1994) further pointed out that formulas are initially regarded as not analytically interesting data in interlanguage studies because they do not have any assigned grammatical categories. Such a perspective on formulaic uses can be exemplified in a canonical study on negations. In tracing the development of English negations and interrogatives in four Spanish learners, Cancino et al. (1978) excluded negated uses such as *I don't know* and *I don't think so* and interrogative expressions such as *do you like*, *do you have*, and *do you want* from the analysis because they regarded these expressions as "routine formulas" or "memorized chunks" that are not themselves meaningful expressions and can never develop further. In another study by Pienemann et al. (1988) focusing on developmental sequences, the status of formulas was also ignored in the analysis. Mackey (1999), who applied Pienemann's developmental sequences in determining the development of English question formation, excluded the very first stage in her analysis, as this initial stage is dominated by uses of formulas.

This standpoint of excluding formulaic uses from the analysis has been debated in a number of usage-based SLA studies that proposed that the formulaic expressions are not noises to be excluded in the analysis; rather, formulas are themselves meaningful constructions and should be treated as usable data. For example, in a rejection to the idea that uses of formulas or routines are outside of the existing interlanguage capabilities within an L2 learner, Eskildsen (2008) addressed the need to investigate uses of multi-word expressions in L2 development. Researchers working on emergentism, such as N. Ellis (2008), point out that formula-based analysis guides the acquisition task, and "repeated experience of the formulas enables the abstracting of low-scope patterns" (Ortega, 2009). Moreover, Eskildsen (2012), in tracing the development of negations by two Spanish learners of English, argued that recurring multi-word expressions such as *I don't know* are themselves meaningful and may serve as the basis to a later more productive utterance schema: subject *don't* verb. In another study on the development of *can*-patterns, Eskildsen (2009) pointed out that the learning of *can*-patterns may not rely on a high frequently occurring exemplar; rather, it may be dependent on a number of recurring exemplars.

A second difference lies in the perspective in establishing developmental sequences or stages of development. In Cancino et al. (1978), developmental sequences were clearly established in relation to negating and interrogative devices. In terms of the negation, four stages of development were proposed. Stage 1 is predominated by "*no* verb", stage 2 is characterized by "*don't* verb", in stage 3 occurs "aux-negation", and in stage 4 appears "analyzed don't" uses and disappearance of "*no* verb". These developmental sequences are not without dispute, as certain of the above-mentioned negation patterns may co-exist at a specific point in time instead of following the pre-proposed strict order of development. Moreover, in a study on developmental patterns for German word order, Meisel et al. (1981) pointed out that developmental stages are determined by appearance of systematic linguistic features, or, in other words, acquired rules, implying that the rules are criteria to determine stages and thus set a prior uniformity for the emergence of rules for all learners.

UBL research in L2 development does not make a clear-cut distinction among sequences or stages of development. It is interested in examining the development of the entire linguistic system, but not interested in setting up a strict division of stages in the course of language development. Because UBL is essentially concerned with linguistic knowledge as consisting of various constructions known as form-meaning pairings, UBL studies in L2 development focus on how these form-meaning pairings are used and developed in the linguistic inventory over time. Later language use is closely linked to previous experiences and the emergence of schematic patterns at different points in time, evolving from concrete uses of a number of previously experienced linguistic expressions. So in the UBL view, there is no stage-like development of language learning; a learner's language knowledge is linked to the entire experience of using the language. This view is compatible with other usage-based approaches as well, e.g., intrinsic to the view of interconnectedness is the usage-based DST approach to language development, which views the whole linguistic system as consisting of a number of sub-systems interacting with each other in the lifespan of an L2 learner's language development (e.g., de Bot et al., 2007, 2013). Similarly, as Larsen–Freeman (2006) put, language learning is not stage-like, rather it is like a "waxing and waning" of patterns at different points in time; some patterns occur and continue to be used later

on while others may only be used in a short period of time and never recur again in the linguistic inventory.

Closely related to the developmental sequences is the issue of variation and uniformity. Traditional interlanguage studies focus more on the uniformity and linear process of language development – that L2 learners, especially with those sharing the same L1, are suggested to follow a similar developmental sequences in the L2 acquisition (e.g., Cancino et al., 1978; Meisel et al., 1981). Although the issue of variation has been raised in studies such as Meisel et al. (1981), it has been assumed that variation indicates a new developmental stage and variation itself tends to be systematic.

UBL, instead, views a linguistic system as dynamic, complex, ever changing, and adaptive to the changing of usage events, and that linguistic constructions emerge through people's engagements in social interactions. Since changing of the usage events may yield a different picture of language development, it is difficult to talk about a complete uniformity in language development. Apart from UBL in cognitive linguistics, many usage-based approaches place much emphasis on variation and view it as one of the core features in language development. For example, DST approach addresses the dynamic nature of linguistic systems and views variation as part of language development (e.g., de Bot et al., 2007). Additionally, other usage-based approaches, such as complexity/chaos theory (Larsen–Freeman, 2012a, 2012b) and emergentism (N. Ellis, 2012), also view linguistic systems as ever changing and language development as a non-linear, dynamic, and complex process. As expressed in Thelen & Smith (1994, p. 145), "in development, as in evolution, change consists of successive make-do solutions that work, given abilities, goals, and history of the organisms at the time." Thus, language development not only varies in response to the change of the usage events but is also shaped by different experiences that language learners are involved in. As a consequence, the progress of language learning is thus unpredictable. Such a perspective also challenges the traditional view on language development, which assumes that language use in an earlier stage can help predict later stage uses.

In a close relation to the third issue is the abandonment of dichotomization of grammar and lexis. Traditional views of interlanguage separated language knowledge into rules and words, thus regarding grammar as one system and lexis as belonging to another linguistic system. The rules were quite often used to define developmental stages. For example, Meisel et al. (1981) argued that the developmental stages were defined by the rules that the positioning of the verb is important to indicate developmental stages. For example, no rules were observed in stage 1, while stage 2 includes particle use and stage 3 includes uses of both particles and inversions and so forth. Such a stand of presupposing the existence of grammatical rules finds kinship in Chomskyan theory in terms of both the preexistence of developmental sequences and the isolation of the independence of learning in syntactic structures (Eskildsen, 2008).

UBL approach, instead, does not separate language knowledge into further component parts; it views language knowledge as a continuum of form-meaning pairings with lexis placed on one end of the continuum and grammar on the other. It focuses on the initial uses of lexis as a starting point. The grammatical rules emerge from people's experience of using the language, as it is "the cognitive organization of one's experience with language" (Bybee, 2006, p. 711). As summarized in Tomasello (2003, p. 41), people learn "two faces of grammar: smaller elements and larger patterns." Smaller elements refer to the concrete uses of linguistic expressions such as formulas while larger patterns cover a variety of schematic patterns, ranging from low scope/semi-productive utterance schemas with fixed parts and open slots such as *come*/*go to x* to fully abstract constructions such as the intransitive construction. These concrete items and abstract patterns reside in "opposite ends of the continuum of linguistic structures" (Achard, 2007, p. 1). Thus, grammar, in the view of UBL, is as an outset of people's use of the language to communicate and socialize: "people construct relational and semantic categories in order to make sense of the world and in order to communicate with one another" (Abbot–Smith & Tomasello, 2006, p. 282). Furthermore, in a similar line with the emergentist view (e.g., Hopper, 1998), Larsen–Freeman (2002, p. 42) gives a detailed account of her view on grammar: "grammar is regarded as epiphenomenal, a by-product of a communication process. It is not a collection of rules and target forms to be acquired by language learners. Language, or grammar, is not about having; it is

about doing: participating in social experiences," thus addressing the emergence of grammar from language use in social practices.

It is worth citing from N. Ellis (2007, p. 85) to summarize the usage-based view on language learning, which is "a dynamic process in which regularities and system emerge from the interaction of people, their conscious selves, and their brains, using language in their societies, cultures, and world."

## 2.2 Motion and SLA

This section sets out to firstly present Talmy's (2000) motion event typology. Furthermore, it discusses a third category of lexicalization pattern in addition to Talmy's binary classification. It then discusses existing SLA studies on English motion event expressions within Talmy's (2000) theoretical framework.

### 2.2.1 Talmy's motion event typology

One of the theoretical stands which the present study builds on is Leonard Talmy's (2000) motion event typology. In this approach, Talmy examines the lexicalization patterns involved in the expression of motion events in different languages of the world (Cadierno, 2008). A motion event is described as follows:

> The basic Motion event consists of one object (the Figure) moving or located with respect to another object (the reference object or Ground). It is analyzed as having four components: besides Figure and Ground, there are Path and Motion. The Path is the path followed or site occupied by the Figure object with respect to the Ground object (Talmy, 2000, p. 25).

Talmy pointed out that these four components refer to "the presence per se of motion or locatedness" in the translational motion: "this is motion in which the location of the Figure changes in the time period under consideration" (Talmy, 2000, p. 25). Besides the internal components of a motion event, there are also Manner and Cause as two external co-events.

Because languages vary in terms of the way that they package the semantic components of a motion event, Talmy (2000) proposed a binary classification of lexicalization

patterns based on how the Path component is lexicalized (i.e., expressed in surface linguistic forms) in different languages. Generally speaking, Verb-framed languages (V-languages) (e.g., Spanish) tend to encode Path and Motion in the verb root while Satellite-framed languages (S-languages) (e.g., English) prefer to encode Path in the satellite and conflate Manner and Motion in the verb root (Cadierno, 2008). V-languages cover "Romance and Semitic languages, Japanese, Korean, Turkish, Tamil, Polynesian, Nez Perce, and Caddo," while S-languages cover "Indo-European languages except Romance languages, Finno-Ugric, Chinese, Ojibwa, and Warlpiri" (Cadierno, 2008, p. 243). According to Talmy (2000, p. 102), the satellite is "the grammatical category of any constituent that is in a sister relation to the verb root," and it covers the verb particles (e.g., *out*, *down*) and should be distinguished from prepositions in English. Talmy pointed out that Path can be expressed either by the combination of a satellite and a preposition or by the satellite alone. However, Filipović (2007), among others, has considered the distinction unnecessary and proposed to treat both types of expressions (i.e., "satellite" and "preposition" in Talmy's terms) that encode Path as Path particles when analyzing motion events. Moreover, in a recent article, Talmy (2009) revised his definition on the expression of Path and, as a supplement, he added prepositional use as an addition to satellite in his (2000) work.

It should be noted that Talmy's binary classification does not mean to be definite, as languages belonging to a certain typological group also display features of another category. Talmy classified the typological approach as based on the characteristics of languages, i.e., "colloquial in style, frequent in occurrence in speech, and pervasive rather than limited" (Talmy, 1985, p. 62). In other words, the binary typological approach is based on the characteristic preferences of Path encoding in different languages. Encoding of Path in other linguistic elements other than the characteristic expression of Path exist in both S- or V-language groups. For example, verbs such as *exit*, *enter*, and *follow* exist in English motion expressions that conflate Path component of a motion event while Spanish allows the expression of Path in a separate complement other than the main verb of a motion event.

### 2.2.2 Equipollently-framed category

A number of studies have pointed out that some languages cannot fit well into Talmy's binary classification and raised the issue of intra-typological differences within languages of the same typological group (e.g., Engberg–Pedersen & Trondhjem, 2004; Ibarretxe–Antunano, 2004a; Özçalişkan & Slobin, 1998, 2000). For example, Özçalişkan & Slobin (1998) and Engberg–Pedersen & Trondhjem (2004) found out that Turkish and West-Greenlandic tend to include more elaborated Path expressions as compared with more "prototypical" V-languages (e.g., Spanish) (Cadierno, 2008). Ibarretxe-Antunano (2004a, 2004b) further pointed out that Basque, as a V-language, largely exhibits the features of an S-language in Path encoding as compared with other languages (e.g., Spanish) that belong to a V-language group. A further elaboration of this argument can be found in her 2009 article where she proposed a *cline of path salience* and called for the need to establish clines of saliency in expressions of Manner and Path instead of viewing them as full categories in the binary classification.

In addition, serial-verb languages, such as Mandarin Chinese, do not seem to fit well with Talmy's two-way typology because such languages allow two verbs (V1+V2) to occur consecutively in a construction. V1 carries the meaning of Manner while V2 expresses Path of motion. In order to address this issue, Slobin (2004, p. 228) proposed Equipollently framed languages (E-languages) as a third category, in which Manner and Path are encoded in two equipollent grammatical forms, i.e., both elements are "equal in both formal linguistic terms and in their force or significance."

Mandarin Chinese, which allows two consecutive verbs to occur in one construction, has been included in this third category. An example is *fei1 chu1 lai2* "fly exit toward.speaker" (Slobin, 2006), in which the verb *fei1* encodes Manner and Motion while the verb *chu1* encodes Path and Motion. However, Chinese scholars have provided different analyses of the linguistic item in V2 position; it can be regarded as a directional complement (DC) instead of a verb (Lü, 1980) or a complement in which the V1+V2 are regarded as a verb compound (Chao, 1968; Li & Thompson, 1981). Along this line, the construction *fei1 chu1 lai2* is regarded as a DC structure (e.g., Cheung et al., 1994; Lu, 2002) in which *chu1* functions as a DC in the motion construction.

There is a great controversy in the typological classification of Chinese between an S-language and an E-language. Peyraube (2006) carried out a diachronic study on the historical development of the directional constructions in Mandarin Chinese. The coding of Path in the expressions of motion events in Chinese followed the coding of DC in V2 position, which are regarded as satellites in Talmy's term. Lamarre (2003) regarded the item in V2 position as a post verbal element that can be treated as a Path satellite. Following a call on "typologies of language use" in Slobin (2004), instead of focusing merely on language structures, Guo & Chen (2009) examined spontaneous uses of motion expressions by Mandarin-speaking Children. It was observed that Mandarin Chinese showed no tendency towards either S- or V-language category. In another study, Chen & Guo (2009, p. 1749) pointed out that Mandarin Chinese writers "follow unique habitual patterns of language use" and concluded that Mandarin Chinese belongs to the E-language type.

In either of the two approaches mentioned above on the typology of Mandarin Chinese, Chinese allows a Path verb/ DC either to be used alone as a motion verb or in a postposition of a Manner verb to express Path. For example, *chu1* can either be used alone as an individual motion verb in *chu1 lai2* "exit toward.speaker" to express Motion and Path or be used in a post-verbal position after a manner verb as in *fei1 chu1 lai2*. Although analytically different, i.e., *chu1* can be analyzed as a satellite (Peyraube, 2006) in *pao3 chu1 jiao4 shi4* ("run out of the classroom") to encode Path as in S-language or as a Path verb (Slobin, 2006) in *pao3 chu1 jiao4 shi4* ("run exit the classroom") as in E-language, the kind of Path encoding in Chinese differs from English because the Path particles in English cannot stand alone as a motion verb. Such a difference may lead to cross-linguistic influence in the encoding of Path information by Chinese learners of English (Spring, 2011).

### 2.2.3 Motion in SLA

Talmy's motion event typological approach has received a great deal of attention in the field of SLA research since the early 2000s, including both cross-sectional and longitudinal studies (e.g., Brown & Gullberg, 2008, 2010, 2011, 2013; Cadierno, 2004, 2008, 2010, 2013; Cadierno & Ruiz, 2006; Jessen, 2013, forthcoming; Jessen &

Cadierno, 2013; Kellerman & van Hoof, 2003; Navarro & Nicholadis, 2005; Negueruela et al., 2004; Stam, 1998, 2006, 2010). Within those studies, there are at least two major dimensions that can be identified (see Cadierno, 2013, for an overview): the type of typological relation that exists between the learner's L1 and L2, which can be inter-typological (e.g., L1 Danish learners of L2 Spanish) (e.g., Cadierno, 2004; Hendriks & Hickman, 2012; Larrañaga et al., 2011; Soroli et al., 2012; Stam, 1998, 2006, 2010) or intra-typological (e.g., L1 German learners of L2 Danish) (e.g., Cadierno & Robinson, 2009; Cadierno & Ruiz, 2006; Hasko, 2009, 2010; Jessen & Cadierno, 2013; Kellerman & van Hoof, 2003) and the type of cross-linguistic influence that is examined in the study, which can be unidirectional, i.e., from the learner's L1 to his/her L2 (all the studies mentioned above), or bidirectional, i.e., from the learner's L1 to his/her L2 and from the learner's L2 to his/her L1 (e.g., Brown & Gullberg, 2008, 2010, 2011, 2013).

#### *2.2.3.1 Cross-sectional studies on motion event expressions in English*

Building on Talmy's (2000) typological framework, SLA research on English motion event expressions has tended to be cross-sectional, aiming to investigate learning of motion constructions in L2 English by learners whose L1 is inter- (e.g., Spanish learners of L2 English) or intra-typologically different (e.g., German learners of L2 English) from the L2 (e.g., Negueruela et al., 2004; Özyürek, 2002; Reshöft, 2011; Stam, 1998, 2006).

The key research questions in those studies are whether and to what extent L2 learners are able to acquire the appropriate L2 lexicalization patterns when talking about motion, and whether and to what extent this learning is influenced by their specific L1 (Cadierno, 2012). Although different studies focus on different aspects (e.g., the expressions of Path or Manner of motion) on the learning of motion expressions using either oral (e.g., Negueruela et al., 2004; Stam, 1998, 2006) or written L2 English data (e.g., Reshöft, 2011), there is converging evidence showing that learners of L2 English are influenced by their well-acquired L1 in both speech and gesture. For example, Özyürek (2002) found out that the expressions of Manner in both speech and gesture in L2 English by L1 Turkish learners was influenced by lexicalization patterns in Turkish. Stam (2006)

pointed out that Spanish learners of L2 English sometimes failed to consistently encode Path in satellites or prepositions in the speech, which may be a result of cross-linguistic influence from L1 Spanish. Reshöft (2011) showed that verb-framed lexicalization patterns were observed in the written L2 production by Romance learners of English. Apart from those unidirectional studies, a number of studies were carried out in order to explore whether bidirectional cross-linguistic influence exists in expressing different semantic components of a motion event, with a focus on Manner and Path (e.g., Brown & Gullberg, 2008, 2010, 2011, 2013). It was found in those studies that linguistic expressions of Manner and Path in the learner's L1 and L2 influence each other.

The main findings of those cross-sectional studies can be summarized along three dimensions (see Cadierno, 2012, 2013 for an overview). First, cross-linguistic influence from the learner's L1 to his/her L2 is observed in both speech and gesture. Second, although L2 learners are able to develop appropriate L2 lexicalization patterns when talking about motion, both target-like and L1-dependent learner patterns co-exist within individual learners. Third, cross-linguistic influence is observed not only from the learner's L1 to L2, but also the other way around, i.e., from L2 to L1.

#### *2.2.3.2 Longitudinal studies on motion expressions in L2 English*

The aforementioned cross-sectional studies provided insights to issues of cross-linguistic influence from a learner's L1 on the learning of L2 English motion expressions and the potential bi-directional influences between the learner's L1 and L2 English. However, what these studies cannot offer is a detailed investigation of the changes in English motion event expressions in the course of L2 development.

Motivated by the lack of longitudinal evidence on the learning of L2 motion event expressions, Stam (2010) traced the development of motion event expressions in both speech and gesture by a Spanish leaner of L2 English. It was found in the study that at an early learning stage, the learner frequently failed to use the motion verb *go* in combination with any accompanying prepositions or satellites as Path expressions. This pattern was attributed to the influence of the leaner's L1 Spanish, in which the Path component is normally expressed in the main verb. Later on, the learner consistently

expressed Path using either prepositions or satellites, thus following the target-like lexicalization pattern in L2 English. Such a finding suggests that L1 may pose a great influence on the learning of an L2 at an early learning stage while later on the L1 influence decreases as the learning process advances.

In addition, N. Ellis & Ferreira–Junior (2009a, 2009b) examined the development of verb-argument constructions (VACs) in the European Science Foundation (ESF) corpus. Their studies provided insights into the quantitative aspect of motion constructions, that is, how acquisition is influenced by frequency factors such as frequency distribution of exemplars within constructions. They found out that within each VAC there was one exemplar that was frequently occurring and prototypical in meaning. The ratios of those verbs were as follows: *go* took 52% of the majority share in verb locative constructions, *put* took 68% in verb-object locative constructions, and *give* took 64% in ditransitive constructions. This finding showed that the first exemplar used in each VAC was the one that occurred most frequently and was prototypical in meaning.

## Chapter 3: Data and Methodology

### 3.1 Participants and setting

#### 3.1.1 Setting

The database in which the present study draws on is *The Multimedia Adult English Learner Corpus* (MAELC) at Portland State University. It contains audio-video recordings of English as foreign language classroom interactions. The focal students are second language learners of English, and they are immigrants coming to the US from all over the world. The classroom is very communicative in a way that teachers and students are talking about all kinds of topics, including people, social life, hobbies, food, etc. The data thus consist of real interactions with real people in real learning situations. The recordings are divided by sessions, each of which contains two consecutive lessons around three hours. There is around a 15-minute break between the two lessons in a session. In each session, two students in the classroom wear a microphone on a rotational basis while the teacher is always wearing a microphone. The classroom setting was equipped with four fixed cameras and two movable ones targeting two students wearing the microphones. Thus, we can simultaneously capture the sound and the image from both the teacher and the two students per session.

MAELC is not the only corpus that consists of longitudinal audio (/-video) recordings. Other longitudinal corpora, such as ESF database, do provide rich and valuable resources for SLA research. The present study picked up MAELC as the data source not only because it consists of longitudinal audio-video recorded data but also because it is easy to locate the participation of a single learner in the classroom over several years. Second, the classroom is like a community, where different kinds of activities are going on – some are controlled by the teacher (e.g., practices of a certain linguistic form) while others may tend to follow free conversations. Such a communicative environment does provide rich linguistic resources to examine language acquisition. These data differ from the elicited data as they make free and spontaneous conversations available. Although the UBL approach treats elicited and free production data as equally important, it highlights the value of the free production data because such data can provide further

evidence of language use in real interactional situations and across contextual boundaries over time (Ortega, 2009).

Apart from the present study on motion constructions, MAELC has been used as a rich database by researchers in SLA studies, such as Eskildsen (e.g., 2009, 2012) on the development of *can*-patterns and English negation patterns, Hellermann (e.g., 2007) and Hellermann & Cole (2009) on dyadic interactions, and Hellermann (2009) on self-initiated self-repairs.

### 3.1.2 Participants

The focal students in the present study are a Mexican learner (Carlos) and two Chinese learners (Lan and Ya) of English. Their participations in the classroom are divided into proficiency levels A–D, which are based on student performance levels (SPL) 0–6 (see Reder, 2005 for more information on proficiency levels). Level A covers SPL 0–2 (beginners), Level B covers SPL 2–3 (high beginners), Level C covers SPL 3–4 (low intermediate), and Level D covers SPL 4–6 (intermediate). During the time spent in the classroom, Carlos and Lan progressed from Level A (beginning level) to level D (intermediate level) while Ya progressed from Level B to level D. Their participations in the classroom have been divided into four recording periods based on the proficiency levels and the hours of recorded classroom participation. RP is used throughout the paper as an abbreviation for recording period.

Carlos:
Recording Period 1 (RP1, Level A): Sept. 27–Nov. 29, 2001: Level A (around 21 hours of video recording)
Recording Period 2 (RP2, Level B): Jan. 18–June 7, 2002: Level B (around 39 hours of video recording)
Recording Period 3 (RP3, Level D): Sept. 23, 2003–Mar. 2, 2004: Level D (around 30 hours of video recording)
Recording Period 4 (RP4, Level D): Sept. 30, 2004–Feb. 22, 2005: Level D (around 24 hours of video recording).

Lan:

Recording Period 1 (RP1, Level A): Sept. 26–Nov. 04, 2002 (around 18 hours of video recording)

Recording Period 2 (RP2, Level B): Jan. 07–Jun. 06, 2003 (around 30 hours of video recording)

Recording Period 3 (RP3, Level C): Oct. 14, 2003–Jul. 13, 2004 (around 15 hours of video recording)

Recording Period 4 (RP4, Level D): Aug. 03, 2004–Jan. 27, 2005 (around 19 hours of video recording)

Ya:

Recording Period 1 (RP1, Level B): Sept. 24–Nov. 08, 2002 (around 8 hours of video recording)

Recording Period 2 (RP2, Level C): Sept. 23– Nov. 04, 2003 (around 14 hours of video recording)

Recording Period 3 (RP3, Level D): Jan. 13–Jun. 04, 2004 (around 28 hours of video recording)

Recording Period 4 (RP4, Level D): Sept. 28, 2004–Feb. 15, 2005 (around 18 hours of video recording)

### 3.2 Methods of analysis

#### 3.2.1 Research methodology 1: type–token analysis

Type–token frequency plays an important role in usage-based studies (e.g., Bybee, 2007; Lieven, 2010). It was proposed that the item-based learning trajectory relies heavily on type and token frequency (e.g., Eskildsen, 2013; N. Ellis, 2002; Tomasello, 2003). Type–token analysis has been vastly applied as a quantitative methodology in many usage-based studies in cognitive linguistics. Tummers et al. (2005, p. 240) listed three dimensions for the application of frequency counts in usage-based cognitive linguistics. First, it is used to indicate the "prototypicality and usage tendencies" of a particular lexical item or linguistic pattern; second, it is used to measure the "differences in attraction between competing forms," which may include either lexical items or linguistic patterns; third, the type–token ratio can provide an overview of the

relationship between concrete linguistic expressions and schematic patterns, concerning the degree of productivity of the linguistic patterns and the possible entrenchment of one or a few exemplars within patterns.

There are different effects in the counts of tokens and types. High-token frequencies can lead to the entrenchment of particular exemplars while high-type frequencies can lead to "the creation of slots in strings and categorization" (Bybee & Scheibman, 1999; Lieven, 2010, p. 2547). The counts of token and type change as the learning advances, which will eventually lead to a change in the degree of productivity (Lieven, 2010).

In SLA research, type–token analysis has been used in a number of studies focusing on learner production (e.g., Eskildsen, 2009; Eskildsen, 2011, 2012; N. Ellis & Ferreira-Junior, 2009a, 2009b; Verspoor et al., 2008). For example, N. Ellis & Ferreira-Junior (2009a, 2009b) investigated L2 learners' production of VACs and found that the type–token distributions within the three types of VACs are Zipfian, as each construction contains one frequently recurring exemplar. The uses of *go* constituted 53% of the total tokens of VL, *put* 68% of VOL, and *give* 64% of VOO in learners' speech, which confirmed that the first-used verbs in each VAC (e.g., the use of *go* in VL construction) were frequent and prototypical in meaning. Eskildsen's (2011) study further confirmed that the first used exemplars are frequently occurring in learner production. In addition, in tracing the development of *can*-patterns and negation-patterns, Eskildsen (2009, 2012) further documented a general increase in type frequency in the learners' linguistic inventory and a non-linear expansion of productivity within the investigated constructions (Eskildsen, 2013).

Testing the usage-based assumption on language learning as going from concrete items towards a higher degree of productivity, the present study applies type–token analysis as a quantitative methodology in analyzing learners' linguistic production as aligned with Eskildsen (2009, 2011, 2012). Type is defined on the variation of Path expressions within certain motion verb related constructions (e.g., *go the bank* and *go to school* are two different types of *go*-uses), and token refers to the actual instantiation of motion constructions. Token frequency determines the degree of entrenchment of exemplars

while type frequency determines the degree of productivity of the construction. A high type–token ratio indicates a high degree of productivity of the pattern used in a particular RP, whereas a low type–token ratio suggests that one or a few exemplars are frequently occurring or may be entrenched.

However, one should bear in mind that it is impossible to visualize whether the types used in each RP are the same or different, as type frequency can only tell how many types are used other than to specify what the exact patterns are in each RP. Thus, in order to get a complete picture of the overall language development, it is important to combine frequency count with linguistic analysis.

### 3.2.2 Research methodology 2: linguistic analysis

If type–token count can only tell a general developmental tendency in terms of the degree of productivity of linguistic patterns, linguistic analysis can provide a more detailed account in relation to the uses of concrete expressions and the longitudinal emergence of schematic patterns. In the present study, the linguistic analysis is used to describe the linguistic items that were used by the learners to encode Motion, Path, and Ground in the overall motion inventories over time, the associations between a motion verb and its associated Path expressions at different points in time, and the various linguistic expressions that are used by the learner to express motion across time.

### 3.2.3 Research methodology 3: qualitative microanalysis

While methodologies 1 and 2 provide the quantitative aspects in relation to the longitudinal development of motion constructions and the expressions of the underlying semantic components of a motion event, they cannot be used to describe the environment in which learning of motion constructions is actually taking place. As was addressed in UBL studies, a key finding in the usage-based approach is that usage events play an important role in language development and in shaping a more productive linguistic inventory over time (e.g., Eskildsen, 2008, 2009, 2012). If usage events play such an important role in language development, it is worth demonstrating how learning is actually taking place and shaped by different usage events. Such a

notion of usage events can best be accounted for in and through analysis of the interactions in which the learners are engaging in the classroom.

Long's (1983, 1985) work on interactional hypothesis (IH) has proved to be influential in studies focusing on interactions. In this approach, it was claimed that the conversational and linguistic adjustments made by the native speakers with non-native speakers in the conversation could promote acquisition (García Mayo, 2013). This stand challenges Krashen's (1985) Input Hypothesis, which argued that comprehensible input was necessary and sufficient to promote L2 learning (García Mayo, 2013). In a more elaborated version of IH, Long (1996) highlighted the negative evidence that learners received from the input and pointed out the need to put more focus on the cognitive process in conversations (e.g., attention). Researchers working within IH tend not to view interaction as "jointly constructed," as in socially oriented approaches such as conversation analysis (CA)-based studies (Mitchell et al., 2013). Thus, in IH informed studies, the interest is in acquisition, not in use (i.e., interaction) (Eskildsen, 2008).

The approach applied in the present study differs from traditional studies within the framework of IH as it views L2 learning as situated in interactions and does not dichotomize acquisition and use. Thus, in order to analyze L2 development and demonstrate the situated nature of language and language learning, a qualitative methodology focusing on micro-aspects of language learning and use in social interactions is needed.

Because CA is concerned with the locally situated nature of cognitive process within social interactions (Mori & Markee, 2009; Mori, 2013), it has been viewed to be a helpful tool to analyze social interactions (Mori, 2013). In traditional CA studies, the initial interest of CA is in analyzing activities in social practice instead of linguistic forms (Sacks, 1992, vol.1), and language is viewed as a "central tool for the coordination of the temporal and sequential unfolding of actions" (Pekarek Doehler, 2010, p. 115). Implicit in this view is that linguistic forms as shared interactional resources are thus sensitive to local contingencies (Auer, 2009; Firth & Wagner, 1997, 2007; Mondada & Pekarek Doehler, 2004; Pekarek Doehler, 2010; Schegloff, 1996;

Wagner & Gardner, 2004). Although this conceptual shift of language makes a great step towards the locally contextualized nature of language, an implied emphasis on sociality seems to be implicitly prominent in this view. Nevertheless, what has been explicitly stated within this conceptual change is a challenge of the traditional view on language as a stable and context-independent system and, as a new perspective, introduces the close interconnection between linguistic structures and language use. This contextualized view is in alignment with the UBL view on linguistic resources as adaptive and emergent through language use (Hopper, 1998; Larsen–Freeman, 2010; Pekarek Doehler, 2010; Tomasello, 2003).

In SLA, CA has been widely adopted as a qualitative methodology to investigate different aspects of SLA, such as L2 pragmatics and L2 learning (see, e.g., Kasper, 2006; Kasper & Wagner, 2011 for an overview of CA-for-SLA; Pekarek Doehler, 2010 for an overview of the conceptual changes and methodological issues in CA-for-SLA; Seedhouse, 2004). Recently, Longitudinal studies applying CA methodology to SLA also marked a growing trend, such as looking at a learner's development of interactional competence (IC) (e.g., Brouwer & Wagner, 2004; Cekaite, 2007; Hellermann, 2006, 2007, 2008, 2011; Hellermann & Cole, 2009; Nguyen, 2011; Pekarek Doehler & Pochon-Berger, 2011; Rine & Hall, 2011; Young & Miller, 2004) and the development of certain linguistic structures such as English negations (Eskildsen, 2012). In studies on IC, interactions were viewed as fundamental to social activities (Hall & Pekarek Doehler, 2011). IC is viewed as both social and cognitive as "its components are constructed in interaction and shared with social group members in specific communicative contexts" and "it is part of people's context-specific structures of expectations" (Hall & Pekarek Doehler, 2011, p. 3).

Furthermore, in a discussion on the application of CA in a usage-based approach, Eskildsen (2008) pointed out that UBL took into account the usage events but has not yet looked in detail into the micro-development in the course of learning in interactions. Thus, a methodology of tracing the locally situated nature of language learning to demonstrate the important role of usage events is needed in usage-based studies. Following a call from Eskildsen (2012), which argues for the need to demonstrate the

"moment to moment" change in the development of linguistic constructions within interactions, a CA-inspired qualitative microanalysis is applied in PL1 and PL2 to examine the micro-changes in the development of motion constructions and the locally contingent and situated nature of construction learning within different interactions in the classroom. Such a qualitative investigation can provide further explanations on the ongoing change in the linguistic inventory that cannot be well explained by quantitative analysis (Larsen–Freeman, 2006).

As the present study is anchored within the socio-cognitive paradigm, learners' competence to use linguistic resources within interactions is viewed as part of IC. However, while the ability to use linguistic resources to participate in social interactions and the development of IC are part of the concerns within CA-SLA longitudinal studies, the present study is more interested in investigating how linguistic structures within individual linguistic inventory develop in classroom interactions over time. Although the present approach does not track the development of a learner's interactional competence over time, it finds kinship in terms of the locally situated nature of doing learning in recent CA-SLA studies that traced the process of language learning (e.g., Pekarek Doehler & Steinbach Kohler, under review). However, Pekarek Doehler (2010) further expressed that the development of linguistic resources is situated within the development of interactional competence in an L2, emphasizing a prominent status of sociality. Although the present study views sociality and individuality as equally important, it highlights the issue of individual linguistic inventories as in alignment with Eskildsen (2008).

## Chapter 4: Summaries of the Three Research Papers

### 4.1 Summary of Paper 1 (LEC): Tracing an L2 learner's motion constructions over time—A usage-based classroom investigation

Paper 1 was motivated by the lack of longitudinal studies tracing an individual learner's development of motion constructions from a usage-based perspective. The focal student (Carlos) is a Mexican learner of English, who participated in the classroom for two and a half years. To explore how an L2 inventory of English motion constructions is constructed and developed over time, two quantitative methodologies were applied in the study. Linguistic analysis was used to examine the kind of linguistic materials used by the learner to encode Motion, Path, and Ground at different points in time and the kind of associations between a motion verb and its associated Path/Ground expressions. Type–token analysis was used to test the usage-based assumption on language learning, i.e., whether linguistic patterns become increasingly productive over time. The findings generally aligned with the usage-based assumption that the learner's learning of motion constructions was item-based and the L2 motion inventory developed from using a limited number of linguistic resources to express Motion, Path, and Ground towards more varied linguistic expressions. Two motion verbs, *go* (/*going*/*went*) and *come* (/*coming*/*came*), occurred as the most frequently used linguistic items to encode Motion, the preposition *to* was mostly adopted for the expression of Path, and noun phrases were mainly used to encode Ground. The linguistic items that encode Path were found to be initially verb-dependent, such as the preposition *to*, which was initially associated with the motion verb *go*, suggesting a "one-to-one" association between a particular Path expression and a motion verb. Later on, both a "one-to-one" association and a "one-to-many" association were observed at different points in time, as the linguistic items that encode Path were not only combined with a particular motion verb but also with different motion verbs.

Based on the linguistic patterns of *go*- and *come*-related uses as motion constructions, a general increase in the degree of productivity in both patterns was observed. However, there are fluctuations in the type–tokens at a certain point in time, which seem to be a result of the ever-changing usage events in the classroom. Over time, no ultimate

abstract schema that sanctions the entire L2 motion constructions was observed; rather, the L2 motion inventory revolved around *come/go to x* as utterance schemas and concrete uses of other motion verb constructions.

The results are based on a single L2 learner of English of a particular L1 background, and as an implication, the study called for further investigations on exploring the individual learning trajectory of motion construction by including more learners of a more varied L1 background and on examining the interactional environments in which learning is actually taking place to understand the ongoing change in the linguistic inventory over time.

### 4.2 Summary of Paper 2 (PL1): Developing L2 constructions to express motion in English: A usage-based case study of a classroom Chinese learner

Building on Paper 1, Paper 2 includes a Chinese learner (Lan) of English in the same classroom setting as in Paper 1. It aims to further explore the usage-based individual learning trajectory of English motion constructions and examine the similarities and differences between learners of typologically different L1s (Chinese vs. Spanish). Similar to Paper 1, the linguistic analysis and type–token analysis were used as two quantitative methodologies focusing on the development of the linguistic expressions of Motion, Path, and Ground; the associations between a motion verb and its associated Path expressions; and the possible development of linguistic patterns towards an increase in the degree of productivity. What differs from Paper 1 is that, motivated by previous usage-based studies on using CA inspired method on tracing the learning of linguistic constructions (e.g., Eskildsen, 2012), Paper 2 applied a qualitative microanalysis to investigate the emergence of the learner's *went to*-construction in classroom interactions, showing that affordance plays an important role on language learning and language learning is contingent and locally situated. Similar to the findings on the Spanish learner in Paper 1, the study generally showed that *go* (*going*/*goes*/*went*) and *come* (*coming*/*came*) were the most frequently used motion verbs, and there was an increase in the degree of productivity for *go* patterns but with fluctuations for *come* patterns, which is suggested to be a result of the changing environment in the classroom. Moreover, the Chinese learner was observed to develop her motion inventory from an

early dependence on a limited number of linguistic resources to encode Motion, Path, and Ground towards an increase of more varied linguistic expressions; the motion inventory does not consist of an abstract schema that sanctions the entire uses of motion constructions, rather, it consist of *go/come to x* as utterance schemas and limited uses of other motion verb related motion constructions that are mainly used in particular usage events. Apart from the similarities between the Chinese learner and the Spanish learner, individual variations were observed in terms of the linguistic constructions that are used at different point in time. Furthermore, potential L1-dependent linguistic patterns were observed, which seem to be the result of the influence from L1 Chinese. However, such an argument based on a single learner needs to be further justified by including more informants in future studies.

### 4.3 Summary of Paper 3 (PL2): A Usage-based classroom investigation on the development of a Chinese learner's motion constructions in L2 English

Building on Paper 2, Paper 3 traced the developmental trajectory of motion constructions in another Chinese learner (Ya) of English in the same classroom setting as in Paper 2. This study was motivated by the lack of longitudinal comparisons on the learning of motion constructions between learners of the same L1 background. In order to compare the learning outcomes between the two Chinese learners (Ya and Lan), the same quantitative and qualitative methodologies were applied in Paper 3 to address the same research questions as were raised in Paper 2. The results showed that while Ya's motion inventory developed along a similar path as Lan, such as moved towards using more varied linguistic means to encode Motion and Path, individual variability was also observed between the two Chinese learners, such as no emergence of *come to x* as an utterance schema was observed in Ya. Furthermore, applying a qualitative microanalysis, the study traced the learning of a *come to*-construction in classroom interactions, showing a case of incipient learning of the *come to*-construction as a result of affordance. Additionally, the study also found some potential cross-linguistic influences in which the preposition *from* seems to be used as a motion verb. As an implication, it calls for further studies on the emergence of linguistic patterns by including more informants of a variety of L1 backgrounds in different data settings.

## Chapter 5: Discussion of the Three Research Papers

The three research papers have investigated how three individual learners of L2 English from two different L1 backgrounds developed their motion constructions in a usage-based fashion in classroom interactions. This section includes three parts. The first part deals with similarities and differences observed in the learning of motion constructions among the three learners. The second part discusses the key findings in the three research papers in relation to UBL perspective and motion constructions in SLA research. The final part discusses the contributions of the present study to the SLA field.

Before moving to the comparison of the three learners, it is worth clarifying the interconnectedness of the three case studies. LEC is the first longitudinal study that applies a UBL approach to the study of individual developmental trajectory of motion constructions in classroom learning environments in SLA research. PL1 builds on LEC by including a learner with a different L1 background (Chinese) as compared with the Spanish learner in LEC and compares the learning outcomes between the two learners and, in addition, investigates the interactional environment in which the learning of motion constructions is situated. PL2 builds on LEC and PL1 by including another Chinese learner in the investigation and compares two learners from the same L1 background. In alignment with PL1, the locally contingent and situated nature of language learning is investigated.

### 5.1 Comparison of the three learners

In comparing the three learners of English from two different L1 backgrounds, both similarities and differences were observed in the development of the motion inventories. The similarities can be summarized along six dimensions. First, the learners developed their motion inventory from relying on a limited number of linguistic means towards a more varied linguistic expression to encode Motion, Path, and Ground. The different associations between a motion verb and its associated Path expressions and the slow generalization of a certain Path expression to other motion verbs aligned with the verb-island hypothesis (Tomasello, 1992), which indicates that language learning is not a sudden but a piecemeal process. Second, in alignment with N. Ellis & Ferreira–Junior

(2009a, 2009b), the finding that *go* (*going*/*goes*/*went*) and *come* (*coming*/*came*) were observed to be the most frequently used motion verbs to encode Motion may be because both are semantic light verbs and are prototypical in meaning. Third, *go* patterns were observed to develop towards a general increase in the degree of productivity. Fourth, an utterance schema *go to x* was observed across the three learners as a result of frequent uses of both afforded and non-afforded uses of *go to*-construction. Fifth, no ultimate abstract schema that sanctions the entire uses of motion constructions was observed, further addressing the constant nature of language development. Sixth, affordance seems to play an important role in the learning of motion constructions.

Overall, the learning trajectories of motion constructions among the three learners seem to be very similar; however, individual variations on the learning of motion constructions vary among individual learners (Larsen–Freeman, 2006). First, the linguistic items that encode Motion, Path, and Ground differ at different points in time and each learner's motion inventory consists of different item-based patterns and recurring expressions. For example, Carlos's early *go*-uses involve a frequently recurring item *go the*, Lan's early *go*-uses are dependent on a recurring expression *go home*, while Ya uses *went to*-construction at an early learning stage. Second, the association possibilities between a motion verb and its associated Path expressions also differ across time. For example, in RP1, Carlos combines *go* with more than one linguistic item (e.g., *to*, *in*, and *down*) that encodes Path, Lan only combines *go* with *home*, and Ya only combines *go* with *to*. Third, although the type–token analysis generally showed that the learners develop their *go* patterns towards a general increase in the degree of productivity, fluctuations were observed for Carlos but not for the two Chinese learners. For example, there is a decrease in the type–token ratios in Carlos's *go*-patterns in RP4 as compared with RP3. Fourth, the development of *come* patterns yields a different picture across the three learners, in which the general increase in the degree of productivity was only observed for Carlos while a more chaotic picture of development was observed in Lan and Ya. For example, Lan's *come*-patterns in RP1 and RP4 share the same type–token ratio while the type–token ratio in RP4 is lower than it in RP2 in Ya's *come*-patterns. Fifth, an utterance schema *come to x* was observed in Carlos and Lan but not in Ya. For example, it was shown that Ya's uses of *come to*-

construction were heavily dependent on afforded uses in RP1, and it is not until RP4 that the only free and spontaneous use of *come to*-construction appears. Fifth, there are different non-target-like uses of motion expressions, some of which seem to be a potential cross-linguistic influence from the learners' L1s. For example, Carlos's uses of *turn the left/right* may be a transfer from Spanish, which requires the determiner *la* ("the") in the expression *girar a la izquierda/derecha*. In addition, Lan's uses of *he running go home* ("ta1 pao3 hui2 jia1") may be a case of transfer from L1 Chinese because Chinese allows Manner and Path to be expressed by two motion verbs. Because English only allows either Manner or Path to be encoded in the main verb, this may be an indication of a potential cross-linguistic influence from L1 Chinese.

### 5.2 General discussions

The findings in the three research papers lead to a number of issues in relation to UBL research and studies on motion constructions in SLA.

First, the findings that the three learners' motion inventories include various item-based constructions and recurring expressions at different points in time challenges the traditional view of interlanguage development where universal orders or sequences of development are highlighted. In traditional interlanguage studies, language development is viewed as going through a fixed number of stages based on the emergence of linguistic forms or grammatical rules, implying that language learning is "a process of taking in of linguistic forms as a mental act" (Larsen–Freeman, 2010, p. 53). The usage-based approach does not attend to the issue of universal orders because it views language development as unpredictable, dynamic, and non-linear, thus, no unified developmental path is proposed under usage-based studies. As was shown in the three research papers, no common stages of development were observed among the three learners. Instead, it was shown that different motion constructions occur at different points in time; some are used consistently across time while others never recur later on. Nor does UBL presuppose systematicity in early language development. This is an especially clear case in LEC, as Carlos's early *go*-inventory was represented by competitions between a predominant *go the*-pattern and the target-like *go to*-construction at an early learning stage. Later on, as learning advances, the number of

such non-target-like uses decreases but does not yet completely diminish, yielding a chaotic picture and a piecemeal and non-linear process of language development. Taking into account all these observations, the present study thus showed that the learners' motion inventories are full of structuring and restructuring (Larsen–Freeman, 2010).

Second, comparing the three learners, a great amount of variations were observed in terms of the linguistic items used to encode Motion, Path, and Ground, and the association possibilities between Motion and Path expressions across time. In viewing linguistic system as dynamic and ever-changing, usage-based research views variation as central to language development. Different motion constructions emerge and are used at different points in time for different learners; some are non-target-like uses that occur early in development (such as *go the* in Carlos's motion inventory) and decrease as the learning advances; some are target-like and kept to be used later on (such as *go home* for Lan); and some are afforded in the beginning and are later used in a spontaneous and free manner (such as the use of *when did you come to America* in Ya and uses of *go to school*, *come to US* in Lan). Due to the ever-changing nature of individual motion inventories, no uniformity was observed across the three learners. Instead, it may be more proper to talk about the similarities across the three learners in terms of developing towards using more varied linguistic means to encode Motion and Path over time and in terms of the item-based learning trajectory that goes from an early dependence on exemplars towards more productive and schematic constructions.

Third, it was observed that the learners' motion inventories consist of a number of different recurring expressions. Many usage-based studies on formulaic expressions have found that formulaic uses tend to form an initial basis for language development (e.g., Eskildsen, 2012; Yuldashev et al., 2013). This is a clear case in LEC, which showed that Carlos initially used a recurring item *go the*, based on which *go the x* is observed as an utterance schema in RP1. *Go the* seems to be processed as a single item due to its recurrent and non-breakable nature in RP1. Such a *go the* construction continues to be used in RP2 and seems to be in a competition with *go to (the) x*; however, it is not observed in RP3. As Eskildsen (2008, p. 211) pointed out, "multi-

word expressions may be locally recurrent and wander in and out of use." No matter whether they were retained by the learner or not, the present study has analyzed recurring expressions as meaningful linguistic constructions, thus challenging the traditional view that such uses are beyond an L2 learner's linguistic capability (Eskildsen, 2008). Furthermore, as was found in the three research papers, the individual learner's motion inventory neither relied on a frequent recurring exemplar nor strictly followed the developmental trajectory starting from one or a few highly recurrent exemplars. Instead, it includes a number of recurring expressions at different points in time – some recurring expressions contribute to later, more-productive uses while others occur later in development and are never developed further in the linguistic inventory. For example, the emergence of *come to x* in Lan's motion inventory is heavily dependent on earlier recurrent uses (e.g., *come to US/USA*), while uses of the recurring expressions (e.g., *come back/here/home*) in Ya's motion inventory occur later in development. Such an observation is suggested to be due to the specific kind of constructions that are under investigation (Eskildsen, 2009).

A fourth issue that is of great importance is the role of affordance in language learning. Eskildsen (2012), on tracing the L2 learning of the same Spanish learner as in LEC, addressed that both language and language learning are locally contingent and situated (e.g., Schegloff et al., 1996) and that input plays an important role in language learning (e.g., MacWhinney, 2008; N. Ellis, 2013). To further explore the locally situated nature of language learning, PL1 and PL2 provided interactional evidence showing that affordance plays an important role in the learning of motion constructions in classroom interactions and that learning and use cannot be kept apart. For example, it was shown in PL1 that the emergence of *go to*-construction seems to be dependent on Lan's early experiences of using an initial afforded expression of *go to (the) restaurant*, based on which later, more-productive and free uses came into place in different usage events. PL2 showed that Ya's learning of *come to*-construction was a result of affordance as well. Although LEC has not tended to examine the locally contingent and situated nature of language learning, further interactional evidence was found in Carlos's data, showing that affordance can prompt the learning of motion constructions in usage events.

As was mentioned in LEC, Carlos's uses of *go down* firstly occur as afforded uses in a direction exercise, and a later non-afforded use seems to appear as a result of previous heavily afforded uses. The very first instantiation of *go down* is an afforded expression picked up by Carlos from the teacher's speech. It is worth showing transcripts of the interactions in which the expression of *go down* is used because they display the role of afforded uses in relation to language learning in the classroom. They also show how learning is situated in different usage events, reflecting Carlos's changing communicative goals in the classroom (Eskildsen, 2009). In the exercise (Extracts 1 and 2), the teacher and the students are giving directions while referring to pictures in the exercise book. Shortly before Extract 1, the teacher (Te) asks the students what Carlos (Ca) should do in order to take one student who is currently at the clinic to another student's house.

Extract 1[1], 01-November-2001

01 Te: we're at the clinic
02 Ca: I go↑°
03 Te: go uhuh
04->Ca: [the s::- ] the sixteen avenue↑
05 Tu: [go down]
06 Te: okay go d<u>o</u>:wn
07 Mu/Ca: go do[wn
08 Te: [kay (.) [I know it doesn't make any se- [s:ense because=
09 [*initiates downward sloping motion gesture* [*gesture repetition*
10->Ca: [o:h go down (.) [geh-
11-> [*initiates horizontal motion gesture: left hand palm down,*
12-> *flat, moves outward from chest position to the left*
13 [*gesture repetition*

[1] Transcription conventions: xxx = inaudible; [ = begin overlap; ] = end overlap; (2.0) / (.) = 2 seconds pause/ micro pause; : = prolongation; ↑/↓/→ = intonation marker, rising/ falling/ continuing; '=' = continued lines; -> = marker of the target expressions.

| | | | |
|---|---|---|---|
| 14 | Te: | [=down is like this | [but it's go do::wn |
| 15 | | [*downward vertical motion gesture* | [*initiates new horizontal motion* |
| 16 | | | *gesture* |
| 17 | Ca: | | [*moves hand slightly, maintains* |
| 18 | | | *position* |
| 19 | Mu: | °go down° | |

In line 1, the teacher readdresses that the starting point of the movement is at the clinic. Carlos offers *I go* in line 2 with rising intonation, suggesting that he is designing it to get a response through try-marking (Sacks & Schegloff, 1979). The teacher gives her response with a repetition of *go* and utters an acknowledgment token *uhuh*, which invites Carlos to go on (line 3). Carlos starts a new turn in line 4, and part of his speech overlaps another student's (Tu) self-select *go down* in line 5. While no response is given to Carlos's turn in line 4, Tu's turn in line 5 receives the teacher's response, as she utters "okay" with a confirmation of Tu's use of *go down*. Then Carlos picks up *go down* in overlap with the multiple students' *go down*. In line 8, the teacher initiated a turn by using gestures to explain the use of *go down*. In a partial overlap with the teacher's embodied gesture, Carlos gives a change-of-state token *oh* (Heritage, 1984) and repeats *go down* in response to the teacher's gesture (line 10).

While the first afforded use in line 7 may be a simple repetition, line 10 is especially interesting; it shows that Carlos is presently engaged in "learning"; the change-of state token indicates that he now knows something that he probably did not know previously, and the motion gestures (lines 11–12) seem to be a practicing of the meaning as is expressed in *go down*. The change from not-knowing to a seeming knowing state seems to be a result of the instructions from the teacher, suggesting that instructions may help learning of motion constructions. It should be made clear, however, that even though Extract 1 shows that Carlos is doing "learning" here, it does not necessarily mean that he has fully internalized, or entrenched, the new form. Language learning, as seen from the perspective of UBL, is a slow and piecemeal process of accumulating new linguistic resources that enable the L2 speaker to participate in an increasingly diverse assortment

of social interactions (Eskildsen, 2012; Lantolf & Thorne, 2006). Thus, this interaction can only be claimed to show an instance of what could be incipient learning.

Later on, five more afforded uses of *go down* occur while Carlos is engaging in direction-giving exercises. Interestingly, around three minutes after the last afforded *go down* use in direction-giving exercises, a non-afforded use of *go down the* occurs in Extract 2, in which the teacher is asking the student where to go to take the bus (line 1).

Extract 2:

| | | |
|---|---|---|
| 01 | Te: | you need to take the bus where are you gonna go↓ I think you take the bus on fifth |
| 02 | | don't you↑ |
| 03 | | (1.0) |
| 04 | Te: | you [go around the building↑ |
| 05 | Ca: | [she- she- |
| 06 | Te: | [I think so |
| 07 | Ca: | [she go in the: same than me [xxx |
| 08 | Te: | [she does |
| 09->Ca: | | yeah (1.0) she can take the: (.) every bus (.) go down the: (1.0) |
| 10 | | *Pointing gesture and other gestures* |
| 11 | Te: | a:h that's because she tak- you tak- o:::h I see so you go down town↑ |
| 12 | Ca: | [uhuh ((nods)) |
| 13 | Te: | [and then you take the train |
| 14 | Ca: | yes *nods* |
| 15 | Te: | yeah okay alright |

Since no response was received after line 1, the teacher initiates a new turn in line 4, in which part of her speech overlaps Carlos's self-selection in line 5. After the response from the teacher *she does* in line 8, Carlos utters an acknowledgement token *yeah* and continues giving directions by using *go down the* accompanied by a pointing gesture in line 9. The sequence ends as both the teacher and Carlos reach an alignment, figuring out the right direction of going downtown and taking the train (lines 11–15).

It is interesting to note that the appearance of the non-afforded use *go down the* in Extract 2 may be a result of previously afforded uses in direction-giving exercises, as Carlos had been scaffolded into using *go down* seven times. Although it is still difficult to argue the entrenchment of *go down the* use in Extract 2, what has been displayed in Extracts 1 and 2 is that the direction-giving exercise actually prompted Carlos's learning of the expression *go down* by relying on afforded uses to be able to produce *go down the* in a free and spontaneous manner. This evidence further supports the notion that affordance plays an important role in language learning and that both language and language learning are locally contingent and situated (Eskildsen, 2012).

Fifth, although no abstract pattern that sanctions the totality of the individual learner's motion constructions was observed in the three research papers, it does not mean that language learning has reached an endpoint without any further development. The learners may develop motion constructions outside of the classroom later on; however, it is out of the current scope to track further development. As Eskildsen (2009) has pointed out for *can*-patterns using the same classroom data, because language learning is a constant process, it is an empirical issue and almost impossible to talk about the endpoint of language development (see also Firth & Wagner, 1998; Lantolf & Thorne, 2006). In addition, as language changes in response to the changes of usage events, language knowledge is viewed as a "moment to moment thing" (Eskildsen, 2008, p. 210). As was shown in the present study, the individual learner's motion inventory is constantly under-construction and re-construction while learning experiences change from moment to moment, thus language knowledge as "a collection of memories of previously experienced utterances" is further proved to be ever-changing (N. Ellis, 2002, p. 166).

Furthermore, the longitudinal emergence of the utterance schemas *go/come to x* is suggested to be a result of experiences on the recurrent uses of many *go/come to*-expressions, emphasizing the usage-based idea that language structure emerges from language use (e.g., Tomasello, 2003). In the view of UBL, there are "two faces of grammar: smaller elements and larger patterns" (Tomasello, 2003, p. 41). Smaller elements refer to the concrete items while larger patterns are those schematic categories

and constructions, with the latter ones viewed as a derivation based on experiences of the former, thus rejecting the traditional view that language learning is governed by abstract rules and grammar and lexis can be kept apart.

Another point to be raised is the issue of cross-linguistic influence. Previous SLA research on motion has found that cross-linguistic influences from the learner's L1 exist on learning of motion expressions in L2 English. The three research papers also have observed evidence showing that some non-target-like uses may be due to potential cross-linguistic influences from the learners' L1. It was shown that Carlos's overuse of *the* in *turn the left/right* seems to be a transfer from the Spanish determiner *la* because the target-like Spanish expression is *girar a la izquierda/derecha*. Similarly, Lan's use of two consecutive motion verbs in *he running go home* ("ta1 pao3 hui2 jia1") provides another evidence of a potential cross-linguistic influence; Chinese as a serial verb language allows Manner and Path to be expressed by two motion verbs in one expression. This differs from English, as English only allows one verb in a motion expression. Apart from this, it was also observed that Lan and Ya may use *from* as a motion verb. Although the use of *from* as a potential motion verb may not be a direct transfer from Chinese, it was argued that both Chinese learners may generalize a similar structure of *hui2* in *hui2 jia1 qu4* "return home go" to the use of *from* as in *cong2 jia1 lai2* "from home come". As was pointed out in PL1, this can be a new angle for future research, i.e., to explore whether Chinese learners of English use Path particles alone to express motion in English.

Apart from the above-mentioned potential cross-linguistic influences, LEC compared the findings with Stam (2010) on the development of motion event expressions by a Spanish learner of English. There is converging evidence showing that as the learning process advances, Carlos seems to be gradually learning the L2 lexicalization pattern to express motion events in English, as he starts to combine *go* with prepositions of satellites more frequently as compared with the initial learning stage. It seems that, although the learning environments differ as compared with the classroom to the one in Stam (2010), the tendency of development from using less characteristic lexicalization patterns (*go* without any accompanying Path expressions) towards a more characteristic

linguistic pattern of expressing motion in L2 English are similar. As an implication, it is encouraged that more studies examining the role of L1 on the development of L2 motion constructions in different settings be carried out.

### 5.3 Contributions of the present study to SLA research

For a long time, the SLA field has undergone great changes and experienced debates among researchers working with different theoretical and methodological approaches. While the present study has examined how individual learners of English developed their individual motion-inventory in a usage-based fashion, it also sheds light on a number of issues that may help better understand SLA research and offer insights to future developmental studies in the field.

Generally speaking, the present study sheds light on a better understanding of how L2 constructions develop over time. This line of investigation follows the line of usage-based SLA research in Robinson & N. Ellis (2008), which addressed the need to examine the development of L2 constructions in SLA. Following their call, both quantitative and qualitative methodologies were used in the present study to investigate the development of L2 motion constructions. Along this dimension, linguistic analysis was used to trace the piecemeal learning of motion constructions within individual learners over time; type–token analysis addressed the interplay between linguistic patterns and specific instantiations within a particular pattern; and CA-inspired microanalysis addressed the locally contingent and situated nature of language learning, showing that acquisition and use are intrinsically interconnected. Below discusses how the present study, along the dimension of investigating longitudinal learning of L2 motion constructions, plays into the development of the SLA research field.

First, this study is the first longitudinal study that has examined the development of L2 English learners' constructions for the expressions of motion. As was discussed in section 2.2 on Motion and SLA, SLA research on motion constructions drawing on Talmy's (2000) typological framework has tended to be cross-sectional. One exception is seen in Stam (2010), who traced the learning of motion constructions by a Spanish learner of L2 English. However, the difference between the present study and Stam

(2010) is that the data used in Stam (2010) are elicited while the data analyzed in the present study are naturally occurring and classroom-based. Learning activities in the classroom are not constrained to a particular type; the classroom makes free conversations available and provides rich interactional contexts for L2 researchers to study L2 development. The present study thus provides insight as to understanding the developmental process of motion constructions using non-elicited data. However, as the classroom may not provide the same learning environment as the world outside of the classroom, it is suggested that further research in the development of motion construction in other data settings using non-elicited data be conducted.

Second, the present study is the first longitudinal study on L2 motion constructions that focuses on three individual learners of two different L1s. Although longitudinal studies by N. Ellis & Ferreira–Junior (2009a, 2009b) examined the development of motion constructions by learners of different L1s, they did not focus on individual variations in the investigation. It was shown in the present study that although the three learners exhibit similarities in terms of an increase of using more varied linguistic means and in terms of the item-based learning trajectory, individual developmental paths vary from learner to learner. Different learners seem to have different preferences of using one construction over the other; some patterns are retained by the learner for the entire learning period while others only occur at a particular point in time. This observation further indicates that the development of linguistic systems is dynamic and non-linear, as language development does not tend to be a "stage-like progression of new accomplishments as the waxing and waning of patterns, some stable and adaptive and others fleeting and seen only under special conditions" (Thelen & Bates, 2003, p. 380; Larsen–Freeman, 2006). This finding aligned with the usage-based view, which regards variation as a core feature in language development. As was explained by Marchman and Thai (2005, p. 150), individual variations are "a natural consequence of learning" within a dynamic and complex linguistic system; "slight differences in the relative rate, strength, or timing (chronotopic constraints) of the component achievements can result in relatively significant differences between individuals in behavioral outcomes." The individual differences are mainly due to "variations in how and when the pieces of the process were put together during learning" (Marchman & Thal, 2005, p. 150).

Furthermore, because of comparisons among learners with two different L1s, the present study documented evidence of potential cross-linguistics from Spanish and Chinese on learning of motion constructions in L2 English. This may shed light on understanding the potential L1-dependent learner patterns along the development of motion constructions. For example, PL1 showed that Lan's use of *he running go home* may to be a supporting evidence of potential cross-linguistic influence from Mandarin Chinese, which allows two motion verbs to appear consecutively in a motion expression. Furthermore, this evidence may also lend support to the view that Chinese exhibits features of an E-language. Since the typological classification of Mandarin Chinese has been debated between the types of E-language and S-language, it may be interesting for future studies to include more Chinese learners and track their uses of motion expressions in L2 English. If Chinese is an E-language, it may be expected to observe L1-influneced lexicalization patterns in L2 English, i.e., using two English motion verbs in one motion expression. Because the potential cross-linguistic influence in the present study is observed based on a limited number of informants, more learners are needed in further studies.

Fourth, the present research contributes to a better understanding on the development of L2 motion constructions from a usage-based perspective, which views language learning as bottom-up, nonlinear, and dynamic. By saying bottom-up, it was found in the present study that the three focal students start with exemplars at the beginning rather than operating on a rule-governed behavior, as was found in UG-informed studies. Because the individual motion inventory is ever changing, it is thus unnecessary to view the emergence of linguistic rules (e.g., the abstract schema) as "the unfolding of some prearranged or innate plan" (Tucker & Hirsh–Pasek, 1993, p. 364; cited in Larsen–Freeman, 2010, p. 59). By saying language development is non-linear and dynamic, the present study has shown that each learner's motion inventory consists of different motion constructions at different points in time, and none of the three learners developed their *go* and *come* patterns towards a linear increase in the degree of productivity. Such a non-linearity is seen in the fluctuations in the type–token ratios for different learners at different points in time.

Fifth, situated within the socio-cognitive paradigm, the present study viewed language learning and use as intrinsically linked to each other. Because the primary interest in cognitive-oriented research is in acquisition while socially oriented research is interested in use, the present study contributes another piece to a growing number of socio-cognitive oriented studies (e.g., Eskildsen, 2011, 2012; Larsen–Freeman, 2006). To study language acquisition and use, analysis methods from studies in both perspectives are needed. Linguistic analysis and type–token analysis have been vastly adopted in cognitive linguistics, while CA has been widely used in socially oriented studies. Within the socio-cognitive paradigm, the application of CA-inspired microanalysis makes available a deeper understanding of the moment-to-moment change within usage events. For example, PL2 showed a case of learner transition from not knowing *come to*-construction to knowing it through incipient learning and being able to use it later on. Moreover, the usage events in which the learners are engaging in prompt learning as they make linguistic resources available to the learners by way of affordance. For example, as seen in PL1 and PL2, Lan's learning of *went to*-construction and Ya's learning of *come to*-construction emerge from initially afforded uses in different usage events. Apart from the important role of the usage events, such a finding also highlights the experience-based nature of language learning, implying that learning is not an isolated act but rooted in a learner's experience of using the language in different situations. As expressed in Bates & MacWhinney (1988, p. 147), language learning is a "new machine built out of old parts." Lee & Schumann (2005) further expressed, "social interaction modifies the patterns to fit the brain rather than requiring the brain to evolve a genetically based mechanism designed to specify the form of the language" (Larsen–Freeman, 2010, p. 59). As a contribution to SLA research field, the study has thus emphasized the interconnection between learners' linguistic representations and language use in social interactions.

In addition, the microanalysis on investigating interactional environments in which motion constructions are situated filled in the gap between learning and use as it provides interactional evidence demonstrating the overtime change of motion constructions within the individual motion inventory. This further brings out the need to incorporate microanalysis in longitudinal studies in SLA because learners' uses of

motion constructions may change constantly in interactions as well as in the course of L2 development. For example, as was shown in PL2, Ya's initial use of *when did you come to America* as a task-relevant form has not yet been picked in the very first practiced situation (as shown in Extract 1) until Extracts 2 and 3. And Ya adopts a number of make-do solutions to solve communicative challenges in the interaction (Extract 1). Such a change cannot be demonstrated unless detailed analysis on this micro-level of interactions was carried out. The present study may also provide insights to researchers whose focus has been on social interactions at a specific point in time or within a short time span. As a new trend in CA-for-SLA, CA researchers are encouraged to not only show the overtime change but also demonstrate how the changed resources are henceforth available (Pekarek Doehler, 2010). Furthermore, although researchers working within the framework of IH are not interested in establishing a linkage between interaction and L2 learning, some recent studies, such as García Mayo (2013) and others (e.g., Mackey, 2007; R. Ellis & Sheen, 2006), expressed the need to integrate with other research and theoretical strands and examine "the impact of cognitive and individual variables as well as social ones on the L2 learning process" (García Mayo, 2013, p. 334).

In sum, all of the above-mentioned aspects make the present study a contribution to the growing number of usage-based investigations of SLA, which view linguistic constructions as emerging from "interrelated patterns of experience, social interaction, and cognitive mechanism" (Larsen–Freeman, 2010, p. 57; see also N. Ellis & Larsen–Freeman, 2006, 2009).

## Chapter 6: Concluding Remarks

Over a long period of time, SLA researchers have been addressing the need to conduct detailed investigations on the learning of L2 constructions using dense longitudinal data (Collins & N. Ellis, 2009; N. Ellis, 2013; Ortega & Iberri–Shea, 2005). Applying a UBL approach in tracing the individual learning of L2 English motion constructions and testing the usage-based assumption on language learning, the present study sheds light on a deeper understanding that linguistic constructions are emergent and usage-driven. The individual variation across the three learners along the development of individual motion-inventories aligned with the usage-based idea that there is no uniformity in the development of linguistic systems; rather, each learner's linguistic system is dynamic and ever changing, challenging the traditional view that L2 development follows a similar developmental sequence.

Furthermore, by investigating the interactional environments in which learning of motion constructions are situated, PL1 and PL2 provided insights as to how learning is shaped by the usage events, contributing to a better understanding as to what learners can do and explanations on the uses of different motion constructions. This provides explanations to the constant changing of the motion inventory, i.e., the appearing and disappearing of motion expressions, further indicating that both language and language learning is locally contingent and situated and adaptive to the changing environment. As Bybee raised, "usage factors provide an avenue that leads to real explanations of linguistic phenomena" (Torrent, 2012). Thus, the present study further lends support to the importance of integrating cognitive and social perspectives to better understand L2 development.

Although the L1 issue has not been a key focus in the present study due to the limited number of informants, the study does find potential cross-linguistic influence from the learner's L1 on learning of motion constructions in L2 English. Due to the nature of the data, it is difficult to trace whether there are also bidirectional cross-linguistic influences between the learner's L1 and L2 at different points in time. Inspired by Brown & Gullberg (2008, 2010, 2011, 2013), future studies on tracing motion constructions in an

L2 are encouraged to not only look at the learning trajectories of the L2 but also track the linguistic productions of the L1 in the course of L2 development within the same learner using both elicited and non-elicited methods. This will help to gain a comprehensive developmental picture of a constructing and restructuring linguistic system in both languages.

So far, the study has focused on examining the development of different linguistic expressions that encode Path, but not yet on the specifics of Path components. A further interesting aspect to be looked at in detail is the development of expressions of different Path components, which include the Vector, the Conformation, and the Deictic. The Vector includes "the basic types of arrival, traversal, and departure" (e.g., *along*), the Conformation is a "geometric complex" (e.g., *into*) and the Deictic is described as "toward the speaker" and "in a direction other than toward the speaker" (Talmy, 2000, pp. 53–56). It is of great interest to see at what point in time do learners use which surface linguistic forms to express what components of Path and whether choices on the linguistic expressions of different Path components (or preferences on one over the other) change over time as a result of cross-linguistic influence.

Furthermore, as has been addressed in the three research papers, more learners of varied L1 backgrounds are needed in order to investigate the extent to which individual variability is observed across learners and examine whether there is a general group tendency on the development of motion constructions within learners of a particular L1.

The nature of the data limited the investigation to classroom-based learning, which may not well represent learning in other situations outside of the classroom (e.g., Theodórsdóttir, 2010; Wagner, 2010). Therefore, future longitudinal studies are encouraged to investigate learning of motion constructions in various contexts (e.g., naturally occurring data outside of the classroom) and examine the role that different contexts play on learning of motion constructions in an L2.

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# Paper 1

# Tracing an L2 Learner's Motion Constructions over Time —A Usage-based Classroom Investigation

Peiwen Li, Søren W. Eskildsen & Teresa Cadierno

## ABSTRACT

Informed by cognitive linguistics, this article discusses the learning of second language motion constructions from the perspective of usage-based linguistics (UBL). It considers how specific motion constructions and their underlying semantic components are expressed and developed over time. The developmental analyses are based on the assumptions of the UBL path of language learning, in which constructions are evolving from concrete items to gradually abstract constructions (e.g., Ellis, 2002; Eskildsen & Cadierno, 2007; Tomasello, 2000). The motion constructions and their components are analyzed on the basis of Talmy's (2000) typological framework. The article draws on a longitudinal audio–video database of classroom interaction. Tracing the development of motion constructions in one learner in the corpus over three and a half years, we show that the inventory of motion constructions becomes increasingly productive with emergent patterns building on previous experience.

*Key words:* second language development, motion constructions, usage-based linguistics

## INTRODUCTION

This article applies usage-based linguistics (UBL) to a case study of classroom second language learning, specifically the pattern-based nature of motion construction development. UBL is used here as a cover term for models of language such as cognitive grammar and construction grammar, which come together in viewing language knowledge as an inventory of constructions known as form–meaning pairings. These pairings consist of linguistic units of varying size (e.g., specific words or fixed or partially filled expressions such as idioms) and schematic patterns such as the intransitive schema (Barlow & Kemmer, 2000; Goldberg, 2009; Langacker, 1987;

Tummers, Heylen, & Geeraerts, 2005). The patterns themselves emerge from people's experience of using languages in real interactional situations.

From this usage-based perspective, a considerable amount of research has been carried out, both within the field of first language (L1) acquisition (Dabrowska, 2000; Dabrowska & Lieven, 2005; Lieven, 2009; Lieven & Tomasello, 2008; MacWhinney, 1975; Tomasello, 1992, 2000, 2003) and within the field of adult second language acquisition (SLA) (Collins & Ellis, 2009; Ellis, 2002; Ellis & Ferreira–Junior, 2009a, 2009b; Eskildsen, 2009, 2011, 2012; Eskildsen & Cadierno, 2007; Mellow, 2006; Yuldashev, Fernandez, & Thorne, 2013). The central empirical finding of those studies is that language learning is item-based, evolving from formulas and a limited inventory of low-scope, semi-productive patterns with a fixed parts and open slots to increasingly creative and abstract constructions, with a continuous interplay of varied constructions interacting with each other at different levels of learning. The term "utterance schema" will be used in this paper for the lexically based semi-productive patterns with a fixed part and an open slot (e.g., *GO TO* X) (Eskildsen, 2009; Tomasello, 2000).

This article extends the examination of the proposed UBL path of learning to a new research area, that of the motion constructions. In contrast to previous cross-sectional and experimental research on motion in SLA (see Cadierno, 2008 for an overview), the focus here is on how the inventory of L2 motion constructions develops over time.

## PREVIOUS RESEARCH

This section discusses existing research within the two strands of study upon which the article builds, UBL and SLA research, and motion expressions and SLA research.

### *UBL and SLA*

The usage-based perspective on second language (L2) studies derives from research on child language acquisition, which has shown that children start with lexically specific phrases or multi-word expressions and gradually build up "a repertoire of increasingly abstract constructions" (Dabrowska & Lieven, 2005, p. 437). Children construct utterances "out of various already mastered pieces of language" with different levels of

abstraction (Tomasello, 2003, p. 310). They reuse what have been previously constructed pieces of language and pick up what seems to be relevant to the "current communicative situation" or the "current usage event" (Lieven, Behrens, Speares, & Tomasello, 2003; Tomasello, 2003). Over time, an increasingly creative linguistic inventory is formed in which both concrete expressions and abstract patterns may cohabitate. The individual inventory is rooted in the usage events and highly dependent on the specifics of those usage events (Barlow & Kemmer, 2000; Langacker, 2000).

Applying such insights from L1 studies, Eskildsen investigated the learning of a variety of constructions by two Mexican Spanish learners of English in classroom interaction. The structures investigated include *do*-negation and other negated structures (Eskildsen, 2012; Eskildsen & Cadierno, 2007), *can*-constructions (Eskildsen, 2009), and *auxiliary do*-constructions (Eskildsen, 2011). While the different constructions exhibit different learning trajectories, the common finding for them all is that they go from exemplar-based starting points towards increasing creativity and schematicity. However, Eskildsen (2009) showed that the exemplar-basis does not necessarily consist of one highly recurring formula but may consist of a few less frequently recurring exemplars, and that the constructions may not exhibit full productivity. This, it was argued, is a matter of the construction in question and the environment-dependent nature of its learning.

Mellow (2006) examined the development of relative clauses by a Spanish learner of English. The results showed that the L2 learner began with a small number of tokens of relatively simple constructions and gradually was able to use more abstract constructions. This finding suggested that the L2 learner's acquisition was item-based.

Ellis and Ferreira–Junior (2009a, 2009b) conducted an investigation into the development of English verb–argument constructions (VACs) in the naturalistic European Science Foundation (ESF) data (Perdue, 1993). They examined three constructions—verb locative (VL), verb object locative (VOL), and ditransitive (VOO), and tested the assumption that abstract schematic constructions eventually emerge on the basis of previously learned concrete exemplars. One of their major findings was that

the frequency distribution for the types occupying the verb island of each VAC is Zipfian as each construction contains one highly frequently recurring exemplar. The uses of *go* constituted 53% of the total tokens of VL, *put* 68% of VOL, and *give* 64% of VOO in learners' speech, which confirmed that the first-used verbs in each VAC (e.g., the use of *go* in VL construction) were frequent and prototypical in meaning.

Yuldashev et al. (2013) examined L2 learners' multi-word inventories including fixed and semifixed multi-word units through analysis of L2 Spanish learners' instant messaging and blog use. Using corpus analysis tools, they demonstrated that the string *es que* (translated as *[it] is that*) was not only used together as one recurring chunk but that other related patterns, such as '[descriptive adjective] thing about [NP] is that […]' also emerged in a pattern-based fashion.

### *Motion and SLA*

***Talmy's Motion Event Typology*.** Apart from the aforementioned UBL perspective, this article draws on Talmy's (2000) typological framework on the semantic domain of motion, in which he examined how the conceptual structure of motion events is linguistically expressed. He describes the basic motion event as "one object (the Figure) moving or located with respect to another object (Ground)," which consists of the four internal semantic components Figure, Motion, Path, and Ground (p. 25). Path refers to "the path followed or site occupied by the Figure object with respect to the Ground object" while Motion refers to "the presence per se of motion or locatedness in the event" (pp. 25–26).

Furthermore, by analyzing how people tend to express the semantic components of the motion event in different languages, Talmy proposed the two-way typology of lexicalization patterns based on how the Path component is lexicalized (i.e., expressed in surface linguistic forms). Generally speaking, what he refers to as Verb-framed languages (e.g., Spanish) tend to encode Path and Motion in the verb root while Satellite-framed languages (e.g., English) prefer to encode Path in the satellite and conflate Manner and Motion in the verb root. According to Talmy, the satellite is "the grammatical category of any constituent that is in a sister relation to the verb root" (p.

102). The satellite covers the verb particles (e.g., *out, down*) and should be distinguished from prepositions in English. Talmy pointed out that Path can be expressed either by the combination of a satellite and a preposition or by the satellite alone. However, Filipović (2007), among others, has considered the distinction unnecessary and proposed to treat both types of expressions (i.e., "satellite" and "preposition" in Talmy's terms) that encode Path as Path particles when analyzing motion events.

In the current study, we take into account both the satellite and the prepositional use when talking about Path. In addition, the kind of motion we discuss includes 'translational motion,'[2] which results in a change of location (e.g., *come into my room*) and 'contained motion', that is, motion without any overall change of location (e.g., *walking in the road*) (Choi & Bowerman, 1991). Thus, the surface element that codes Motion is the motion verb while the Path can be lexicalized either by a satellite or preposition alone or by a combination of a satellite and a preposition.

***Motion in SLA.*** Inspired by Talmy's typological framework, a great number of studies have been carried out on motion constructions in SLA (see Cadierno, 2008, 2012 for an overview). However, most have been cross-sectional studies using oral and written narratives and focusing on the inter-typological and intra-typological differences between the learner's L1 and L2 (Brown & Gullberg, 2008; Negueruela et al., 2004; Özyürek, 2002; Reshöft, 2011; Stam, 1998, 2006). Two main research questions have been addressed, namely, whether and to what extent L2 learners are able to acquire the appropriate L2 patterns when talking about motion, and whether and to what extent this learning is influenced by their specific L1 (Cadierno, 2012).

The findings can be summarized along three main dimensions: first, L2 learners are able to develop appropriate L2 patterns when talking about motion; however, while some patterns tend to be target-like others still reflect the specific L1 pattern; second, learners' gestural patterns also reveal the influence of their L1 on their learning of an L2; and

[2] Caused motion is not included in the current study.

third, learners seem to face more difficulties when expressing grammatical distinctions that are not included in their L1 (Cadierno, 2012).

Motivated by Talmy's aforementioned typological work and the above mentioned motion studies in SLA, the current study explores the individual developmental trajectory of motion constructions over time. With respect to the development of the semantic components of motion, it specifically focuses on the expression of Motion, Path, and Ground, because Figure can be found in expressions other than motion constructions. At the same time, it also examines the UBL path of learning, investigating whether the learning of motion constructions is item-based and gradually becomes more abstract. Its focus reflects the fact that motion constructions in non-experimental data have not yet been examined in detail except in Ellis and Ferreira–Junior's (2009a, 2009b) research on the ESF corpus, which provided insights into the quantitative aspect of motion constructions, that is, how acquisition is influenced by frequency factors such as frequency distribution of exemplars within constructions. More directly connected to the focus of this study, Stam's (2010) longitudinal inquiry into motion traced how a Spanish L2 learner of English developed her motion expressions over time, especially expressions of Path. She did so by investigating the co-expression of Path and Manner of motion in both speech and gesture productions in Spanish and English. The results showed that at an early stage, the learner expressed Path in the L2 speech not only by a satellite, which followed the English pattern, but also by just a verb, as is the case in L1 Spanish. Later on, Path was consistently expressed by either a satellite or a preposition in her L2 speech.

Within that research context, this article explores how the inventory of L2 motion constructions develops over time. It addresses three research questions:

1. What type of linguistic material is used by the L2 learner to express Motion, Path, and Ground at different points in time?
2. What kind of association exists among the construction constituents that encode Motion, Path, and Ground over time?
3. Are different patterns of motion constructions becoming increasingly productive over time?

## THE STUDY

### *Data*

The article's data come from a longitudinal audio–video database of classroom interaction, *The Multimedia Adult English Learner Corpus* (MAELC)[3] at Portland State University. The students in the classroom wore a microphone on a rotational basis while the teacher always wore a microphone (Reder, 2005; Reder, Harris, & Setzler, 2003). The classroom was also equipped with six video cameras—two movable ones targeted at the two students wearing the microphones, and four fixed ones to capture different scenes in the classroom. The focal student in this paper, Carlos, is a Spanish-speaking Mexican learner of English in his late 20s to early 30s who attended class from September 2001 to February 2005. The final database covers approximately 120 hours of video recordings, in which Carlos is either wearing a microphone or sitting next to another student wearing the microphone. During the three and a half years in the language class, Carlos gradually progressed through the four proficiency levels assigned to their classes, from beginner to high-intermediate, referred to locally as levels A, B, C and D (see Reder, 2005 for more information on the different proficiency levels).

Carlos's participation in the classroom has been divided into four periods on the basis of his proficiency level and the hours of recorded classroom participation (abbreviated as RP for recording period). His performance at level D was further divided into two recording periods because of a much higher number of recording hours at that level and because of a six-month learning interval between RP3 and RP4, his level D performances.

Recording Period 1 (RP1): Sept. 27–Nov. 29, 2001: Level A (21 hours of video recording)

Recording Period 2 (RP2): Jan. 18–June 7, 2002: Level B (39 hours of video recording)

Recording Period 3 (RP3): Sept. 23, 2003–Mar. 2, 2004: Level D (30 hours of video recording)

[3] The same data source has been reported on in other publications, such as Eskildsen (2012) and Hellermann (2008).

Recording Period 4 (RP4): Sept. 30, 2004–Feb. 22, 2005: Level D (24 hours of video recording).

***Methodology***

***Transcription and Coding.*** After transcription of the recordings by the second author of this paper, all motion verbs were extracted and double checked by the first author. Both declarative and interrogative utterances were taken into consideration. Disagreements were discussed and resolved by the three authors and, in a few cases, at research meetings with other researchers. Unclear expressions were excluded from the analysis.

The following coding criteria were used: a motion verb in a motion expression was coded as 'Motion'. The linguistic element expressing a trajectory of the movement was coded as 'Path'[4] if it was present in an utterance (e.g., *go* ***to*** *Mexico*), or, if it was absent, (e.g., *go the bank*), it was coded as 'ØPath'. The linguistic item (in most cases a noun phrase (NP)) in an object position that conveys locative information was coded as 'Ground' (e.g., *come to* ***the party***); if it was absent (e.g., *go down*), it was coded as 'ØGround'. In the case of incomplete utterances, such as *come in the* the definite article *the* was coded as a Ground because *the* appears in the object position and normally modifies a noun that expresses Ground. If neither Path nor Ground was expressed in a motion expression (e.g., *come all the time*), it was coded as 'ØPath ØGround'. A sample of coded utterances is given in Table 1.

[4] Because the present study focuses on different linguistic items that express Path outside of the main verb, it only codes the linguistic item that encodes Path outside of the main verb as Path, although Path may be expressed in motion verbs, such as *go* and *come*, that incorporate deictic information in motion constructions.

TABLE 1

Examples of Coded Utterances

| CODING | UTTERANCES |
|---|---|
| Motion Path Ground | *go to Mexico* |
| Motion Path Ground | *come in the* |
| Motion Path ØGround | *go down* |
| Motion ØPath Ground | *go the bank* |
| Motion ØPath ØGround | *come all the time* |

***Data Analysis*.** Data analyses fell into two categories: (a) a linguistic analysis of the linguistic means used to express Motion, Path, and Ground, aimed at answering research questions 1 and 2; and (b) a type–token analysis of *go*-patterns and *come*-patterns addressing research question 3. The first section of the linguistic analysis examined Carlos's uses of *go* (/*going*/*went*) and *come* (/*coming*/*came*) as motion expressions because these were by far his most frequently employed motion verbs (cf. also Table 6); its second section gives a complete inventory of all the motion verb constructions.

## RESULTS

### *Linguistic Analysis of Go- and Come-constructions*

Linguistic analysis of the linguistic material used by Carlos to encode Motion, Path, and Ground and the associations among the three in *go*- and *come*-constructions over the four recording periods is presented in Tables 2–5. Because Motion is expressed by the motion verbs *go* and *come* and Ground is not always obligatory in a motion expression, the focus of the present analysis was on the development of a core feature of a motion event, i.e., Path.

The tables are organized internally according to token frequency, i.e., the most frequently occurring tokens are listed first. Types were defined based on the variation of Path expressions in motion constructions. For example, *go down* (coded as 'Motion Path') and *go the bank* (coded as 'Motion ØPath Ground') were considered as two different types of *go*-use. Within a particular type, the numbers of tokens of different

linguistic materials (e.g., NPs, adverbs) that express Ground are specified. The actual linguistic element that encodes Ground was spelled out if the expression occurred only once; otherwise, a grammatical category (e.g., NP) together with two examples was given if more than two linguistic items of the same category were used.[5]

Table 2 presents an overview of Carlos's *go*- and *come*-uses as motion expressions in RP1.

TABLE 2

*Go*- and *Come*-use, RP1

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *go* | Ø | *the* (NOUN) (e.g., *bank, level b*) | 11 |
| | | *level b* | 2 |
| | | Ø | 6 (e.g., *I go, I need go*) |
| | *down* | Ø | 8 |
| | | *the* | 1 |
| | *to* | NP (*Mexico, bed, the supermarket*) | 3 |
| | *in* | *the* | 2 |
| | *home* | | 2 |
| | *where?* | | 1 |
| | *straight* | Ø | 1 |
| *come* | Ø | Ø | 3 |
| | *in* | NP (*the, the Jackson*) | 2 |
| | | *here* | 1 |
| | *over* | *here* | 2 |
| | *back* | Ø | 1 |

*Note*. RP = Recording Period; NP = Noun Phrase. *Where?* indicates that *where* is used as an interrogative adverb. *Go the* (NOUN) indicates that *go the* is either a recurring item on its own or is recurring and followed by a Noun.

[5] Please note that uses of 'going to Future' are not included in the analyses. Neither are 'meta uses', such as uses of *went* in situations where Carlos produces it to display meta-knowledge of the past tense of *go* when solicited by the teacher.

As shown in Table 2, *go*-use is characterized by more varied types than *come*-use in RP1. As indicated by the number of tokens, two clearly predominant patterns were observed for the use of *go*, whereas no predominant patterns were found for *come*.

For *go*-uses, the predominant pattern is *GO THE* (NOUN), comprising nine instances of *go the* followed by different nouns (e.g., *go the bank*, *go the level b*) and two instances of *go the* without the noun. It resembles prototypical motion constructions to the extent that it involves Motion and Ground (but probably not a Path[6]). In addition, the recurring *go the* can also be found in a different kind of expressions *go the write* and *go the run*, as they involve verbs in the structural slot that is usually occupied by nouns—*go the write* functions as an informal imperative to ask a fellow student to write something on the blackboard while *go the run* is an immediate translation of another Mexican student's speech (*el va corriendo*) in a picture description exercise.[7] These *go the* uses seem to be emergent from an utterance schema *GO THE* X, with the open slot X filled by a variety of nouns that encode Ground which is then expanded to also sanction the use of verbs that carry the meaning of activities in what is otherwise a position filled by the Ground-denoting item. Furthermore, *GO LEVEL B* occurs twice as a pattern on its own. *GO THE* (NOUN) and *GO LEVEL B* seem to be interrelated as both are non-target-like patterns which do not include a preposition *to*. However, the preposition *to* does exist in a target-like pattern *GO TO* NP, which is instantiated by *go to Mexico* and *go to the supermarket* and an afforded use of *go to bed*. Afforded uses refer to the linguistic constructions that are picked up by the learner from the immediate environment (e.g., peers, teachers, course book) (see van Lier, 2000). An interesting observation is that all these three patterns *GO THE* (NOUN), *GO LEVEL B* and *GO TO* NP appear at the same point in time in the data, suggesting a variable inventory of *go*-patterns. Thus, the notion that the path of learning is one that goes linearly towards reaching native-like mastery is called into question.

[6] It is uncertain whether Carlos encodes Path in the use of *the*.
[7] Such uses of '*go the* Action' and expressions of '*go* Action' (e.g., *go open*/*write*) are not included in Tables 2–7 because they are not regarded as motion event expressions in the sense of Talmy (2000).

The second-most frequently used pattern is *GO DOWN (THE)*, consisting of eight instances of *go down* and one afforded use of *go down the*. However, seven instances of *go down* are afforded and appear in direction-giving exercises. The single non-afforded use falls only three minutes after the exercises in which Carlos had been scaffolded into using *go down* seven times. Furthermore, there are also *go home* and an afforded *where did you go* in which the single linguistic items *home* and *where* encode Ground. However, when *home* and *where* are used with *go*, an implied meaning of Path is arguably added to *home* and *where*. Thus, a dynamic meaning of 'Motion Path Ground' is expressed in *where did you go* and *go home*.

In terms of *come*-use, the three main patterns see an equally distributed frequency across patterns. *COME Ø Ø* is instantiated by an afforded *come and check* and two incomplete expressions *you coming* and *you come* in which neither Path nor Ground is expressed, whereas, *come over here* and *come in here* are prototypical motion constructions that include Motion (*come*), Path (*over*, *in*) and Ground (*here*). Furthermore, an afforded expression *come back* occurs to instantiate the pattern *COME BACK*.

With respect to the expressions of Path and the associations between construction constituents that encode Motion and Path, *go* is associated with more Path expressions, i.e., satellites[8] *down*, *straight*, *home*, and *where*, and the prepositions *to* and *in*, while *come* is associated with prepositions *over* and *in* and a satellite *back*. Ground is mainly expressed by a greater number of noun phrases in *go*-use while restricted to specific expressions (e.g., *here*, *the*) in *come*-use. However, the data does not immediately reveal a complete lexicalization of Path in either *go*- or *come*-use. In other words, either Path is not lexicalized in those motion expressions, which it should be (e.g., *go level b*, *I go*, *you come*), or Path may be expressed by a phonetic resemblance between *to* and *the* (e.g., *go the bank*). Bearing in mind the afforded nature of *go down*, *go straight*, where *did you go*, and *come back* and the construction specific nature of *home*, more generalizable means to express Path (other satellites and prepositions) in relation to *go*

[8] The present study regards linguistic items that conflate Path and Ground in motion constructions (e.g., *home*, *where*) as satellites.

and *come* are limited to only prepositions *to, in* and *over*, while *GO THE* (NOUN) is by far the most frequently deployed pattern to talk about motion in RP1.

In RP2, Carlos begins to combine both *go* and *come* with more varied means to express Path which results in an increase in the number of patterns in both uses. *GO TO* NP, *GO* Ø Ø, *GO THE* NOUN, *GO WHERE?*, *COME BACK*, and *COME* Ø Ø that occurred in RP1 continued to be used in RP2. Besides these, other patterns that were used in RP1 do not recur in RP2. Instead, six new patterns of *go*-use and four new patterns of *come*-use occur as depicted in Table 3 below.

TABLE 3

*Go*- and *Come*-use, RP2

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *go* | *to* | NP (e.g., *the bathroom*, *Mexico*) | 37 |
| | *ahead* | Ø | 5 |
| | Ø | Ø | 4 (e.g., *I go whole night*) |
| | | *the* NOUN (*some place*, *shopping*) | 2 |
| | *into* | NP (e.g., *the kitchen*, *the bedroom*) | 4 |
| | *where?* | | 3 |
| | *outside* | | 1 |
| | *down in* | *the Powell* | 1 |
| | *the back* | Ø | 1 |
| | *over* | *there* | 1 |
| *come* | *to* | NP (*the party*, *the school*, *work*) | 4 |
| | *back* | Ø | 3 |
| | Ø | Ø | 2 |
| | | *the party* | 1 |
| | *here* | | 2 |
| | *into* | *my room* | 1 |

*Note*. RP = Recording Period; NP = Noun Phrase. *Where?* indicates that *where* is used as an interrogative adverb.

With respect to *go*-use in RP2, the pattern *GO TO* NP that occurs twice in RP1 now appears to be the predominant pattern as shown by the number of occurrences in Table

3. It is first instantiated by a number of afforded *go/going to (the) bed/bedroom* in different exercises which are then expanded to later productive uses (e.g., *going to the level C*, *went to the bathroom*). Furthermore, an expression used in RP1, *go to Mexico*, recurs in RP2. At this stage, *GO TO* NP seems to be heavily dependent on affordances (especially in early RP2) as there are 20 afforded uses out of the total 37 instances. The second-most frequently occurring pattern *GO AHEAD* is also afforded and appears five times in one exercise but is not used again in the classroom by Carlos. Besides, a previously dominant pattern in RP1 *GO THE* NOUN becomes less dominant in RP2 as its number of occurrence sharply decreases from 9 in RP1 to 2 in RP2. It is hypothesized that the previously very frequent pattern *GO THE* NOUN is replaced in developmental competition by the more target-like *GO TO* NP. Apart from these, other patterns appear to be less dominant in RP2 but are worth mentioning. The newly occurring pattern *GO INTO* NP is instantiated by an afforded writing example *going into the bed* and later non-afforded uses of *going into the kitchen/the bedroom*. Carlos's use of *go down in the Powell* may be derived from the earlier practiced construction *go down* in RP1. Furthermore, *go over there* can be traced back to a previously used expression *come over here* in RP1, as Carlos seems to generalize *over* to the use of *go* in RP2 from its use in combination with *come* in RP1. Developmentally, then, RP2 sees both an increase in the number of different patterns in *go*-use and interconnections between the present constructions and previously experienced exemplars.

As to *come*-use in RP2, the number of types has increased from 4 in RP1 to 5 in RP2. However, its total number of types used in RP2 is still less than the number of types in *go*-use. Similar to RP1, *come*-use in RP2 also sees a seemingly equally distributed frequency across patterns, with a newly occurring type *COME TO* NP accounting for the highest frequency. Its lexically specific beginning is *come to the party* which Carlos produces as an other-initiated self-repair[9] of the expression *come the party*. He later goes on to expand *come to* to *come to the school* and *come to work*. In addition, the expression *come back* occurred three times in RP2, which shows that possibly entrenched multi-word expressions are not only formulas that may initiate pattern-

[9] See Schegloff, Jefferson, & Sacks (1977) for the uses of initiation and repair in conversations.

learning; rather, they may also emerge in the course of learning, in this case perhaps sanctioned by previously used *COME* + Path-patterns.

In terms of the expression of Path and the association between Path expressions and the motion verbs, besides *to* and *where* that have been used in combination with *go* in RP1, Carlos starts to combine *go* with a greater number of new satellites (e.g., *outside*) and prepositions (e.g., *into* and *over*), and a complex Path expression *down in*; while *come* is combined with the prepositions *to* and *into*, and the satellites *back* and *here*, none of which were used in combination with *come* in RP1. Ground is expressed by a greater number of noun phrases in *go*-uses while still restricted to a limited number of noun phrases in relation to *come*. Developmentally, both the *go*- and the *come*-inventory go from relying on a limited number of linguistic resources to express Path in RP1 to sanction increasingly varied Path expressions. For *go*-use, for example, a change from *GO THE* (NOUN) to *GO TO* NP is documented, a process which seemed to rely on practice of a limited number of different *GO TO* NP exemplars. For *come*-use, previously used patterns in RP1 were not kept in use in RP2. Having said that, there are still traces of previous uses as testified by *come in here* and *come over here* falling out of use at the expense of what might be a more simplified version of the two, namely *come here*. In addition, the new type *COME TO* NP occurs as a main way to express motion, perhaps as Carlos is appropriating the *GO TO* NP pattern and extending the use of *to* to patterns centered on *COME*.

Later on, in RP3 as depicted in Table 4, four types *GO TO* NP, *GO WHERE?*, *COME BACK*, and *COME TO* NP that were used in RP2 continued to be used in RP3. *Go*-use at this point is, perhaps somewhat surprisingly, characterized by less varied types as compared with RP2, while *come*-use sees an increase in the number of types from 5 in RP2 to 8 in RP3.

TABLE 4

*Go*- and *Come*-use, RP3

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *go* | *to* | NP (e.g., *the party, Arizona*) | 11 |
| | *out* | Ø | 5 |
| | Ø | Ø | 2 |
| | *out to* | *the nightclubs* | 1 |
| | *at* | *the park* | 1 |
| | *where?* | | 1 |
| *come* | *back* | Ø | 6 |
| | *to* | NP (e.g., *school, the USA*) | 5 |
| | | *here* | 1 |
| | | *them* | 1 |
| | Ø | Ø | 5 |
| | *in* | Ø | 3 |
| | | *the* | 1 |
| | *back to* | NP (*my country, the France*) | 3 |
| | *from* | *Mexico* | 1 |
| | *in to* | *the Mexico* | 1 |
| | *on* | *the street* | 1 |

*Note*. RP = Recording Period; NP = Noun Phrase. *Where?* indicates that *where* is used as an interrogative adverb.

For *go*-use, the previously used pattern *GO TO* NP continues to be the predominant one in RP3; however, the number of occurrences decreases from 37 in RP2 to 11 in RP3. Because there are 20 afforded uses out of the total 37 in RP2 and only 2 afforded uses out of the total 11 in RP3, *GO TO* X appears to become increasingly entrenched and productive as an utterance schema—with the open slot X filled by more different noun phrases. The pattern *GO TO* NP thus seems to have emerged on the basis of practiced and afforded lexically specific patterns in RP2. Moreover, *go*-use is further expanded to include a frequently recurring phrasal verb, *go out*, often used in conjunction with *all the time*. So, developmentally, no increase in the number of patterns was observed in RP3 as compared with RP2; rather, three new patterns *GO OUT, GO OUT TO THE NIGHTCLUBS* and *GO AT THE PARK* were added to Carlos's *go*-inventory.

In terms of *come*-use in RP3, four new types *COME BACK TO* NP (e.g., *come back to my country*), *COME FROM MEXICO*, *COME IN TO THE MEXICO* and *COME ON THE STREET* were added to Carlos's *come*-inventory. The pattern *COME BACK* that instantiated by three instances of *come back* in RP2 continues to be a frequent pattern in RP3. Besides, another previously used dominant pattern *COME TO* NP seems to evolve into an utterance schema *COME TO* X at this stage in which the open slot X is filled by either noun phrases or *here*. Furthermore, an earlier occurring *come in (the)* construction in RP1, which does not recur in RP2, recurs here, instantiated by four instances of *come in (the)*. The new type *COME BACK TO* NP, instantiated by three instances of *come back to my country/the France*, may build on the frequently used *come back* construction. Developmentally, both an increase in the number of patterns and recurring uses of previously occurring patterns were observed in RP3.

With respect to the semantic components of a motion event and the associations between the construction constituents that encode Motion, Path, and Ground, Path expressions that are used in combination with *go* are not only expressed by the previously used preposition *to* and the satellite *where* but also realized by three new linguistic means, i.e., *out, out to* and *at*. For *come*, Carlos does not only combine it with the previously occurring preposition *to* but also with new linguistic means, i.e., the prepositions *on* and *from*, the satellite *back*, and combinations of a satellite and a preposition *back to* and *in to* as complex Path expressions. Ground is expressed mainly by different noun phrases in relation to both *go* and *come*. Developmentally, then, *GO TO* X and *COME TO* X become increasingly entrenched as utterance schemas in RP3; it could even be argued that they have come to share a common basic motion expression schema, *GO/COME TO* X. Additionally, the number of associated Path expressions decreases with *go* while it increases with *come* as compared with RP2.

In RP4, only two new types *GO THERE* and *GO ANYPLACE* occur in Carlos's *go*-inventory while no new types occur in his *come*-inventory. *Go*- and *come*-patterns at this stage seem to be heavily based on previously used ones as shown in Table 5.

TABLE 5

*Go*- and *Come*-use, RP4

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *go* | *to* | NP (e.g., *college*, *store*) | 19 |
| | | *there* | 1 |
| | Ø | Ø | 3 |
| | | *the anywhere* | 1 |
| | *there* | | 3 |
| | *where?* | | 2 |
| | *in* | *the* | 1 |
| | *anyplace* | | 1 |
| | *home* | | 1 |
| *come* | *to* | NP (e.g., *school*, *class*) | 5 |
| | Ø | Ø | 4 |
| | *here* | | 2 |
| | *in* | Ø | 1 |
| | *back* | Ø | 1 |
| | *back to* | *here in Portland* | 1 |

*Note*. RP = Recording Period; NP = Noun Phrase. *Where?* indicates that *where* is used as an interrogative adverb.

In RP4, *GO TO* X continues to be used as an utterance schema—the open slot X is not only filled by different noun phrases (e.g., *college*, *store*) but can also be filled by *there*. Other expansions of the inventory include *go there* and *go anyplace*. Similarly, the *COME TO* X construction continues to be used as an utterance schema. A development here is the appearance of a complex motion construction *I come back to here in Portland*, which includes not only a complex Path (*back to*) in a similar case as in RP2 but also a complex Ground (*here in Portland*). While this use may seem odd, it might be brought about by *here in Portland* being a previously used chunk in Carlos's inventory.

In sum, Carlos's learning of *go*-constructions is suggested to be item-based, evolving from an early reliance on affordances, recurring items (e.g., *go the*), and classroom exercises. A dominant pattern *GO THE* NOUN emerged early in the inventory and gradually disappeared as a result of a later frequently used *GO TO* NP pattern, based on which two emergent utterance schemas *GO THE* X and *GO TO* X were observed. Alongside this constructional development, the study documented the continuous and discontinuous uses of earlier recurring patterns and the emergence of new patterns across time, all substantiating the usage-based assumptions of language learning as a slow and gradual exemplar-based process. As to Carlos's *come*-constructions, the data revealed the emergence of both a frequently recurring exemplar *come back* and an utterance schema *COME TO* X. Patterns within *come*-use were observed to become increasingly varied across time. In contrast to the developmental path of *go*-constructions, *come*-constructions seem not depend on affordances. However, both constructions seem to be developmentally interrelated—there is evidence showing possible transfers between *go*-related uses and *come* uses. For example, *to* appears early in combination with *go* in RP1 and is generalized to be combined with *come* in RP2; *come over here* occurs in RP1, in which a similar structure is generalized to *go*-use (*go over there*) in RP2.

Concerning Carlos's expressions of Path and Ground, there were continuous changes in Path encoding and little change in Ground encoding through RPs 1–4. Longitudinally, the data generally show that Carlos's expressions of Path progress from an early reliance on a limited number of prepositions (e.g., *to, in*) and satellites (e.g., *down, home*) to sanction increasingly varied linguistic resources. Three main changes were observed in Path encoding over time. First, the number of 'ØPath' or so-called 'empty Path' expressions changed, especially in relation to *go*-use. In RP1, Path was not consistently expressed by any satellites or prepositions 43% (16/37) of the time with *go* and 22% (2/9) of the time with *come*. As indicated in Stam (2010) on a Mexican–Spanish learner of English, the use of *go* without any accompanying satellites or prepositions to express Path in motion expressions is a learner pattern which is not normally used by English L1 speakers. These learner patterns were less frequently used over time and disappeared in RP4. Second, Path expressions become more complex

over time. In RP1, Path was expressed by a single linguistic item while in RPs 3 and 4, complex Path expressions included *out to*, *back to* and *in to*. Third, Path expressions in each RP were not the same across time, which results in an ever-changing motion inventory. As to Ground encoding, little change was observed in *go*-use in which Ground was mainly expressed by a great number of noun phrases across time, whereas for *come*-use, Ground expressions evolve from being restricted to specific expressions to allow for an increasingly greater variety of noun phrases.

In associations among construction constituents that encode Motion, Path, and Ground, *go* and *come* were shown to have different combinations with different Path and Ground expressions across time, especially in the initial learning stages. In RPs 1 and 2, *go* was found to have more association possibilities than *come*. For example in RP1, *go* was associated with both prepositions (*to*, *in*) and satellites (*down*, *home*, *where*) while *come* was only associated with prepositions (*over*, *in*); *go* was associated with a number of noun phrases as Ground expressions while *come* was combined with a limited number of specific Ground expressions. Later on, both verbs came to have equally distributed numbers of association possibilities.

***Linguistic Analysis on Carlos's Full Inventory of Motion, Path, and Ground***

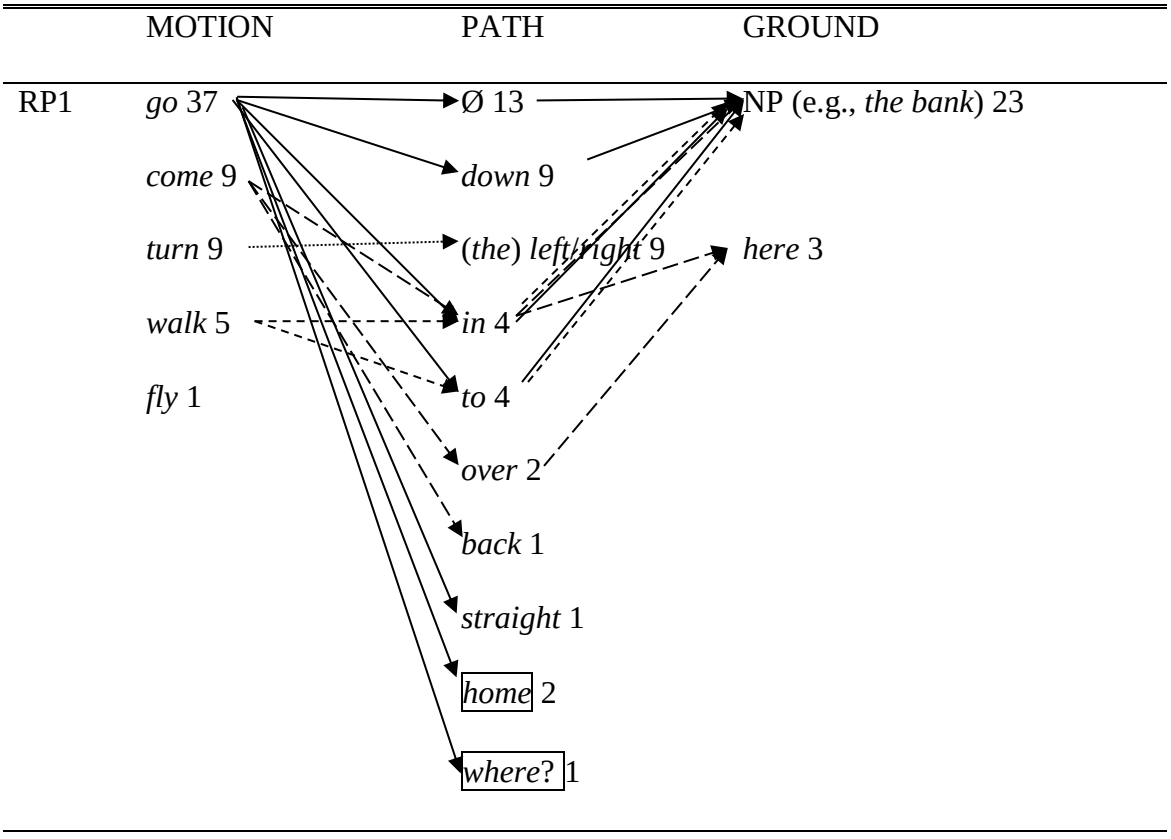
Addressing research questions 1 and 2 this section presents a complete inventory of the different construction constituents that encode Motion, Path, and Ground in different RPs. Beyond that, it comments on the extent of associations between a specific motion verb and the type of linguistic material that encodes Path and Ground to see whether there is a preference of associations among the three.

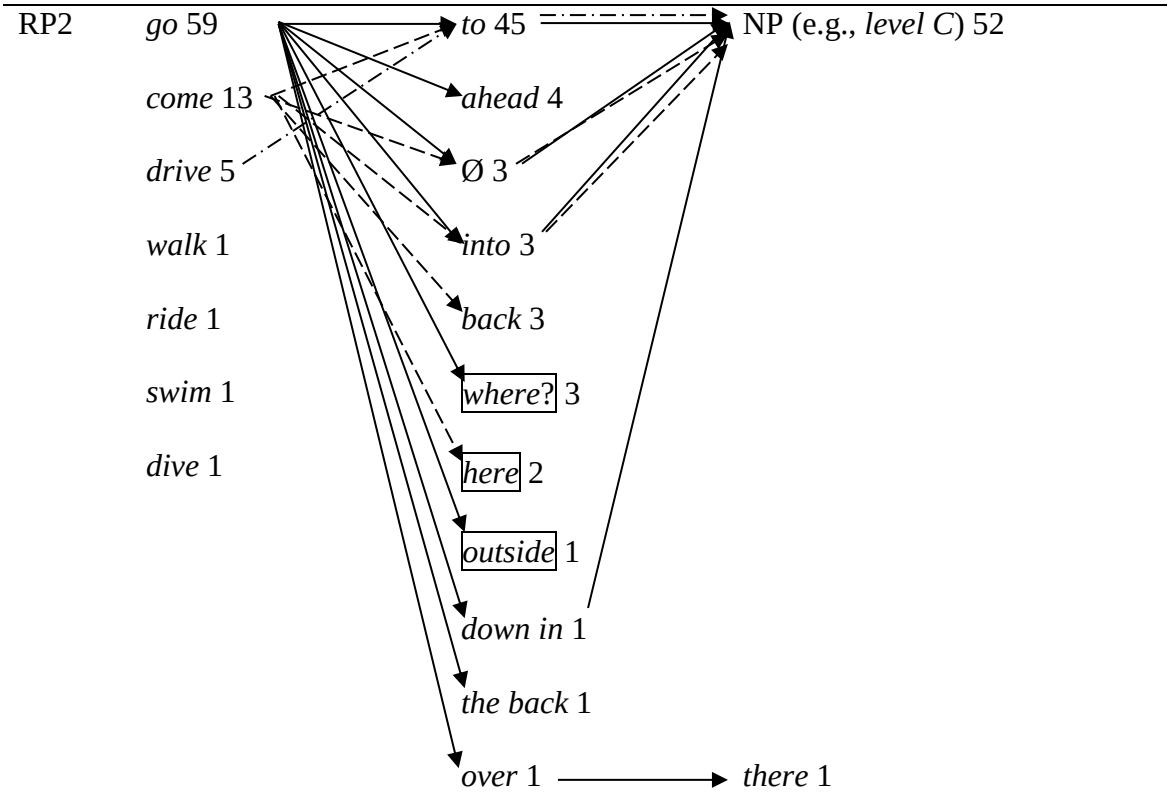
Table 6 illustrates the different construction constituents that were used by Carlos to encode Motion, Path, and Ground in different RPs. The arrows mark the combination between the motion verb and the construction constituents that encode Path and Ground. Different motion verbs are distinguished by arrows of different shapes. When motion verbs are listed alone without any arrows, it means that neither Path nor Ground is expressed in those constructions. Examples of these cases are *he drive*, *swimming*. In each column, the linguistic items that encode each semantic component are organized

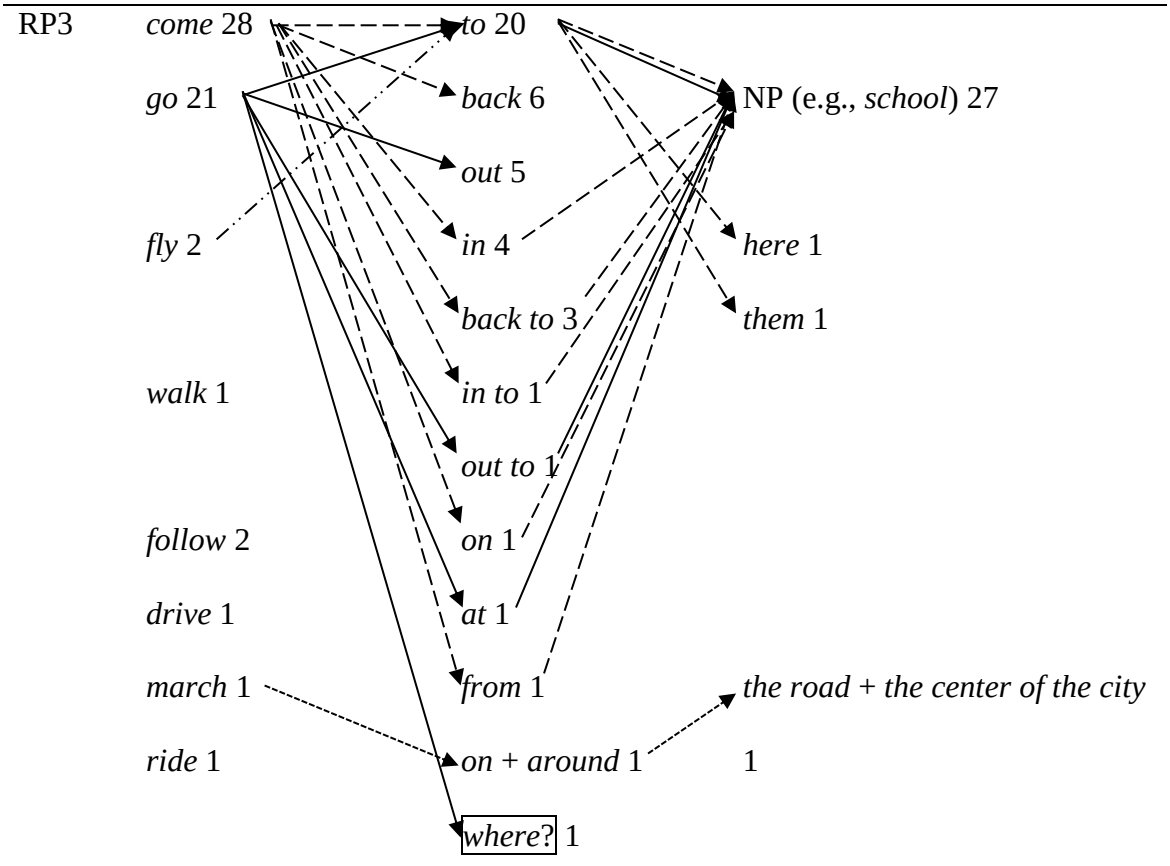
according to frequency of use. The number after each linguistic expression in the table refers to the frequency of occurrence in each RP. For example, *come 9* means that *come* appear nine times in motion expressions, *in 4* means that *in* appears four times in total to express Path. *NP 23* refers to the expressions that encode Ground are realized by twenty-three instances of noun phrases in total.

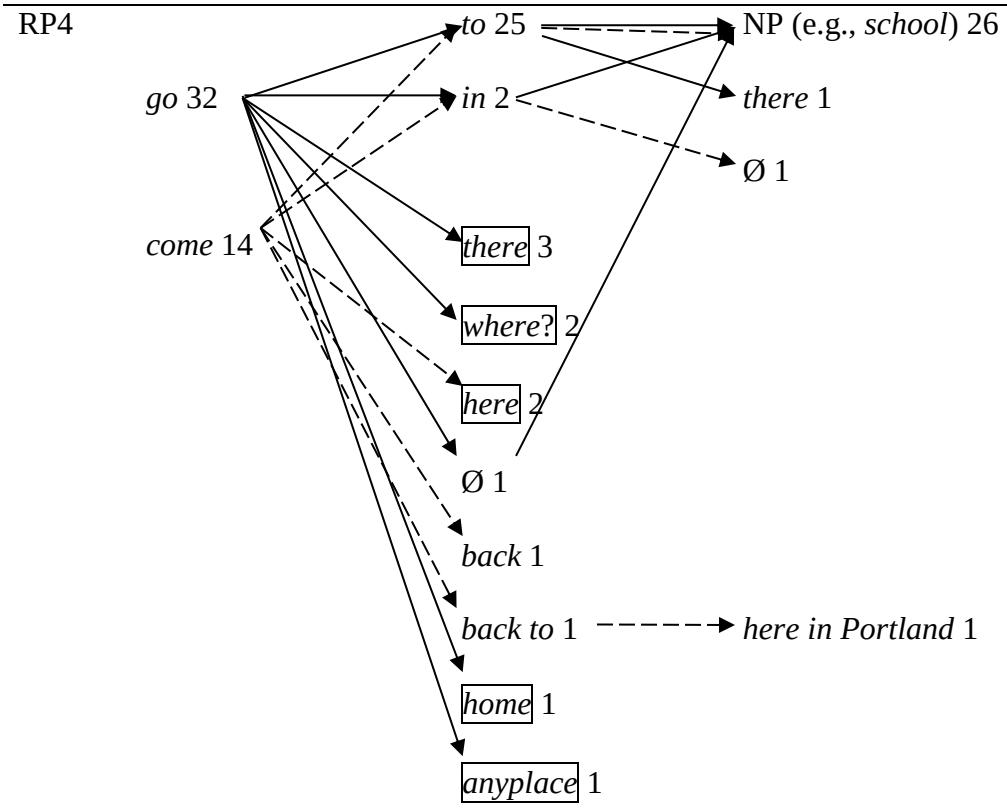
TABLE 6

An Overview of Carlos's Full Inventory of Motion, Path, and Ground




RP2
go 59
come 13
drive 5
walk 1
ride 1
swim 1
dive 1
to 45
ahead 4
Ø 3
into 3
back 3
where? 3
here 2
outside 1
down in 1
the back 1
over 1
NP (e.g., level C) 52
there 1


RP3
come 28
go 21
fly 2
walk 1
follow 2
drive 1
march 1
ride 1
to 20
back 6
out 5
in 4
back to 3
in to 1
out to 1
on 1
at 1
from 1
on + around 1
where? 1
NP (e.g., school) 27
here 1
them 1
the road + the center of the city
1




*Note*. RP = Recording Period; NP = Noun Phrase. *Where?* indicates that *where* is used as an interrogative adverb. Item indicates that the linguistic item conflates both Path and Ground in motion constructions.

In RP1, Motion was expressed by five motion verbs, i.e., *go*, *turn*, *come*, *walk*, and *fly* as shown in Table 6. The linguistic materials that encode Path were the prepositions *in*, *to* and *over* and the satellites *down*, *straight*, *back*, and (*the*) *left/right*. Ground was mainly expressed by a number of noun phrases. The satellites *home* and *where* express both Path and Ground when used together with a motion verb and are distinguished from the linguistic items that encode only Path. As to the associations between motion verbs and Path expressions, *go* was used with a greater variety of Path expressions that include both non-afforded uses of *in*, *to*, *over*, and *home* and afforded uses of *down*, *straight*, and *where*. The other verbs were much more restricted in relation to their association possibilities. *Come* was combined with *in*, *over*, and an afforded use of *back* while the uses of *walk* in combination with *in* and *to* were afforded. *Turn* was used with a specific Path expression *(the) left/right* while *fly* was used alone without any Path expressions. It should be noted that, *Turn* was frequently occurring in RP1 but has not

been discussed in more detail in the paper because it was afforded and only used in a one-off specific direction-giving exercise, in which the total nine instances of *turn* (*the*) *left/right* occurred.

In RP2, the motion verbs *go, come,* and *walk* were kept in use while *drive, ride, swim,* and *dive* occurred as new means to express Motion. *Swim* and *dive*, however, were afforded and never found in the data again. With regard to Path expressions, *to* and *home* were kept in use while new linguistic means include prepositions *into*, satellites *ahead, the back,* and a combination of a satellite and a preposition *down in* as a complex expression. In contrast to the few occurrences of the preposition *to* in RP1, its use increased in RP2 regarding both the number of occurrences and the number of association possibilities with motion verbs (*go, come,* and *drive*). In terms of the associations between a motion verb and Path expressions, Carlos started to combine *go* and *come* with a larger variety of prepositions and satellites in RP2 as compared with RP1 and continued to combine both motion verbs with a greater number of noun phrases as Ground expressions. *Walk,* which was afforded in combination with *in* and *to* in RP1, was also afforded in RP2 and did not have any associated Path expressions. *Drive to,* which occurs in RP2, was an afforded use. Finally, the remaining newly occurred motion verbs in RP2 did not have any associated Path or Ground expressions.

In RP3, Carlos's motion inventory was expanded further to include two more motion verbs, i.e., *follow* and *march* to express Motion. Path expressions not only include previously occurring *to, back, in,* and *where* but also include a greater variety of new means, such as *out, on,* and *from*. Besides, three complex Path expressions *back to, in to,* and *out to* were added to the inventory. Different from RP2, the number of Path expressions that were combined with *go* decreased while it increased in relation to *come*. *Fly* was only combined with the preposition *to,* and *march* was combined with *on* and *around* in a complex motion construction *march on the road around the center of the city*. The other motion verbs did not have any associated Path or Ground expressions.

In RP4, Motion was only expressed by the previously used verbs *go* and *come* which were mainly combined with previously recurring Path expressions. Noun phrases remain as a main way to express Ground.

In sum, both *go* and *come* appear to have more association possibilities with increasingly varied Path and Ground expressions, while the other motion verbs, appearing and disappearing at certain points in time, were more restricted in their association possibilities. Moreover, certain linguistic materials that encode Path seem to be verb-specific, i.e., they were revolving around specific verb islands (Tomasello, 1992), both at a certain point in time and across time. For example, the satellite *out* was found to be combined with *go* in RP3, and the satellite *back* was found to be in combination with *come* through RPs 2-4. On the other hand, some of the linguistic materials that encode Path tend to be in a relatively freer association with different motion verbs. For example, *to* was employed as the most frequently occurring preposition for the expression of Path which appeared in a comparatively free combination with different motion verbs, i.e., *walk*, *come*, *go*, *drive*, and *fly*. However, the use of the preposition *to* seems not to be immediately generalizable to other motion verbs. As indicated in Tomasello (1992, 2003), language learners use a structure in relation to a particular verb-island but may not be able to generalize such a structure to new verbs. Carlos produced *go to* constructions at an early stage in RP1 but failed to generalize a similar use to other motion verbs as the uses of *walk to* in RP1 and *drive to* in RP2 were all afforded. It is not until RP2 appeared non-afforded *come to* construction and RP3 appeared *fly to* construction.

***Type–Token Analysis on Go- and Come-patterns***

The point of this section is to explore the degree of creativity in terms of the uses of different *go*- and *come*-patterns across time. Tables 7 and 8 below show the type and token relations for the total and non-afforded *go*- and *come*-patterns that have been discussed earlier. Type is defined on the variation of Path expressions, and type frequency in each RP refers to the number of different types that were used in the *go*- and *come*-inventory of motion expressions. Token frequency refers to the total number of instantiations within each type in each RP. Type–token ratios are used to illustrate the

degree of creativity and the possible entrenchment of certain expressions in *go*- and *come*-patterns. The degree of creativity is based upon the number of non-afforded uses as counting in afforded uses may not show a true picture of pattern development. If a type only appears in a specific usage event in an afforded manner (e.g., practice of certain forms) without being used in other usage events, it was excluded from the non-afforded type–token count. Similarly, afforded instantiations of a non-afforded type were also excluded from the non-afforded type–token count. A high type–token ratio indicates a high degree of creativity of the types, whereas a low type–token ratio suggests a frequent use of one or a few types within a RP or possible entrenchment of one or a few exemplars.

TABLE 7

Type and Token Frequencies for Carlos's *Go*-use

| RPs | Total *Go*-use as Motion Expressions | | | Non-afforded *Go*-use as Motion Expressions | | |
|---|---|---|---|---|---|---|
| | Types | Tokens | Ratios | Types | Tokens | Ratios |
| RP1 | 7 | 37 | 0.19 | 5 | 24 | 0.21 |
| RP2 | 9 | 59 | 0.15 | 8 | 33 | 0.24 |
| RP3 | 6 | 21 | 0.29 | 6 | 18 | 0.33 |
| RP4 | 7 | 32 | 0.22 | 7 | 25 | 0.28 |

*Note*. RP = Recording Period.

TABLE 8

Type and Token Frequencies for Carlos's *Come*-use

| RPs | Total *Come*-use as Motion Expressions | | | Non-afforded *Come*-use as Motion Expressions | | |
|---|---|---|---|---|---|---|
| | Types | Tokens | Ratios | Types | Tokens | Ratios |
| RP1 | 4 | 9 | 0.44 | 3 | 7 | 0.43 |
| RP2 | 5 | 13 | 0.38 | 5 | 11 | 0.45 |
| RP3 | 8 | 28 | 0.29 | 8 | 28 | 0.29 |
| RP4 | 6 | 14 | 0.43 | 6 | 10 | 0.60 |

*Note*. RP = Recording Period.

For the development of *go*-patterns as shown in Table 7, doing away with afforded uses seems to yield a clearer picture of development as compared with the total *go*-uses whose type–token ratios tend to be quite misleading. Table 7 shows an increase in the degree of creativity for non-afforded uses as the type–token ratio increases from 0.19 in RP1 to 0.33 in RP3. There is an increase in the number of types in RP2, suggesting more varied Path expressions. However, a lower type–token ratio in RP4 suggests that one or a few types were frequently used, which are *GO TO* NP and *GO THERE* (see Table 5 for details).

As shown in Table 8, excluding afforded uses also seems to produce a clearer picture of the development of *come*-patterns although it follows a slightly different developmental path from *go*-patterns. First, Table 8 shows an overall increase in the degree of creativity over time as the type–token ratio increases from 0.43 in RP1 to 0.60 in RP4. However, one thing seems to be puzzling: RP3 sees the lowest type–token ratio which indicates a decrease in the degree of creativity from RP2 to RP3 and, possibly an entrenchment of one or a few exemplars. Recalling *come*-use in Table 4, the specific patterns *COME BACK* and *COME TO* NP constitute almost half of all the instantiations in this RP, partially explaining the lower ratio here. The increase in the number of types alone, however, indicates that the pattern is becoming increasingly varied.

## DISCUSSION

This study investigated how an adult L2 Spanish learner of English developed his inventory of motion constructions during his participation in classroom interaction. The longitudinal results generally showed that Carlos's early inventory contain less varied linguistic patterns with limited number of linguistic resources for the expression of Motion, Path, and Ground, while subsequent use shows him moving towards an increasingly diverse and productive inventory of various motion expressions. Furthermore, under a longitudinal optic, the study documented the appearance, continuous and discontinuous uses of patterns (e.g., decrease of an initially recurring *GO THE* NOUN), the emergence of *GO TO* X and *COME TO* X as two core motion constructions, the appearance of varied and complex Path expressions, and different associations among construction constituents that encode Motion, Path, and Ground.

The longitudinal study sought answers to three research questions.

First, the study documented different linguistic materials used by the L2 learner to express Motion, Path, and Ground at different points in time. It showed that Motion was mainly expressed by verbs *go* and *come* through RPs 1–4 and was less frequently expressed by other motion verbs (e.g., *walk, fly*). Most of these other less frequently used motion verbs were, moreover, very often found only once or repeated a few times only in one particular usage event, and were typically afforded. Path was initially either not linguistically expressed (e.g., *go the bank*) or encoded in a limited number of prepositions (e.g., *to, in*) and satellites (e.g., *down*). Later on, Path expressions became increasingly varied, including use of prepositions (e.g., *to, in, into*), satellites (e.g., *back, out*) and combinations of a satellite and a preposition (e.g., *back to*) as complex Path expressions. The type of linguistic material to encode Ground was mainly realized by noun phases across time. The fact that *go* and *come* were the two main motion verbs employed in motion constructions is similar to what was reported in Ellis and Ferreira–Junior (2009a, 2009b): both *GO* and *COME* are more prototypical of the meaning of the verb locative construction and thus more frequently occurring. Theakston et al. (2004) pointed out that people basically use these verbs to describe their experiences and that they may therefore be vital in language acquisition. Moreover, the development of Path

expressions, especially in *go*-use, is in accordance with the findings in Stam (2010) that showed that the Spanish learner of English may not consistently encode Path in satellites/prepositions at an early learning stage. The number of such uses decreases as the learning process advances and the learner gets more proficient in English.

Second, The linguistic analyses have shown two types of associations between a Path expression and a motion verb: a 'one to one' association, that is, the linguistic element that encodes Path was found to revolve around a specific verb island not only in a particular RP (e.g., *go down* in RP1) but also across time (e.g., *come back* in RPs 2–4), and a 'one to many' association, i.e., the linguistic element that encodes Path was used in association with more than one verb across time (e.g., *go to* in RP1, *come to* in RP2, *fly to* in RP3). As has been mentioned earlier, the finding that *to* has not been combined with other motion verbs other than *go* at an early learning stage resonates well with the findings in Tomasello (1992), who found that language learners may fail to generalize a similar structure to new verbs. Later combinations between *to* and other motion verbs (e.g., *come to* in RP2, *fly to* in RP3) provides evidence showing that Carlos is gradually generalizing a similar structure to other motion verbs and that learning of similar structures is not a sudden but a slow, gradual, and exemplar-based process.

Third, the type–token analysis generally showed that *go*- and *come*-patterns become productive over time but with fluctuations in type–token ratios in certain RPs (RP4 for *go* and RP3 for *come*). The general increase in type–token ratios aligns with UBL's proposed path of language learning according to which patterns go from being more to less dependent on recurring exemplars. Fluctuations show that this development is non-linear. Regarding reasons for such fluctuations, Eskildsen (2009) proposes the influence of situational changes, that is, changing usage events (e.g., free conversation, picture description exercises, teacher-controlled interaction) call on different linguistic resources. Furthermore, the low type–token ratios in RP4 for *go*-use and RP3 for *come*-use suggest that one or a few exemplars became entrenched because they were frequently kept in use. For example, *COME BACK* occurs as a type in RP2 but is more frequently used in RP3.

Viewing the development of *go*- and *come*-patterns as going from low scope patterns to an increasingly creative use, Carlos seems not to work on one abstract schema such as 'verb satellite/preposition NP' that sanctions all the uses of motion constructions found in the data. Rather, the data seem to consist of a number of interrelated utterance schemas. Recalling the emergence of *GO THE* X, the conflation of *GO TO* X and *COME TO* X into *GO/COME TO* X, the recurring nature of *COME BACK*, and the afforded uses of many other motion verb constructions with few accompanying prepositions or satellites, Carlos's motion inventory seems to revolve around *go*- and *come*-related utterance schemas and concrete uses of other motion verbs. However, that does not mean that Carlos's learning of motion constructions has reached an endpoint. Rather, the addition of new motion verbs, afforded or not, seems also to be sanctioned by already existing motion expression schemas, as they combine with already existing means to encode Path, for example. In this sense, learning is a never-ending process with the abstract grammar emerging as a result of new items constantly being recruited by existing utterance schemas (Ellis & Ferreira–Junior, 2009a; Ellis & Larsen–Freeman, 2006; Eskildsen, 2009; Hopper, 1998).

In addition, the data provide evidence for a possible influence from Carlos's L1 Spanish on his motion expressions in L2 English, especially in motion productions in RP1. The expressions *turn (the) left/right* occur nine times in a direction-giving exercise, six of which included *the*. Carlos may transfer the use of the Spanish determiner *la* to its equivalent *the* in English because the target-like Spanish expression is *girar a la izquierda/derecha*. Although this is the only piece of evidence showing the possible typological influence from Carlos's L1 Spanish on his L2 English, it provides a new angle for further research to see whether learners of a same language group exhibit similar patterns.

## CONCLUSION

The study has illustrated how the learning of L2 motion constructions may proceed in a usage-based fashion. Carlos's motion inventory initially consisted of a few linguistic resources for Motion and Path expressions, which became varied and creative later on. *Go*- and *come*-constructions were shown to form the core of his motion inventory as

other motion verbs are less frequently occurring. As these verbs are used, they are "recruited" (Ellis & Ferreira–Junior, 2009a) by the constructions that have emerged on the basis of the two core verbs: emergent patterns build on previous experience. Path expressions either revolved around a specific verb-island or were combined with different motion verbs at different points in time. Ground was primarily expressed by a number of noun phrases that are mainly used in combination with *go* and *come*.

Carlos's learning of the central *go*- and *come*-constructions is item-based, that is, evolving from a dependence on recurring expressions (e.g., *go the*) to more productive utterance schemas. However, it may be too hasty to conclude that the motion constructions at this point are fully schematic or abstract. As Eskildsen (2009) has pointed out for *can*-patterns of the same focal student, it may be difficult to argue for an ultimate endpoint of a schematic motion construction, because learning a language is a constant process (see also Firth & Wagner, 1998; Lantolf & Thorne, 2006).

The study also comes with a number of limitations. First and foremost, it is a case study and thus not immediately generalizable. The nature of the data also implies limitations; while the classes taught and compiled in MAELC were very communicative and based on different kinds of learning activities (e.g., reading, pair-work), a classroom does not present the same environments of use and learning as the world outside the classroom does (e.g., Theodórsdóttir, 2010; Wagner, 2010). As Carlos's motion inventory is ever-changing, examining different interactional contexts in which the learning of motion constructions is taking place may provide further explanations to understand the ongoing change (Eskildsen, 2009; Larsen–Freeman, 2006). We therefore encourage future longitudinal studies incorporating more informants of the same or different language groups in different data settings (e.g., naturally occurring data, experimental data) and examining the role that various contexts play on learning of motion constructions in an L2.

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# Paper 2

# Developing L2 Constructions to Express Motion in English: A Usage-based Case Study of a Classroom Chinese Learner


## ABSTRACT

This study traces the development of motion constructions and the locally situated nature of construction learning by a Chinese learner of English from a usage-based perspective. The data come from longitudinal audio–video recordings of classroom interactions over two and a half years. By applying both a quantitative and a qualitative methodology, the study shows that the learner's motion constructions become increasingly varied over time with later emergent constructions linked to previous experience in different interactions. Furthermore, the study compares the Chinese learner with the Spanish learner in Li et al. (forthcoming) and calls for further longitudinal research to incorporate more informants from diversified linguistic backgrounds in different data settings.



*Keywords*: Chinese learner; Longitudinal; English motion constructions; second language acquisition; usage-based linguistics


## INTRODUCTION

Drawing on Talmy's (2000) motion event typology, studies on second language (L2) constructions for the expression of motion have tended to be cross-sectional in nature (for recent reviews see Cadierno, 2008, 2012, 2013; Gullberg, 2011). Those studies specifically looked at the learning outcomes of L2 motion constructions at a specific point in time and thus did not take the learning trajectory into consideration. Recent work, however, has started to investigate the development of L2 motion constructions over time within single learners (Stam, 2010; Li et al., forthcoming). This research has provided insights to how an individual learner develops motion constructions in an L2 that is typologically different from his/ her L1.

The present paper extends on the longitudinal research just mentioned by examining the individual developmental trajectory of motion constructions in an L1 Chinese learner of

L2 English. The aims of this investigation are to further test the usage-based assumption that linguistic patterns become increasingly productive over time and to explore how language learning is influenced by the interactional environments (or usage events). Furthermore, as a comparison to Li et al. (forthcoming), which focuses on an individual learner with L1 Spanish background, the present study examines the extent to which the learning outcomes differ between the Spanish learner and the Chinese learner.

## THEORY REVIEW

### *Talmy's Motion Event Typological Approach*

Previous studies on the semantic domain of motion were mainly drawn on Leonard Talmy's (2000) typological framework. In the typological approach, Talmy examined how the conceptual structure of motion events is linguistically expressed. A motion event refers to a situation in which there is an object moving or maintaining a stationary location. It consists of four internal semantic components: Figure, Motion, Path, and Ground (Talmy, 2000). Path refers to "the path followed or site occupied by the Figure object with respect to the Ground object," while Motion refers to "the presence per se of motion or locatedness in the event" (Talmy, 2000, pp. 25–26). In addition, Manner and Cause are two external factors of a motion event.

Talmy proposed a binary classification based on how the Path component is lexicalized (i.e., expressed in surface linguistic forms) in different languages. The Verb-framed languages (V-languages, e.g., Spanish) tend to encode Path and Motion in the verb root while the Satellite-framed languages (S-languages, e.g., English) prefer to encode Path in the satellite and conflate Manner and Motion in the verb root. According to Talmy, the satellite is "the grammatical category of any constituent that is in a sister relation to the verb root" (Talmy, 2000, p.102), which covers verb particles (e.g., *out*, *down*) and should be distinguished from prepositions in English. He pointed out that Path can be expressed either by the combination of a satellite and a preposition or by the satellite alone. This distinction between satellite and preposition is questioned in e.g., Filipovic (2007), where she suggested that the two should be treated equally as Path particles when analyzing the expression of Path in motion constructions. Talmy (2009) added prepositions as an additional category to encode Path in S-languages. Li et al.

(forthcoming) have likewise examined both preposition and satellites as linguistic means employed to express Path of motion.

Several researchers have suggested an extension to Talmy's (2000) binary classification (e.g., Slobin, 2004). In addition to V- and S-languages, Slobin proposed a third type as Equipollently-framed languages (E-languages). A key feature of E-languages is that Manner and Path are encoded in equivalent grammatical forms. For example, it has been suggested that contemporary Chinese, being a serial-verb language, exhibits features of an E-language (e.g., Chen, 2007; Chen & Guo, 2009) in which Manner and Path can be expressed by two verbs with equal grammatical weight in a motion construction. An example is *fei1 chu1 lai2* "fly exit toward.speaker" (Slobin, 2006), in which the verb *fei1* encodes Manner and Motion while the verb *chu1* encodes Path and Motion. However, some Chinese linguists regard the construction *fei1 chu1 lai2* as a "Verb-directional complement (DC)" structure (e.g., Cheung et al., 1994; Lu, 2002) in which *chu1* functions as a DC in the motion construction. Specifically, such a DC (e.g., *chu1*) can either be used alone as an individual motion verb (e.g., *chu1 lai2* "exit toward.speaker") to express Motion and Path or as a satellite (e.g., *pao3 chu1 jiao4 shi4* "run out of the classroom") to encode Path as in S-language (e.g., Peyraube, 2006; Wu, 2011). In either of the two approaches mentioned above, Chinese allows a Path verb/ DC either to be used alone as a motion verb or in a post position of a manner verb to express Path. This kind of Path encoding in Chinese differs from English and may cause interference in the encoding of Path information by Chinese learners of English (Spring, 2011).

### *UBL, Motion and SLA*

***UBL and SLA.*** Informed by cognitive linguistics, the item-based path of language learning stems from the usage-based perspective on child language acquisition — children start by using concrete items and move toward an increasingly productive inventory of linguistic constructions (e.g., Barlow & Kemmer, 2000; Tomasello, 1992, 2003). Over time, with enough occurrences of particular concrete items within different constructions, a structured inventory of form-meaning pairings is formed, gradually conspiring into a schematic linguistic knowledge in the learner's mind.

By testing the usage-based findings on language learning as applied to SLA, a number of studies have provided evidence of the item-based developmental trajectory, such as Eskildsen and Cadierno (2007), Eskildsen (2009, 2011, 2012), Mellow (2006), Ellis & Ferreira–Junior (2009a, 2009b), Li et al. (forthcoming), and Yuldashev et al. (2013). Furthermore, Eskildsen (2009, 2011, 2012) examined the locally contextualized nature of language learning and suggested future research to investigate how L2 development is influenced by usage events.

***Motion and SLA.*** The semantic domain of motion has been extensively explored in cross-sectional SLA studies, focusing on a possible typological influence of a learner's L1 on his/ her L2 English (e.g, Negueruela et al., 2004; Özyürek, 2002; Reshöft, 2011; Stam, 1998, 2006) and more recently on the bi-directional transfer between a learner's L1 and L2 (see e.g., Brown & Gullberg, 2008, 2010, 2011). It has been shown that both inter- and intra-typological difference between the learners' L1 and L2 can affect learning in terms of linguistic expressions and gestural patterns (see Cadierno, 2008, 2012, 2013; Gullberg, 2011 for an overview).

With notable exceptions from the above-mentioned studies, researchers such as Becker & Carroll (1997) have argued for the need to look at longitudinal data for the development of spatial relations. Along such a longitudinal line of research, Ellis and Ferreira–Junior (2009a, 2009b) examined the development of verb–argument constructions (VAC) in the European Science Foundation (ESF) corpus. They found out that within each VACs there was one exemplar (e.g., *go* in verb locative construction, *put* in verb object locative construction, and *give* in ditransitive construction) that was frequently occurring and prototypical in meaning.

Furthermore, a longitudinal study on the co-expression of speech and gesture by a Spanish learner of English was carried out in Stam (2010). The longitudinal results showed that Path was initially encoded in the L2 speech either in a verb as in native Spanish or in a satellite as in native English, while in later development it was consistently expressed by either a satellite or a preposition following the English pattern.

Informed by Ellis & Ferreira–Junior (2009a, 2009b) and Stam (2010), Li et al. (forthcoming) examined the developmental trajectory of motion constructions by a Spanish learner of English in the classroom. The study provided insights to the individual development of motion constructions as the Spanish learner went from initially relying on a limited number of linguistic resources to using more varied linguistic means to express Motion, Path, and Ground. The linguistic items that encode Path were found to be initially verb-dependent, such as the preposition *to*, which was initially combined with the motion verb *go*, suggesting a 'one-to-one' association between a particular Path expression and a motion verb. Later on, both a 'one-to-one' association and a 'one-to-many' association were observed at different points in time as Path expressions were not only revolving around a particular motion verb but were also combined with different motion verbs. The study also showed that language learning was item-based as the L2 learner developed his motion constructions from an early reliance on recurring items (e.g., *go the*) towards an increasingly diverse and productive motion inventory. Although none of the constructions have developed into an abstract pattern that sanctions all the motion constructions in the L2 motion inventory, two emergent utterance schemas, *go to x* and *come to x*, emerged over time.

The early lexical basis of Carlos's uses of those schematic patterns was found to consist of a number of afforded instances, which become more spontaneous and free as the learning process advances. Affordance refers to the non-spontaneous and non-free uses of linguistic constructions as a result of picking ups from the immediate environment, such as the speech from the teacher or the students in the previous turn[10], expressions written on the blackboard or the course book. Moreover, the study also documented a possible transfer of the use of the article *la* "the" from the learner's L1 Spanish to the English expression *turn <u>the</u> left/ right*. Additionally, Li et al. (forthcoming) suggested an examination be made of the role that interactional environments play on language learning, as has also been suggested by Eskildsen (2009, 2011, 2012).

[10] In an interactional sequence, afforded uses are determined by picking ups from another interlocutor within four to five turns. For the organization of turn-taking, see Sacks, Schegloff, & Jefferson (1974).

Building on Li et al. (forthcoming), the present study advances the line of research by including a Chinese leaner of English in the same classroom setting. Four research questions are addressed.

1. What kind of linguistic material is used by the learner to express Motion, Path, and Ground in the L2 motion inventory across time and what are the kinds of associations between the linguistic items that encode Motion and Path/Ground over time?
2. Is there any interactional evidence showing that the emergence of motion constructions is locally contingent and situated?
3. Are different patterns of motion constructions becoming increasingly productive over time?
4. What are the similarities or differences in the learning trajectory of motion constructions between the Chinese learner in the present study and the Spanish learner (Carlos) in Li et al. (forthcoming)?

## THE PRESENT STUDY

### *Data*

The data presented in this paper come from *The Multimedia English Learner Corpus* at Portland State University. They consist of longitudinal audio-video recordings of classroom interactions. In the classroom, two students were wearing a microphone on a rotational basis while the teacher was wearing a microphone all the time. The classroom was equipped with four fixed cameras and two movable ones targeted at the two students wearing the microphones. The present research is conducted on Lan, a Chinese learner of English, who attended the English as a second language class in Portland from September 2002 to January 2005. She started with level A (beginner's level) in the class and gradually progressed to level D (intermediate level) (see Reder, 2005, for more information on the different proficiency levels). The data comprise around 80 hours of video recordings in which Lan's voice is recognizable as she is either wearing a microphone or close to another student wearing the microphone.

Lan's participation in the classroom has been divided into the following periods: each recording period corresponds to a proficiency level. Throughout this paper, RP is used as an abbreviation for "recording period".

Recording Period 1 (RP1, Level A): Sept. 26 – Nov. 04, 2002 (around 18 hours of video recording)

Recording Period 2 (RP2, Level B): Jan. 07 – Jun. 06, 2003 (around 30 hours of video recording)

Recording Period 3 (RP3, Level C): Oct. 14, 2003 – Jul. 13, 2004 (around 15 hours of video recording)

Recording Period 4 (RP4, Level D): Aug. 03, 2004 – Jan. 27, 2005 (around 19 hours of video recording)

***Transcription and Coding***

The classroom data were firstly transcribed. Motion expressions were extracted from the transcribed data by an initial search for utterances with motion verbs. The relevant utterances for the present study were then sorted out to include only translational and self-motion expressions (e.g., *come to USA*) (see also Li et al., forthcoming).

Coding was done based on the following criteria. A motion verb in a motion expression was coded as "Motion". The linguistic element that expresses the moving trajectory was coded as "Path" if it was linguistically expressed outside of the main motion verb[11] in an utterance (e.g., *come **to** USA*), or else (e.g., *come together USA*) was marked as "ØPath". In alignment with Li et al. (under review), the present study took into account uses of the prepositions, the satellites, and a combination of a preposition and a satellite as three ways to express Path. Any reference information in relation to the subject's movement was coded as "Ground" (e.g., *come to **USA***); if it was absent (e.g., *come back*), it was coded as "ØGround". If neither Path nor Ground was expressed in a motion expression

[11] Path may be expressed in motion verbs, such as *go* and *come*, that incorporate deictic information in motion constructions. Because the present study focuses on different linguistic items that express Path outside of the main verb, it only codes the linguistic item that encodes Path outside of the main verb as Path.

(e.g., *I need to go*), it was coded as "ØPath ØGround". Because Figure can be found in expressions other than motion and is sometimes omitted in the construction, it was not included in the coding. Unclear coding issues were discussed and resolved at regular research meetings. A sample for the coded utterances is given in Table 1.

Table 1

Examples of Coded Utterances

| UTTERRANCES | CODING |
|---|---|
| *go home* | Motion Path Ground |
| *come to USA* | Motion Path Ground |
| *come together USA* | Motion ØPath Ground |
| *come back* | Motion Path ØGround |
| *come in the* | Motion Path Ground |
| *I need to go* | Motion ØPath ØGround |

*Note*. 'Home' in *go home* is coded as incorporating Path in addition to Ground. Other adverbials of a same function can be found in, e.g., *go there*, *come here*, and *go outside*.

***Data Analysis***

To investigate the development of motion constructions and the usage events in which the expressions of motion were situated, both a quantitative and a qualitative methodology were used here.

Linguistic analysis and type–token analysis were used as two quantitative methodologies to address research questions 1, 3, and 4. The linguistic analysis explores the linguistic items that were used to encode Motion, Path, and Ground, and the associations between a motion verb and its associated Path/ Ground expressions at different points in time. Because a given motion verb may be used in different grammatical forms, verbs in small caps are used in the study to cover different grammatical forms, such as *GO* is used as a cover term of *go*/*going*/*goes*/*went*. The type–token analysis was used to determine the degree of productivity of the linguistic patterns used over time. The linguistic analysis includes two sections; the first section provides an overall developmental picture of Lan's entire motion inventory of Motion, Path, and

Ground, while the second section looks at Lan's *GO* (*go*/*going*/*goes*/*went*) and *COME* (*come*/*coming*/*came*) related motion constructions because these two motion verbs were the mostly frequently employed ones in Lan's motion inventory.

In order to address research question 2, the study also carried out a Conversation Analysis-inspired microanalysis on the use of motion constructions in different interactional environments (see Eskildsen et al., forthcoming). The aim of this analysis is to investigate the contingent and situated nature of linguistic constructions within different usage events (Eskildsen, 2011, 2012).

## RESULTS

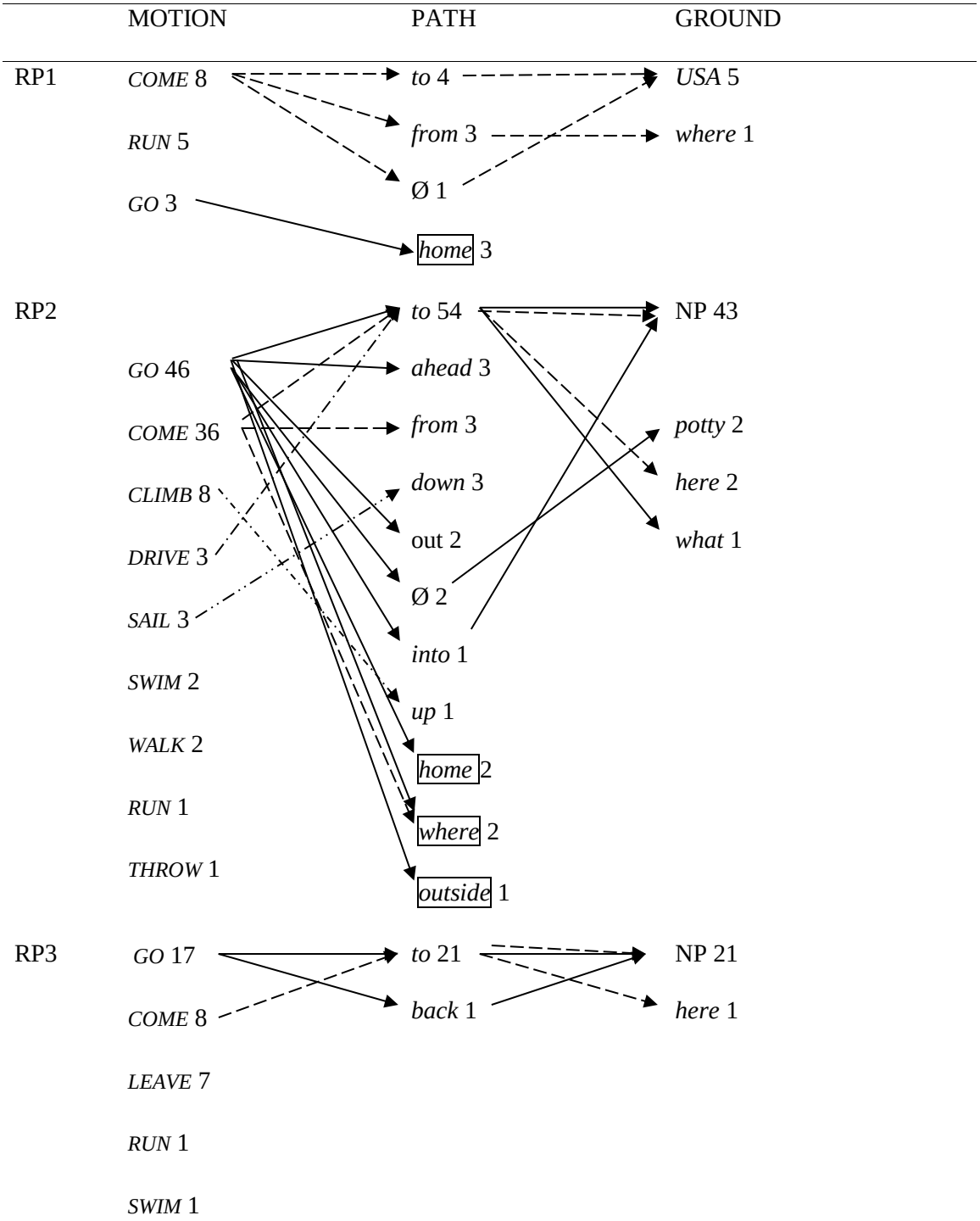
### *Linguistic Analysis of Lan's Overall Motion Inventory of Motion, Path, and Ground*

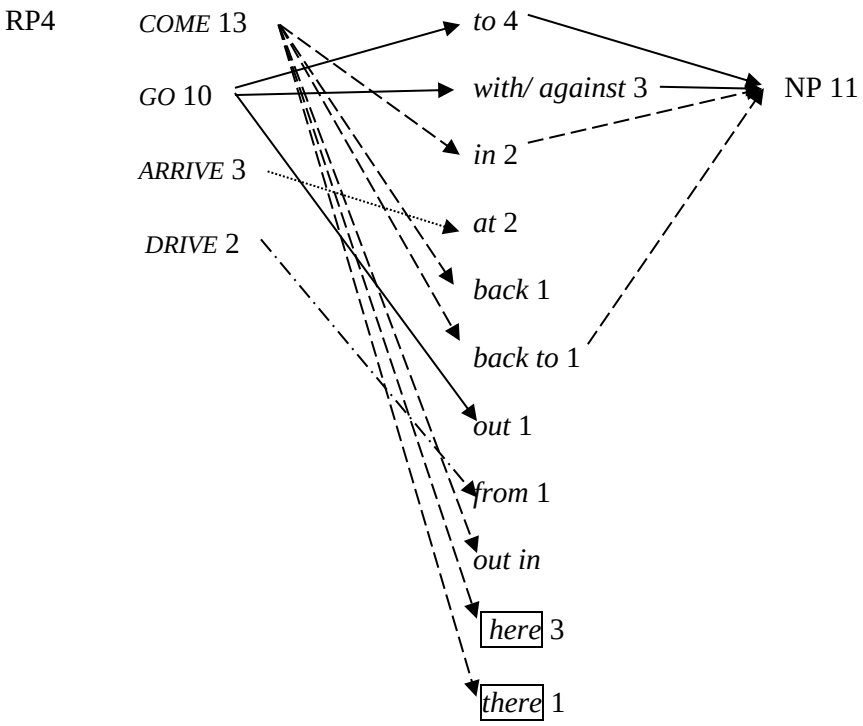
This section presents an overview of all the motion verb constructions observed in Lan's entire motion inventory in RPs 1–4. The analysis aims at exploring explore how Lan's motion inventory develops over time in relation to the linguistic elements that are used to encode Motion, Path, and Ground at different points in time, and to examine the types of associations that there are between a motion verb and its combined Path and Ground expressions over time. A further aim is to explore the extent to which a certain linguistic element that encodes Path revolves around a specific verb-island (Tomasello, 1992), as was addressed in Li et al. (forthcoming).

Table 2 gives an overview of the linguistic items that encode Motion, Path, and Ground in Lan's entire motion inventory across time. The number after each linguistic item refers to the total occurrence of that item in a given RP. The linguistic items under each column of Motion, Path, and Ground are arranged in order based on the frequency of occurrence in each RP. Arrows mark the possible combinations among the linguistic items that encode Motion, Path, and Ground. Each motion verb uses a unique arrow shape to distinguish it from others. A motion verb without any arrows means that it appears alone in a motion expression without any associated Path or Ground information.

Table 2

An overview of Lan's overall motion inventory of Motion, Path, and Ground






*Note*. RP = Recording Period; NP = Noun Phrase. *Item* indicates that the linguistic item encode both Path and Ground in motion constructions.

At an early stage in RP1, Lan's motion inventory is quite limited, including a restricted number of linguistic resources that encode Motion, Path, and Ground. Motion is expressed by the motion verbs *COME*, *RUN*, and *GO*, while Path is expressed by the prepositions *to* and *from*. The satellite *home* incorporates both Path and Ground when used together with the motion verb *GO*. The linguistic items that encode Ground are restricted to *USA* and *where*. The combination possibilities between a motion verb and its associated Path expressions are also limited. *COME* is combined with the prepositions *to* and *from*, while *GO* is only combined with *home*. *RUN*, which appears five times in RP1 in a specific picture description exercise, is used alone without any associated Path expressions.

In RP2, while previously experienced linguistic means to express Motion, Path, and Ground are kept in use, a greater number of new means occur. Besides *COME*, *RUN*, and *GO* that were found in RP1, new verbs that encode Motion are *CLIMB*, *DRIVE*, *SAIL*, *SWIM*, *WALK*, and *THROW*. New Path expressions include both satellites (i.e., *ahead*, *down*, *out*,

*up*) and a preposition *into*. Ground is mainly expressed by noun phrases. However, uses of *CLIMB*, *SAIL*, *RUN*, and *THROW* are afforded as they occur in a particular reading exercise; *DRIVE* is also afforded by the exercise. *COME*- and *GO*-uses contain a great number of afforded instances as well. Uses of *SWIM* and *WALK* are non-afforded and appear in a pair-work in which Lan and her co-participant are talking about the activities that they do in the weekend.

With respect to the association possibilities, *GO* is associated with a greater variety of Path expressions (e.g., *to, ahead*), as compared with RP1, while *COME* is mainly associated with previously used Path expressions (e.g., *to, from*). *CLIMB*, *DRIVE*, and *SAIL* are only associated with a particular afforded Path expression. Other motion verbs appear alone without any associated Path expressions.

In RP3, the construction constituents that encode Motion, Path, and Ground seem to be mainly built on previously used linguistic items, suggesting the important role that previous learning experiences play on language development. In addition to *GO*, *COME*, *RUN*, and *SWIM* used in RP2, a new verb *LEAVE* occurs to express Motion. Path is expressed by the previously used preposition *to* and a newly occurred satellite *back*. Ground continues to be expressed by noun phrases. There is a decrease in the association possibilities in relation to both *GO* and *COME*, as compared with RP2. *GO* is associated with the satellite *back* and the preposition *to*, while *COME* is only associated with the preposition *to*. Other verbs appear alone without any associated Path or Ground expressions.

In RP4, Lan's motion inventory seems to become relatively stable as is featured by a heavy dependence on previously experienced motion constructions and a slight addition of new means to express Motion and Path (e.g., the motion verb *ARRIVE*, prepositions *in* and *at*). A development here is that in addition to using a single linguistic item to express Path, Lan starts to encode Path in two complex expressions, *back to* and *out in*. Furthermore, both *GO* and *COME* have more association possibilities as compared with RP3 and as compared with other motion verbs in RP4. However, these combinations are

heavily dependent on affordances. *DRIVE* is combined with the preposition *from* and is afforded, while *ARRIVE* is combined with a newly occurred preposition *at*.

Over time, the study has shown that *GO* and *COME* are the most frequently used motion verbs and have more associated Path and Ground expressions, as compared with other motion verbs, in RPs 1–4. The frequency of association possibilities also changes across time as new Path expressions and new motion verbs are employed at different points in time. RP2 sees the highest association possibilities for *GO*, while RP4 sees the highest association possibilities for *COME*. Other motion verbs are quite restricted to their association possibilities, and when they are combined with Path expressions, they are mainly afforded in nature. The analysis also showed a development from an initial 'one-to-one' association in RP1 to the co-existence of both 'one-to-one' and 'one-to-many' associations across time, as aligned with the findings in Li et al. (forthcoming). For example, the preposition *to* is firstly found to be combined with *COME* in RP1, and is then generalized to be combined with more verb-islands, such as *GO*, *COME*, and *DRIVE* in RP3, while the satellite *ahead* and *out* are only combined with the motion verb *GO*. This supports the verb-island hypothesis that the linguistic items revolving around a particular verb-island may not be immediately generalizable to other verb-islands; it is not until later in development that the learner starts to make generalizations to other verbs (Tomasello, 1992). This observation suggests that the developmental process of Lan's motion inventory is slow, gradual, and non-linear.

***Linguistic Analysis: GO- and COME-uses***

This section aims to explore the development of Lan's *GO*- and *COME*-related motion constructions over time because these two motion verbs are frequently occurring and are consistently used through RP1 to RP4. Because Motion is encoded in the motion verbs *GO* and *COME*, and Ground is not always required in motion constructions, the focus of the analysis is on the expression of Path as a core feature in motion constructions and the associations between the construction constituents that encode Motion and Path/ Ground.

Lan's *GO*- and *COME*-uses are listed in Tables 3-6. Each table presents the linguistic items that encode Path and Ground in both *GO* and *COME* constructions as motion expressions. The tables are organized internally according to token frequency. Tokens are the actual linguistic instantiations, while types are defined on the variation of Path expressions. If more than one Ground expression of a same linguistic category (e.g., noun phrase [NP], adverb) was found within a given type, the category was specified in the Table, or else the Ground expression (e.g., *USA*) was spelled out if it occurred only once. If Path or Ground are not linguistically expressed, they are marked as "Ø" under the Path/ Ground column.

Lan's *GO* and *COME* uses in RP1 are depicted in Table 3.

Table 3

*GO*- and *COME*-uses, RP1

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *GO* | | *home* | 3 |
| *COME* | *to* | *USA* | 4 |
| | *from* | Ø | 2 |
| | | *where*? | 1 |
| | Ø | *USA* | 1 |

*Note*. RP = Recording Period; '*Where*?' indicates that 'where' is used as an interrogative adverb.

As shown in Table 3, Lan's *COME*-use is characterized by more varied types than *GO*-use in RP1. As indicated by the number of tokens, *GO*-use is restricted to a particular type, *go home*, while *COME*-use sees an equally distributed number of token for the two dominant patterns *come to USA* and *come from Ø/ where?*

For the uses of *GO*, *go home* occurs in the context in which Lan is describing a picture to her co-participant. For the uses of *COME*, a recurring expression *come to USA* deserves some attention, as it may be a forerunner of later more frequently used *come to*-constructions. The very first *come*-construction, *when do you come to USA*, occurs three

times as readings from an exercise. Later on, the occurrence of a non-afforded *I come to USA* may be a result of the earlier practiced *when do you come to USA*. The pattern *COME from Ø/ where?* is instantiated by *where are you come from* in a practice of *where are you from* and two instances of *when did you come from* as a partial picking up from another student's speech *when did you come*. Furthermore, another expression, *father mother come and me together USA*, occurs. It seems that, at this early stage, Lan's *COME*-use includes more varied afforded and non-afforded uses while her *GO*-use is restricted to a particular non-afforded expression, *go home*.

In terms of the expression of Path and Ground and the associations between the construction constituents of a motion event, *GO* is associated with a particular satellite *home*, which incorporates Path in addition to Ground (Talmy, 2000). It is argued that when *home* appears alone, it encodes only Ground; however, it expresses the meaning of 'Path Ground' when it is used together with the motion verb *GO* (Li et al., forthcoming). *COME* is associated with the prepositions *to* and *from* that encode Path and *USA* and *where* that encode Ground. Bearing in mind the initially afforded nature of *to*, *from*, *USA*, and *where*, the linguistic means that encode Path and Ground in Lan's *GO*- and *COME*-uses in RP1 is the satellite *home*. Other linguistic elements that express Path and Ground are limited and restricted to afforded expressions.

Later on, as shown in Table 4, all *GO* and *COME* patterns that occurred in RP1 recur here in RP2. In addition, seven new *GO* types and one new *COME* type are added to Lan's motion inventory. As compared with RP1, RP2 contains more varied *GO* types and more frequently recurring *COME* types. At this stage, the number of types in *GO*-use far exceeds the number in *COME*-use.

Table 4

*GO*- and *COME*-uses, RP2

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *GO* | *to* | NP (e.g., *restaurant, school*) | 28 |
| | | *what* | 1 |
| | Ø | Ø | 5 |
| | | *potty* | 2 |
| | *ahead* | Ø | 3 |
| | *out* | Ø | 2 |
| | | *home* | 2 |
| | | *where* | 1 |
| | | *outside* | 1 |
| | *into* | *his own house* | 1 |
| *COME* | *to* | NP (e.g., *US, Portland*) | 15 |
| | | Ø | 7 |
| | | *here* | 2 |
| | Ø | Ø | 8 |
| | *from* | Ø | 3 |
| | | *where* | 1 |

*Note*. RP = Recording Period; NP = Noun Phrase.

As to *GO*-use in RP2, a clear predominant pattern *GO to NP* was observed, in which its afforded instantiations constitute 74% (20 out of 27) of the total uses within this pattern. The lexically specific beginning of *go/went to* NP are two afforded expressions of *go: to:: what* and *went to (the) restaurant*, which are then expanded to include both afforded (e.g., *go to school)* and non-afforded expressions (e.g., *go to work* and *went to restaurant*). The emergence of an utterance schema *GO to x* at this stage thus seems to be heavily built on affordances as the open slot *x* is filled by a limited number of non-afforded expressions to encode Ground. Furthermore, there are also two repetitions of the teacher's speech *go potty*, which means "go to the bathroom." Additionally, *GO*-use is further expanded to include recurrent non-afforded uses of *go ahead* and *go out*. Moreover, other newly occurred expressions, *go where, go outside,* and *went into his*

*own house,* are all afforded. Lan seems to slowly develop her *GO* uses to include both afforded and non-afforded patterns.

While Lan's *GO*-use contains more varied new types, her *COME*-use seems to be mainly dependent on previously used types. The predominant pattern *COME to NP* is initially instantiated by a number of afforded expressions *come to US*/*USA*/*the United States/Portland,* which can also be traced back to a previously recurring exemplar *come to USA* in RP1. Later on, *COME*-use is expanded to include non-afforded *come to US/USA* and *come to here*. At this stage, the emergence of an utterance schema *come to x* thus seems to be heavily built on previous afforded uses. Furthermore, the pattern *COME Ø Ø* is instantiated by a number of practiced expressions *when did/do you come* and afforded *she came, came three years ago*. Additionally, a non-afforded expression, *when do you come from*, occurs three times in RP2, and can be traced back to previously afforded *when did you come from* in RP1. Furthermore, a newly occurred expression, *where do you come,* is afforded. Developmentally, Lan's *COME* uses in RP2 are built not only on affordances but also on previous experience.

With respect to the expression of Path and Ground, *GO* is associated with more varied Path expressions, which include the previously used satellite *home* and newly occurred satellites (e.g., *ahead*) and prepositions (e.g., *to*), whereas *COME* is mainly associated with previously occurred prepositions (*to* and *from*) in RP1. The Ground expressions that are combined with *GO* and *COME* are mainly afforded in RP2. Here, Lan is slowly developing different linguistic means to express Path, whereas her Ground expressions are mainly restricted to afforded uses.

In RP3, as shown in Table 5, both *GO* and *COME* uses see a decrease in the number of types, as compared with RP2. A new expression, *go back your country*, occurs as a new type in *GO*-use, while no new types occur in *COME*-use. Both *GO to NP* and *COME to NP* that were predominant in RP2 continue to be the dominant patterns in RP3.

Table 5

*GO*- and *COME*-uses, RP3

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *GO* | *to* | NP (e.g., *library*, *restaurant*) | 15 |
| | *back* | *your country* | 1 |
| | Ø | Ø | 1 |
| *COME* | *to* | NP (e.g., *Portland*, *America*) | 5 |
| | | *here* | 1 |
| | Ø | Ø | 2 |

*Note*. RP = Recording Period; NP = Noun Phrase.

For *GO*, the type *GO to NP* is still dependent on afforded uses, as there are only three instances of non-afforded expressions (*go to library* and *went to restaurant*) out of the total 15 (e.g., *goes to school*, *go to bed*). The expression *went to a restaurant* seems to be built on previous experience, as *went to restaurant* was a previously used recurrent exemplar in RP2. Furthermore, the expression *go back your country* is non-afforded. For *COME*, the predominant pattern *COME to NP* is instantiated by three non-afforded expressions, *come to Portland/ America*, and two afforded, *come to (the) US*, which can be traced back to previously experienced exemplars in RP2. Developmentally, Lan's *GO* and *COME* uses in RP3 continue to be dependent on affordances and previous experience.

As to the expression of Path and Ground, the preposition *to* that was combined with *GO* and *COME* in RP2 continues to be used in RP3, and a new satellite *back* appears in combination with *GO*. The Ground expressions continue to be largely dependent on afforded uses. Developmentally, the number of Path expressions that are combined with *GO* and *COME* decreases in RP3, as compared with RP2.

Later on in RP4, *GO* types continue to be built on previous experience, as the type *go to NP* that was recurring in RPs 2 and 3 and *go out* that was used in RP2 recur here. Whereas for *COME* use, no previously recurrent types are found here; all of the five *COME* types are newly occurred in RP4, as shown in Table 6.

Table 6

*GO*- and *COME*-uses, RP4

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *GO* | *to* | NP (e.g., *school*, *bed*) | 4 |
| | *with/against* | *the flow* | 3 |
| | Ø | Ø | 2 |
| | *out* | Ø | 1 |
| *COME* | *here* | | 3 |
| | Ø | Ø | 4 |
| | *in* | *US* | 2 |
| | *there* | | 1 |
| | *back* | Ø | 1 |
| | *back to* | *US* | 1 |
| | *out in* | *the human* | 1 |

*Note*. RP = Recording Period; NP = Noun Phrase.

For *GO*-use, *GO to NP* remains in the inventory as a dominant pattern in RP4. Different from RPs 2 and 3, in which there were a greater number of afforded uses, *GO to NP* in RP4 is instantiated by four non-afforded expressions, i.e., *go to school/Hongkong/bed/market*. It should be noted that *go to school* and *go to bed* can be traced back to previously afforded uses in RPs 2 and 3, suggesting an important role that both affordance and previous experience play on language learning. Moreover, a new expression, *go with/against the flow*, occurs in a situation in which the teacher is instructing the use of *go against the flow*, which Lan mistakenly produces as *go with the flow*. This expression is afforded and is not used again later on. For *COME*-use, all of the five types are newly occurred in RP4 but are heavily dependent on affordances. The expression *came here* occurs three times in a pair work in which only one instance is non-afforded. *Come in the US* is also afforded by the exercise. *Come back* and *come back to US* are afforded as well. The only non-afforded types are *COME Ø Ø* (instantiated by *came with your family*, *my uncle is coming*, and *I came two years and half*), *come there*, and *come out in the human*. Longitudinally, *GO* constructions continue to be heavily dependent on previous experience while *COME* constructions are

not only dependent on affordances but also include more varied types, as compared with RP3.

As to the expressions of Path and Ground, *GO* is combined with the previously used preposition *to* and the satellite *out*, while *COME* is combined with the satellite *there* that encodes both Path and Ground and a complex Path expression *out in*. The Ground expressions in combination with *GO* are not only dependent on previously used linguistic items (*school* and *bed*) but also include new means (*Hongkong* and *market*) while they are encoded in comparatively restricted means in association with *COME* (*US*, *there*, and *the human*).

In sum, Lan's learning of *GO* constructions is suggested to be heavily dependent on affordances and classroom exercises. An emergent pattern *go home* appears early in the inventory and continues to be used later on. The predominant pattern *GO to NP* occurs as an utterance schema in RP2 and remains in the inventory through RPs 2–4; it does not seem to be entrenched until RP4, as there is a large number of afforded instantiations in RPs 2–3. Its later non-afforded instantiations can be traced back to previously experienced ones, suggesting that language learning is a slow process with later patterns building on previous experience and new instantiations emerging as a result of earlier practices. Similarly, Lan's learning of *COME* constructions is also suggested to be dependent on affordances and classroom practices, with the pattern *COME to NP* appearing as a dominant one through RPs 1–3. Within this pattern, an earlier practiced recurrent exemplar *come to USA* remains in the inventory through RPs 1–2 and based on which later non-afforded expressions such as *come to here* and *come to America* that are instantiated by an utterance schema *come to x* appear. Other patterns seem to be short-lived across time, as they only appear in a specific period of time and are not kept in use later on. The continuous and discontinuous uses of patterns and the occurrence of new patterns result in an ever-changing motion inventory, rooted in different classroom-based learning situations.

As to the expressions of Path and Ground, Path is initially expressed by a limited number of linguistic resources and is then expanded to include a greater variety of

linguistic expressions, while Ground is mainly expressed by noun phrases. As to the associations among the linguistic items that encode Motion, Path, and Ground, *GO* is initially combined with *home* that encodes Path and Ground in RP1 and is then combined with different Path and Ground expressions later on. There is a sharp increase in the number of associated Path expressions in RP2, which decreases in RPs 3 and 4. *COME* is mainly combined with afforded Path and Ground expressions in RPs 1–3, with an increase in the number of associated Path expressions in RP4.

The data presented so far aligned with the usage-based idea, which views linguistic knowledge as emergent, linguistic inventory as ever-changing, and language learning as a slow and constant process. As shown in the analysis, some motion expressions only occur once at a certain point in time while others are recurring across time. There are abundant afforded and non-afforded recurring expressions found in Lan's *COME*- and *GO*-uses. Exploring the interactional environments in which linguistic productions are situated may provide further evidence to understanding the ongoing change along the development of motion constructions, and to understanding the locally contingent and situated nature of language learning (see e.g., Eskildsen, 2012; Larsen–Freemann, 2006).

***Qualitative Microanalysis on the Emergence of Went to-construction***

This section explores the emergent and locally situated nature of linguistic constructions, as well as the role of affordance on construction learning. As previously noted, the pattern *GO to NP* was initially instantiated by a number of afforded *went to*-uses. Examining the initial learning environment and the longitudinal emergence of this pattern may provide further evidence toward understanding the emergent and situated nature of construction learning. Three interactions (Extracts 1–3) in the classroom are presented here, which display the initial learning environment of the afforded *went to*-construction and later similar non-afforded uses, showing that constructions are interconnected and situated within different usage events.

As mentioned earlier in the analysis of *GO*-uses in RP2, the expression *went to restaurant* was the very first exemplar used to instantiate *went to NP* within the pattern *GO to NP*. There is some evidence, as depicted in Extract 1, showing that this context

might be the initial learning environment of *went to NP*. In addition, Extract 1 also displays the role of affordance on construction learning in the classroom learning environment, and further shows that going from an afforded non-target-like use of *went to restaurant* to an afforded target-like use of *went to the restaurant* is a result of affordance in the exercise.

Shortly before Extract 1, the teacher gives instructions on different uses of *went to* constructions. A student (Kate) provides an example *I went to the cooking*, which is corrected by the teacher to *I cooked*. Then another student (UNO) self-selects in line 1 with a non-target-like sentence *I went to the cook in English restaurant*, which is then corrected by the teacher (TEA) to the target-like expression *I went to the restaurant* in line 3.

Extract 1, 14-January-2003

01 UNO: I went (.) to the cook in English restaurant yeah↗
02 UNO: I went [to the cook
03 TEA: [I went to the restaurant
04 UNO: yeah I went to cook
05 LAN: yeah
06 UNO: in restaurant
07 TEA: well (.) if if you work in [a restaurant you can say that (.) I think that all =
08-> LAN: [I went (.) I went to restaurant to cook
09 TEA: = she wants is the action (.) so (.) you know this weekend I cooked for
10 my family
11 UNO: yeah
12 TEA: okay
13 UNO: yeah
14 TEA: I went to the restaurant
15 UNO: yeah [I went to the restaurant
16-> LAN: [I went to the restaurant (.) cook

*Note*. Transcription conventions: xxx = inaudible; [ = begin overlap; (2.0) / (.) = 2 seconds pause/ micro pause; : = prolongation; ↑/↓/→ = intonation marker, rising/

falling/ continuing; '=' = continued lines; -> = marker of the target expressions; *comments* = transcriber's comments .

In line 5, Lan (LAN) utters an acknowledge token *yeah* as a receipt to either the teacher's utterance in line 3 or Uno's expression *I went to cook* in line 4. The teacher comments that the expression can be used if one works in a restaurant (line 7). Lan then self-selects in line 8 *I went to restaurant to cook* as a rephrase to the sentence made by Uno. Lan's self-selection is in overlap with the teacher's utterance in line 7 and the teacher continues with the explanation in line 9. An example of using *cook* as an action is given in line 10 *this weekend I cooked for my family*, and it is followed by Uno's receipt token *yeah* (line 11). Then the teacher continues with the correct expression *I went to the restaurant* in line 14. The sequence closes as Uno corrects himself with *I went to the restaurant,* which is in overlap with Lan's *I went to the restaurant (.) cook* (lines 15–16). It is interesting to see in this extract that Lan is not only able to provide the sentence *I went to restaurant to cook* by way of affordance — a partial picking up from the teacher's earlier instruction *I went to the restaurant* in line 3 — but is also able to repair her sentence to *I went to the restaurant* by adding a definite article *the* to the initial sentence; this also seems to be as a result of affordance.

Five minutes later in a pair work, Lan starts to use *went to* construction in a non-afforded and target-like manner, *I went to work*. Interestingly, this use is an immediate self-repair of another non-afforded use of *I go to work* in a pair work of practicing and asking each other *what did you do on the weekend*. See Extract 2 below:

Extract 2, 14-January-2003

01 PAR: what did you do this weekend
02 LAN: enh: I (.) I stayed at home all day (.) a:nd watch TV a:nd work
03 homework
04 PAR: what
05 LAN: homework (.) write homework
06 PAR: xxx
07 LAN: yeah (.) homework

08 PAR: *nodding, looking at the blackboard*

09 LAN: *rubbing the eyes*

11-> LAN: Sunday I go to work (.) I went to work

12 PAR: work

It is interesting to note that Extract 2 occurs shortly after the teacher's instructions, such as *I went to the market*, and practices of different expressions of using the past tense *went*. Thus, Lan's self-repair of *I go to work* to *I went to work* (line 11) may be a result of earlier instructions and practices in the classroom. Such a repair seems to be a thoughtful choice as the latter use is afforded by the nature of the usage event—applying previously practiced *went to* expressions to a spontaneous and free use of *I went to work*, showing a locally contingent and situated nature of language learning.

About four months later, another non-afforded expression *went to eh: woman's fire* occurs, and the previously experienced expression *went to restaurant* reappears. While Extract 2 shows the short term learning effect as afforded by the nature of practice, Extract 3 below shows how a previously experienced afforded exemplar re-occurs in a different usage event in a non-afforded manner. Extract 3 displays the interactional environment in which the expressions *went to eh: woman's fire* and *went to restaurant* are situated. In Extract 3, Lan and her co-participant (Par) are engaging in a pair work and asking each other what they did over the weekend. Par launches the turn by addressing Lan with *what did you do on the weekend* in line 1.

Extract 3, 06-May-2003

01 PAR: what did you do on the weekend

02-> LAN: on Saturday Saturday morning (.) I meet my friend→ went to eh:

03 woman's fire (.) get a job (.) you know↗ woman's fire (.) woman's

04 fire (.) get a job (.) get a job

05 PAR: *nodding*

06 LAN: *nodding*

07-> LAN: enh:: on the: (.) on the afternoon→ on the afternoon→ I I:: (.) we

08 we (.) we went to: restaurant (.) eat lunch

09 PAR: Chinese restaurant↗

10 LAN: no [American-

11 PAR: [Japanese↗

12 LAN: American American restaurant it's a: it's a buffet (.) buffet restaurant

13 PAR: enh

Lan responses to Par's question in lines 2–3, in which the expression *went to eh: woman's fire* is used in a non-afforded manner. She utters *you know* with a rising intonation, suggesting that she is carrying out a comprehension check. Since no response is received from Par, she continues with the turn (lines 3–4). Par nods in line 5 showing a receipt of Lan's message. Lan launches a new turn in line 7 and produces another non-afforded expression, *went to: restaurant*, which is a previously used exemplar, as shown in Extract 1. Then Par responds in line 9 through a question for information about the restaurant. Lan's response in line 10 is in overlap with Par's in line 11. The sequence closes as Lan offers the information of the restaurant (line 12) and Par utters an acknowledgement token *enh* (line 13) as a receipt to Lan's speech. Although the two *went to*-uses in Extract 3 are not completely target-like, the interaction provides further interactional evidence showing that Lan is able to produce *went to*-construction in a spontaneous and free manner.

It is interesting to note that while Lan is able to produce the target-like *went to the restaurant* in a afforded manner, as shown in Extract 1, as an example of incipient learning, she fails to use the corrected form and keeps the initial non-target-like expression *went to restaurant* in a different usage event (Extract 3). This indicates that language learning is a slow and piecemeal process; learning of the target-like construction may be achieved in the immediate learning environment through affordance, but it may fail to be picked up later on.

By tracing the emergence of *went to*-uses, as shown above, it is suggested that Lan's learning of motion constructions is environmentally situated. The initial exemplar *went to (the) restaurant* is afforded by the interactional environment (Extract 1), and the later one is recycled again in a different usage event (Extract 3), indicating that Lan's later

use of the same exemplar may be built on her previous experience. Furthermore, the learning trajectory of *went to*-construction, as shown in the three Extracts, indicates that Lan is moving from relying on afforded expressions towards subsequently more spontaneous and free uses. The emergence of L2 constructions is thus shown to be locally situated and interactionally contingent.

### *Type–token Analysis of Lan's GO and COME patterns*

This section examines the degree of productivity in relation to Lan's uses of *GO* and *COME* patterns across time. Table 7 and Table 8 display the type and token frequencies for Lan's *GO* and *COME* patterns from RP1 to RP4. Both tables consist of two parts, the total uses and the non-afforded uses of *GO/COME* patterns. Type is defined on the variation of Path expressions within motion constructions (e.g., *go back* and *go out* are two different types of *GO* uses) and token refers to the actual instantiation of motion constructions. A high type–token ratio indicates a high degree of creativity of the pattern used in a particular RP, while the opposite scenario suggests that one or a few exemplars are frequently occurring.

Table 7

Type and token frequencies for *GO* patterns

| RPs | Total *GO* uses as motion expressions | | | Non-afforded *GO* uses as motion expressions | | |
|---|---|---|---|---|---|---|
| | Tokens | Types | Ratios | Tokens | Types | Ratios |
| RP1 | 3 | 1 | - | 3 | 1 | - |
| RP2 | 45 | 8 | 0.18 | 23 | 5 | 0.22 |
| RP3 | 17 | 3 | 0.18 | 6 | 2 | 0.33 |
| RP4 | 10 | 4 | 0.40 | 7 | 3 | 0.43 |

*Note*. RP = Recording Period.

Table 8

Type and token frequencies for *COME* patterns

| RPs | Total *COME* uses as motion expressions | | | Non-afforded *COME* uses as motion expressions | | |
|---|---|---|---|---|---|---|
| | Tokens | Types | Ratios | Tokens | Types | Ratios |
| RP1 | 8 | 3 | 0.38 | 2 | 2 | 1.00 |
| RP2 | 36 | 4 | 0.11 | 17 | 3 | 0.18 |
| RP3 | 8 | 2 | 0.25 | 5 | 2 | 0.40 |
| RP4 | 13 | 6 | 0.46 | 6 | 6 | 1.00 |

*Note*. RP = Recording Period.

As indicated by the type–token ratios in Tables 7 and 8, the doing away with the afforded instantiations seems to yield a clearer developmental picture. The type–token ratio increases through RPs 2–4 for both *GO* and *COME* patterns, indicating a general increase in the degree of productivity over time. However, the type–token ratios of *COME* patterns seem to be confusing. *COME* patterns in RP1 and RP4 share the same type–token ratio (1.00), suggesting a same degree of productivity, which, in turn, indicates a decrease in abstractness in RP4. In both RPs, the number of types equals the number of tokens, which yields a high type–token ratio. Nevertheless, the increase in the number of types in RP4, as compared with RP1, at least suggests an increase in the number of varied Path expressions in RP4.

***Comparisons between the Chinese learner Lan and the Spanish learner Carlos***

Similar to the findings in Li et al. (forthcoming), it was found in the present study that both *GO* and *COME* appeared to be the most frequently used motion verbs to encode Motion, and that the preposition *to* appeared to be a frequently used linguistic element to encode Path. This finding may be due to the nature of *GO* and *COME* as semantic light verbs and their prototypicality in meaning (Ellis & Ferreira–Junior, 2009a, 2009b). Second, both learners expressed Motion, Path, and Ground from using a limited number of linguistic resources towards including more varied linguistic means. Third, although fluctuations in the type–token ratios of *GO* and *COME* patterns were observed for both learners at different points in time, the tendency of developing *GO* and *COME*

constructions towards more creative uses is similar. Fourth, the emergence of *GO/COME to x* as utterance schemas was observed in both learners. The above-mentioned similarities on learning outcomes seem to be L1-independent. However, to make this observation as a strong argument, more informants of different L1 backgrounds are needed.

The differences between the two learners are mainly in the various motion constructions adopted by the learners at different points in time. More specifically, the expressions that form the early motion inventory differ. For Carlos, a great number of *GO* and *COME* constructions in RP1 lacked the Path expression *to*; whereas, Path was expressed by *home* in Lan's *GO*-use and was more frequently expressed in Lan's *COME* constructions in RP1. Second, there was a decrease in the number of afforded uses in Carlos's *GO* and *COME* constructions over time, while Lan's motion inventory was heavily dependent on affordances. This may be explained by the situated nature of language learning in the classroom, as the learning activities in which Lan and Carlos were participating differ. Third, although both learners' *GO* and *COME* inventories built around *GO/COME to x* as utterance schemas, the instantiations and the amount of these instantiations within both patterns differ.

The above-mentioned differences may be caused by individual leaner differences irrespective of a learner's L1. However, as was shown in Li et al. (forthcoming), while Carlos's use of *the* in the expression *turn the left/right* may be a transfer from *la* in Spanish, there is also some evidence in the present study showing possible cross-linguistic influences from Lan's L1 Chinese on her learning of motion constructions in L2 English. The expression *he running go home* "ta1 pao3 hui2 jia1" was found in RP1, which may be a transfer from L1 Chinese, as Chinese accepts Manner and Path to be expressed by two motion verbs. *Running* "pao3" encodes Motion and Manner, while *go home* "hui2 jia1" encode Motion, Path, and Ground. Since English only allows either Manner or Path to be encoded in the main verb, this may indicate an influence from L1 Chinese. Future research should look at more informants of L1 Chinese to see whether similar patterns can be found in their learning of L2 English, i.e., use two motion verbs consecutively in a motion construction.

Another possible influence from L1 Chinese was found in Lan's use of the preposition *from,* which encodes only Path information in English but may be used to express both Motion and Path in Lan's motion expressions. Throughout 2002–2004, three examples of using *from* without any accompanying motion verbs were found, listed chronologically: *how long you from here* (RP1), *you from Vietnam is twenty years* (RP3), and *the Chinese people not from* (RP3). Such an argument of a possible linguistic influence from L1 Chinese was tentatively given because the equivalent expression of *from* in Chinese cannot stand alone as a motion verb by itself. However, Lan may regard *from* in English as a Path verb in a similar sense to L1 Chinese, such as *hui2* in *hui2 jia1 qu4* "return home go", as she may generalize a similar structure to the use of *from,* as can be exemplified by a Chinese expression *cong2 jia1 lai2* "from home come." This can be a new angle for future research, i.e., to look at the use of Path expressions when looking at motion expressions by Chinese learners of English to see whether these Path expressions are used as motion verbs in L2 motion constructions.

**DISCUSSION**

The study has presented the learning trajectory of motion constructions by a Chinese learner of English in the classroom setting. The data showed that the development of Lan's motion constructions goes from an early dependence on a limited number of linguistic resources to express motion towards an increasingly productive and a diverse inventory of motion expressions.

The study sought answers to the following research questions:

1. What kind of linguistic material is used by the learner to express Motion, Path, and Ground in the L2 motion inventory across time and what are the kinds of associations between the linguistic items that encode Motion and Path/Ground over time?

The data generally showed that the expression of Motion, Path, and Ground were initially restricted by a limited number of linguistic items towards a moderate increase in the number of linguistic expressions. More specifically, the motion verbs that encode Motion initially include *COME*, *RUN*, and *GO*, which then expanded to include a greater variety of verbs; Path expressions went from very restricted linguistic means to include

more varied prepositions and satellites; Ground was mainly expressed by noun phrases, which were largely associated with *GO* and *COME*. In alignment with the findings in Li et al. (forthcoming), Path expressions were suggested to be initially verb-dependent while later on both a 'one-to-one' association and a 'one-to-many' association were observed in RPs 2–4. Additionally, similar to the findings in Li et al. (forthcoming), the preposition *to,* which was only associated with a particular verb-island (i.e., *COME*) in RP1, was later generalized to be in association with other motion verbs (e.g., *GO* and *DRIVE*). This phenomenon aligned with the findings that the linguistic structures of a given verb may not be immediately generalizable to other verbs (Tomasello, 1992), indicating a slow and piecemeal process of language learning.

2. Is there any interactional evidence showing that the emergence of motion constructions is locally contingent and situated?

To better understand the contextualized nature of construction learning and the ongoing change along the developmental path way of Lan's motion inventory, the present study traced the emergence of *went to*-construction within the pattern *GO to NP*, showing that the initial source of learning of this pattern was situated in affordances and classroom exercises. The interactional analysis further suggested that affordances may affect learning outcome in two ways: (1) the incipient learning of a given construction (e.g., afforded uses of *went to (the) restaurant* in RP2) and (2) the continuous use of a previously experienced exemplar (e.g., non-afforded *went to restaurant* in RP3) in a different usage event. In viewing language learning as locally contingent and situated in interactional environments, learning and use (i.e., interaction) thus cannot be kept apart when examining the development of motion constructions.

3. Are different patterns of motion constructions becoming increasingly productive over time?

The data generally showed that Lan's *GO* and *COME* patterns developed towards an increase in the degree of productivity in RPs 2–4 for the non-afforded uses, with fluctuations in the type–token ratios for *COME* patterns. As was addressed in Li et al. (forthcoming) and Eskildsen (2009), these fluctuations seem to be influenced by the changing environment, i.e., the type and amount of linguistic productions vary as the

usage-event (readings, pair work, etc.) changes. The fluctuations in the type–token ratios also indicate that language development is non-linear.

Over time, in viewing the development of *GO* and *COME* patterns in RPs 2–4 as moving towards a general increase in the degree of productivity, none of the motion constructions seem to evolve into any abstract patterns or schemas that sanction all the motion constructions in Lan's entire motion inventory. On the whole, *GO* and *COME* patterns were reported to be heavily dependent on affordances and recurring expressions, while other motion constructions were built on concrete uses of the motion verbs with a low frequency of occurrence. However, the emergence of *GO to x* and *COME to x* as utterance schemas was documented, in which the open slot *x* was mainly filled by a limited number of different noun phrases. The sharing of a same Path expression *to* between *GO*- and *COME*-uses suggests an interconnection between the two motion verbs.

4. What are the similarities or differences in the learning trajectory of motion constructions between the Chinese learner in the present study and the Spanish learner (Carlos) in Li et al. (forthcoming)?

The study has shown that the learning of motion constructions between Lan and Carlos follows a similar developmental path in terms of the frequent uses of *GO* and *COME*, the development towards using more varied linguistic means to encode Motion, Path, and Ground, the emergence of *GO/COME to x* as utterance schemas, and the increasingly growing degree of productivity of *GO* patterns over time. The differences mainly lie in different uses of motion constructions across time and adoption of different linguistic items to encode Motion, Path, and Ground at different points in time. Apart from these similarities and differences which seem to be L1-indepent, the seeming L1-dependent learner patterns differ between the two learners. The use of *he running go home* and the potential use of *from* as a motion verb were only observed in Lan's motion inventory while uses of *the* in the expression *turn the left/right* were only found in Carlos's motion inventory. Such a difference may be due to a potential cross-linguistic influence from the learners' L1s. However, more informants of both L1 Chinese and Spanish backgrounds are needed in order to support this argument.

## CONCLUSION

To conclude, the study has shown how an L2 motion inventory was constructed and developed in a usage-based fashion over time. It has generally shown that Lan's motion constructions revolve around affordances and recurring expressions, with later constructions linking to previous experience in different usage events. It was also shown that *GO* constructions went from an initial reliance on restricted linguistic means to a slight increase in the degree of productivity while there are fluctuations for *COME* constructions in RP1 as compared with later RPs. These fluctuations may be accounted for by the ever changing classroom environments.

The findings are generally aligned with the usage-based assumption on language learning, which proposes that linguistic constructions are becoming increasingly productive over time. The observed fluctuations for *COME* patterns do not contradict the usage-based idea especially in the perspective of viewing language development as a non-linear and dynamic process. However, no ultimate abstract schema was observed that sanctions the totality of motion constructions in the data. Instead, Lan's motion inventory was built around initially concrete uses of all the motion-verb constructions and emergent utterance schemas *GO/COME to x*. Implicit in this observation is the rejection of the traditional view on language development as a linear process that goes towards the emergence of an abstract rule. Nonetheless, the observation of no ultimate abstractness does not mean that the learning of Lan's motion inventory has reached an endpoint without further development; as was shown in the data, language learning is a constant process and is locally contingent and situated (Eskildsen, 2012; Firth & Wagner, 1998; Lantolf & Thorne, 2006). As Eskildsen (2009) pointed out, it is a matter of both the nature of the investigated construction and the environment-dependent nature of language learning that limits the developmental trajectory towards a full productivity and schematicity.

The findings in the present study may shed light on the understanding of the developmental trajectory of motion constructions by a Chinese learner of English, and the understanding of the seemingly L1-dependent learner patterns. However, the learning outcome of an individual learner is not generalizable to represent other learners

of a same L1 background. Additionally, as was mentioned in Li et al. (forthcoming), language learning takes place in all sorts of settings (in the classroom, at home, in shops), changing environments may yield different learning outcomes. Although the classroom is very communicative and various uses grow out of different usage events, the linguistic expressions and learning activities are, to a certain extent, constrained by the classroom-based interactional environment. Thus, learning in the classroom may pose a different developmental picture as comparing with the learning processes outside the classroom. It is suggested for future research to incorporate more informants from both the same and different L1s in different data settings (e.g., naturally occurring data) of various contexts to examine the extent to which the learning trajectory differs among different learners in different data sets.

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# Paper 3

# A Usage-based Classroom Investigation on the Development of a Chinese Learner's Motion Constructions in L2 English


## Abstract

This study traces the development of motion constructions and their underlying semantic components in a second language (L2). Building on Li et al. (forthcoming) and PL1, it further investigates the empirical relevance of the usage-based linguistics (UBL) proposed item-based path of language learning (e.g., Ellis, 2002; Tomasello, 2003). Tracing the learning trajectory of an L2 Chinese learner in the classroom over two and a half years, the study shows that language learning, situated in usage events, is slow and piecemeal, and schematic linguistic knowledge evolves from the use of a number of interrelated expressions. Furthermore, the study also displays the important role that usage events play in shaping an individual motion inventory over time and suggests that the differences between the Chinese learner in the present study and the one in PL1 are partly due to individual learners' differences and partly due to the ever-changing environments in the classroom. As an implication, it calls for further investigation of the potential L1-dependent learner patterns and explorations on the locally contingent and situated nature of language learning.


## 1. Introduction

The semantic domain of motion has received a great deal of attention in the field of second language acquisition (SLA) studies, ranging from traditional cross-sectional studies (for recent reviews see Cadierno, 2008, 2012, 2013; Gullberg, 2011) to more recent longitudinal investigations (Stam, 2010; Li et al., forthcoming; PL1). The cross-sectional research provided insights into the cross-linguistic influence from the learner's first language (L1) on the learning of an L2 and the bi-directional influence between the learner's L1 and L2, while the longitudinal studies offered new understandings as to how a single learner develops motion constructions in an L2 that is different from his/her L1. Furthermore, the individual learning of motion constructions between learners of a different typological L1 was also addressed in PL1. However, none of the previous research has examined the similarities and differences in the over-time development of motion constructions between learners of the same L1.

Building on PL1, which examines the learning trajectory of motion constructions in a Chinese learner of English, the present study extends the same line of research by including another Chinese learner in the same classroom setting. Drawing on UBL, it aims to investigate the developmental pathway of an L2 inventory of motion constructions and examine the similarities and differences in the learning of English motion constructions between the Chinese learner in the present study and the Chinese learner in PL1.

The study first reviews two strands of previous research: longitudinal studies in SLA that have drawn on UBL and studies on motion events from both a cross-sectional and longitudinal perspective. Subsequently, it reports and discusses the data analyzed in the present study. It finishes with conclusions and implications for future research.

## 2. Usage-based Models and SLA

The UBL proposed path of language learning has gained much empirical support in the field of child language acquisition, which views linguistic expressions as emergent and usage-driven—linguistic expressions grow out of specific usage events, upon which learners gradually build up a structured inventory of linguistic expressions (Barlow & Kemmer, 2000). Such an inventory is dependent on people's experience of using the language, which links later, more schematic constructions to previously experienced concrete items (e.g., Tomasello, 2003; Ellis & Larsen–Freeman, 2006).

How do L2 learners construct and develop their L2 systems over time? Research has shown that L2 learners follow a similar item-based developmental line to L1 learners—the learning of constructions goes from an early dependence on concrete expressions to a gradual schematicity and productivity. Such evidence has been supported by a number of longitudinal SLA studies, including Eskildsen and Cadierno (2007) on *do*-negations; Eskildsen (2009, 2011, 2012) on *can*-constructions, auxiliary *do*-constructions, and negated constructions; Mellow (2006) on meaningful discourse; Ellis and Ferreira–Junior (2009a, 2009b) on English verb-argument constructions; Yuldashev et al. (2013) on multi-word units; and Li et al. (forthcoming) and PL1on motion constructions. In addition, Eskildsen (2011, 2012) and PL1addressed the need to examine the

interactional environments (or usage events) in which the linguistic constructions are situated because this can provide further evidence to understanding the locally situated and contingent nature of language learning.

## 3. Studies on Motion Constructions and SLA

### 3.1 Talmy's motion event typology

Talmy's (2000) typological approach has formed the basis of both cross-sectional and longitudinal studies on the semantic domain of motion. This approach characterizes the expression of motion events in different languages of the world. A motion event is defined as "one object (the Figure) moving or located with respect to another object (Ground)" and contains Figure, Motion, Path, and Ground as four basic internal semantic components (Talmy, 2000, p. 25). Motion is defined as "the presence per se of motion or locatedness in the event" (Talmy, 2000, pp. 25–26). Path refers to "the path followed or site occupied by the Figure object with respect to the Ground object" (ibid.). In addition, Manner and Cause are two other external semantic components of a motion event.

Based on how the semantic components of a motion event are linguistically expressed, two main groups of languages have been defined—Verb-framed languages (V-languages) and Satellite-framed languages (S-languages). In V-languages (e.g., Spanish), Motion and Path tend to be encoded in a main verb and Manner in a separate constituent, whereas in S-languages (e.g., English), Motion and Manner are usually expressed in the main verb and Path is expressed by a satellite. According to Talmy (2000), Path can be expressed by a satellite alone or a combination of a satellite and a preposition in English. A satellite is defined as "the grammatical category of any constituent other than a noun-phrase or prepositional-phrase complement that is in a sister relation to the verb root," and it includes verb particles in English (e.g., *down, back*) (Talmy, 2000, p. 102). However, there is some controversy on Talmy's division on satellite and preposition—some authors argue to include prepositions on equal footing with satellites when expressing Path. For example, Filipovic (2007) questioned the division between the two and suggested using the term "path particles." Additionally, Talmy (2009) re-defined his classification on the expression of Path in S-languages and he included the use of

prepositions as an additional category to satellites. Li et al. (forthcoming) and PL1took into account three means to express Path: a preposition, a satellite, and a combination of a satellite and a preposition.

In addition to Talmy's binary category, Slobin (2004) added Equipollentlly-framed languages (E-language) as a third type. A key feature of E-language is that Manner and Path can be expressed by two motion verbs in the same expression of a motion event. Mandarin Chinese, which permits a linguistic item (e.g., *hui2* '(go/come) back') appearing as a motion verb, exhibits the feature of E-languages, as two motion verbs of the same grammatical weight can be used in a consecutive position (e.g., *pao3 chu1* 'running exit/out'). Because of the different features among different languages, Chinese learners may exhibit some L1-dependent learner patterns when learning English (PL1).

### 3.2 Motion constructions in cross-sectional and experimental SLA studies

Previous SLA research drawing on Talmy's (2000) motion event typology on English motion constructions has tended to be cross-sectional and experimental, in which two main issues have been addressed: how L2 learners of a same/different L1 group express motion in the foreign language and what the possible inter-/intra-typological influence of their L1 on their L2 constructions is (e.g., Negueruela et al., 2004; Özyürek, 2002; Reshöft, 2011; Stam, 1998, 2006). These studies have shown that learners' motion constructions in an L2 are, to a certain extent, influenced by their L1 both in linguistic expressions and gestural patterns. Some of the motion constructions tend to be target-like while others are deeply affected by the learner's L1. Although such influences gradually diminish, as in comparing lower-proficiency-level learners to higher-proficiency ones, it has been shown that difficulty remains in developing a target-like L2 pattern, especially in the expression of new grammatical distinctions in an L2 that are not covered in the learner's L1 (see Cadierno, 2008, 2012, 2013 for an overview).

Apart from the cross-sectional studies, Stam (2010) carried out a longitudinal study on the development of English motion constructions using elicited data. The focal Spanish learner in the study was initially found to rely heavily on her L1 Spanish to express Path,

i.e., Path was expressed in the motion verb without any accompanying prepositions or satellites, while later on, she was able to express Path in a target-like manner following the L2 English pattern.

### 3.3 Motion constructions in naturalistic and classroom SLA research from a usage-based perspective

Ellis & Ferreira–Junior (2009a, 2009b) investigated the effects of frequency factors in construction learning by looking at English verb-argument constructions (VACs) in the European Science Foundation (ESF) corpus. The VACs examined in the study cover verb locative (VL), verb object locative (VOL), and ditransitive (VOO). The aim was to test whether L2 learning was optimized by Zipfian type/token frequency distributions. It was found that the first used generic verb in each VAC was also the most frequent one in learners' speech. The ratios of those verbs were as follows: *go* took 52% of the majority share in VL constructions, *put* took 68% in VOL constructions, and *give* took 64% in VOO constructions. This finding showed that the first exemplar used in each VAC was the one that occurred most frequently and was prototypical in meaning.

Inspired by the above-mentioned quantitative explorations, two case studies were carried out on the individual developmental trajectory of English motion constructions by a Spanish learner (Li et al., forthcoming) and a Chinese learner (PL1) in a classroom setting. The results showed that both learners developed their motion constructions from an early dependence on a limited number of linguistic means to express motion towards producing more creative linguistic constructions. The combination possibilities between *go (/goes/went/going)* and *come (/came/coming)* and their associated Path expressions were also found to become increasingly varied across time. Furthermore, following a call by Li et al. (forthcoming) to include the interactional environments in which the learning of motion constructions are situated, PL1traced the emergence of a *go/went to* construction in classroom interactions, showing that the usage event and the learning of motion constructions are inseparable. Additionally, PL1also reported the cross-linguistic similarities and differences of the learning outcomes between the Spanish learner and the Chinese learner, suggesting that the seemingly L1-dependent learner

patterns, such as the use of *from* as a motion verb, need to be supported by including more informants in future studies.

Based on the findings from the above-mentioned longitudinal studies, the following research questions are addressed in the present study.

1. What are the most frequently used linguistic elements to encode Motion and Path in Ya's motion inventory over time and what kind of associations are there between motion verbs and specific linguistic elements that encode Path at different points in time?
2. Are L2 motion constructions developing towards an increasingly growing degree of productivity?
3. What are the similarities and differences in the learning of motion constructions between the Chinese learner in PL1and the Chinese learner in the present study?
5. Is there any interactional evidence showing that the slow and piecemeal learning of motion constructions is locally contingent and situated?

## 4. The Present Study

### 4.1 Data

The data presented in this paper come from *The Multimedia English Learner Corpus* at Portland State University, which consists of longitudinal audio-video recordings of classroom interactions. In the classroom, two students were given a microphone rotationally while the teacher was wearing a microphone all the time. The classroom was equipped with four fixed cameras and two movable ones targeted at the two students. The present research is conducted on Ya, a Chinese learner of English, who had been learning English in China for two years before coming to the US and who attended the English as a second language class in Portland from September 2002 to February 2005. He started with level B in the class and gradually progressed to level D (intermediate level) (see Reder 2005, for more information on the different proficiency levels). The data drawn on in this paper encompass around 68 hours of video recordings, in which either Ya is present in one of the movable cameras wearing a microphone or sits next to another student wearing the microphone.

Ya's participation in the classroom has been divided into the following periods. Throughout the paper, RP is used as an abbreviation for recording period:

Recording Period 1 (RP1, Level B): Sept. 24 — Nov. 08, 2002 (around 8 hours of video recording)

Recording Period 2 (RP2, Level C): Sept. 23 — Nov. 04, 2003 (around 14 hours of video recording)

Recording Period 3 (RP3, Level D): Jan. 13 — Jun. 04, 2004 (around 28 hours of video recording)

Recording Period 4 (RP4, Level D): Sept. 28, 2004 — Feb. 15, 2005 (around 18 hours of video recording)

### 4.2 Transcription and Coding

The classroom data were transcribed first and motion expressions were extracted by an initial search for motion verbs in the transcription. Only self- and translational-motion expressions were included in the present study.

The extracted utterances were then coded based on the following criteria. A motion verb is coded as Motion, and its accompanying particle that expresses the moving trajectory of the object is coded as Path. If there is no associated linguistic item that expresses the trajectory of the movement, it is coded as ØPath. The linguistic item that expresses the location in relation to the moving object is coded as Ground. If a particular linguistic item conflates Path in addition to Ground in motion constructions (e.g., *home* in the construction *go home*), it is coded as Path & Ground. Because the learner may use different grammatical forms of a given motion verb, motion verbs in small caps (e.g., *GO*) are used as a cover term of different grammatical forms (e.g., *go, went*).

### 4.3 Methodology of analysis

The analysis applied both a quantitative and qualitative methodology. In order to address research questions 1 through 3, two quantitative methodologies were used: linguistic analysis and type–token analysis. In order to answer research questions 4 and 5, a qualitative conversation analysis (CA)–informed microanalysis was used.

For the linguistic analysis, we analyzed uses of the motion verbs and their association possibilities with various expressions that encode Path. For the type–token analysis, type–token counts were conducted in relation to *GO* and *COME* uses because these two motion verbs were most frequently used throughout the whole RPs. Token refers to the actual linguistic instantiation of a motion expression while type is defined on the variation of linguistic items that encode Path. The type–token count was used to determine the productivity of a certain pattern and the extent to which a certain schematic expression may be strengthened. A high token and a low type count results in a low type–token ratio, which indicates a possible entrenchment of a certain or a few exemplars in a given type; in contrast, a high type–token ratio indicates a high degree of productivity of the linguistic patterns. For the qualitative microanalysis, the interactional environments in which the learning of motion constructions is situated were examined. Such a qualitative methodology of combining UBL and CA has proven to be a powerful way to account for the local contextualization of long-term L2 learning (Eskildsen, 2012; Eskildsen et al., forthcoming).

## 5. Results

### 5.1 Linguistic analysis of Ya's motion inventory

This section aims to examine the linguistic elements that are used by Ya to encode Motion and Path over time and the kind of associations between motion verbs and linguistic items that encode Path at different points in time. It firstly gives a longitudinal overview of the linguistic items that encode Motion and Path in Ya's entire motion inventory. It then zooms into Ya's *GO*- and *COME*-uses as motion constructions across time because both motion verbs were consistently and frequently used through RP1 to RP4.

#### 5.1.1 An Overview of Ya's Motion Inventory of the Basic Internal Semantic Components of a Motion Event

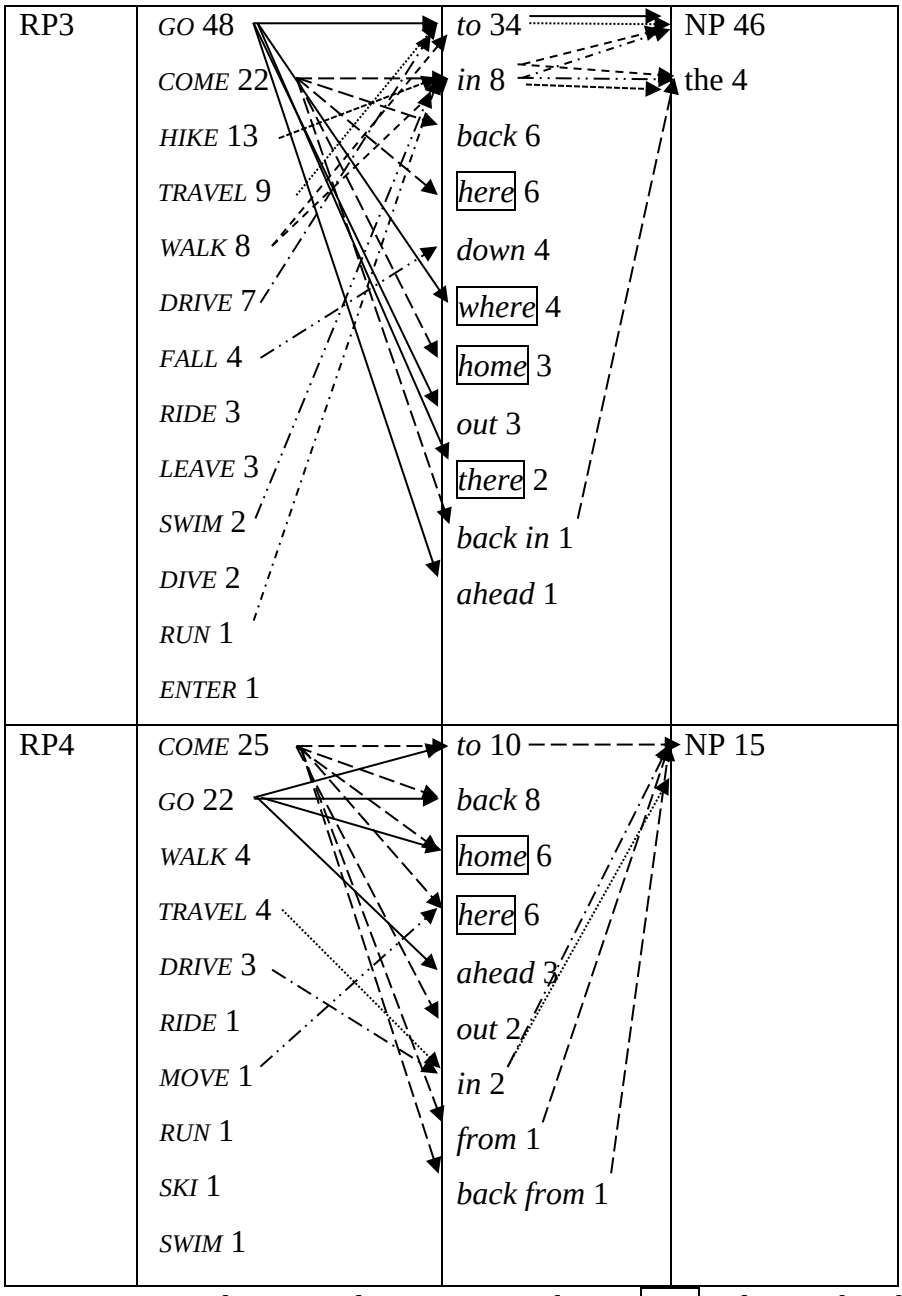
This section provides an overview of the construction constituents that encode the basic internal semantic components of a motion event in Ya's entire motion inventory over time. It aims to trace the development of the expressions of Motion and Path and the

associations between the two at different points in time because both Figure and Ground can be found in other kinds of constructions other than motion.

Table 1 illustrates the motion verbs that express Motion and the linguistic items outside of the main verb that express Path, as well as the kind of combinations between the two. The table is organized internally according to the token frequency of the linguistic items under the Motion and Path column. The number after each linguistic item refers to its total number of occurrences within each RP. Arrows mark the combinations between a motion verb and its associated Path expressions in different RPs. Different motion verbs are distinguished by arrows of different shapes.

Table 1: An overview of Ya's inventory of the linguistic elements that encode Motion and Path

| | MOTION | PATH | GROUND |
|---|---|---|---|
| RP1 | *COME* 4<br>*GO* 3<br>*FLY* 2<br>*TRAVEL* 1 | *to* 6 | NP 4 |
| RP2 | *GO* 32<br>*WALK* 14<br>*LEAVE* 4<br>*COME* 4<br>*DRIVE* 4<br>*ARRIVE* 2<br>*FLY* 3<br>*RIDE* 2<br>*SWIM* 1 | *to* 16<br>*ahead* 7<br>*where* 6<br>*in* 4<br>*at* 2<br>*around* 1<br>*from* 1<br>*here* 1 | NP 31 |




*Note*. RP = Recording Period; NP = Noun Phrase. *Item* indicates that the linguistic item conflates both Path and Ground in motion constructions.

In RP1, the linguistic items that encode Motion and Path are quite restricted, including a limited number of linguistic expressions. Four verbs, *COME*, *GO*, *FLY*, and *TRAVEL*, are used to express Motion, while the only mean to express Path is by way of the preposition *to*. Besides the uses of *GO*, which includes both afforded and non-afforded expressions, other motion verbs are mainly afforded in specific usage events. For example, uses of *FLY* are afforded and occur in a pair work in which Ya is talking to his

co-participant about a book that he read, and the book is called *The Kite Flying*. Although *COME*, *GO*, and *TRAVEL* are combined with the preposition *to*, the only non-afforded combination is seen between *GO* and *to*, while *FLY* does not have an associated Path expression.

In RP2, the linguistic inventory of Motion, Path, and Ground not only includes previously used linguistic items, but also includes a variety of new linguistic means. Besides *GO*, *COME*, and *FLY* that occurred in RP1, eight new verbs that encode Motion are added to Ya's motion inventory. The frequently used verbs *GO*, *COME*, *WALK*, and *DRIVE* are used in different usage events and include both afforded and non-afforded expressions, while those less frequently occurring ones, such as *ARRIVE*, *LEAVE*, *FLY*, *RIDE*, and *SWIM*, are context-specific, i.e., each verb is restricted to a particular usage event. For example, uses of *LEAVE* are afforded, which only occur in a pair-work of practicing *before I/you left the house*. The linguistic items that express Path include the previously used preposition *to*, a newly occurred satellite *ahead*, and prepositions *in*, *at*, and *from*. Furthermore, *where* and *here* occur as two new means to encode Path and Ground.

In terms of the associations between the linguistic expressions that encode Motion and Path, Ya starts to combine Path expressions with more motion verbs as compared with RP1. Moreover, the number of association possibilities also increases as compared with RP1. *GO* is combined with more varied Path expressions (*to*, *ahead*, *where*, and *around*), *WALK* and *COME* are combined with two different linguistic items, while *ARRIVE* and *RIDE* are combined with a particular Path expression. Other motion verbs do not have any associated Path expressions.

In RP3, Ya's motion inventory not only builds on previous experience but is also expanded to include a greater variety of linguistic items that encode Motion and Path and an increase in the number of combination possibilities as compared with previous RPs. Motion and Path expressions include both previously used and newly occurred linguistic resources. Both *GO* and *COME* are combined with more varied Path expressions as compared with RP2 and other motion verbs in RP3. *WALK* is combined with *to* and *in*; *HIKE*, *SWIM*, and *RUN* are combined with *in*; *TRAVEL* and *DRIVE* are

combined with *to*; while *FALL* is combined with *down*. Other motion verbs do not exhibit any association possibilities.

It is interesting to point out that some context-specific motion verbs in previous RPs start to be used across contextual boundaries, suggesting that the learner is slowly generalizing previous experienced verbs to other usage events. For example, the use of *TRAVEL* occurs in a particular picture description exercise in RP1, while here in RP3, a variety of different uses (e.g., *travel to Thailand*, *too many people just travel*, *travel some place*) are observed in different usage events. *RIDE* is also context-restricted in RP2, while in RP3 it is used in different usage events: *I ride elephant*, *they ride a bicycle*, and an afforded use of *could you ride a bicycle*. Language learning, in this sense, is not only a matter of generalizing previously used means to new situations, but it is also environmentally contingent and situated as linguistic productions change in response to changing usage events. Thus, language learning entails learning of linguistic constructions in an environmentally coupled fashion. As will be shown later in the study, examinations of the usage events in which motion constructions are situated may provide better understanding towards recognizing the locally contingent and situated nature of language learning and understanding the ongoing change in the course of language development (Eskildsen, 2012; Larsen–Freeman, 2006).

In RP4, the linguistic means to express Motion and Path are heavily dependent on previously experienced linguistic resources. Comparing the number of new additions of Motion and Path expressions in previous RPs, Ya's motion inventory in RP4 seems to be more stable at this stage, as only a few new linguistic means are observed. The newly occurred motion verbs are *SKI* and *MOVE*, while *back from* occurs as a complex expression to encode Path. As to the association possibilities between motion verbs and various Path expressions, *COME* is associated with a greater variety of linguistic items that encode Path; *GO* is associated with *to*, *back*, *home* and *ahead*; *TRAVEL* and *DRIVE* are associated with *in*; and *MOVE* is combined with *here*. Other motion verbs do not have any association possibilities.

Summing up, Table 1 reveals that Ya's motion inventory develops from an initial reliance on a limited number of linguistic resources to encode Motion and Path to an increase in the number of various Motion and Path expressions and a general increase in the number of association possibilities. *GO* and *COME* occur as the most frequently used means to express Motion, while the preposition *to* is most frequently employed to encode Path. In addition, the data also exhibit different kinds of associations between specific linguistic elements that encode Path and motion verbs. RP1 is represented by an *one to many* association, i.e., the preposition *to* is used in a free combination with the motion verbs *COME*, *GO*, and *TRAVEL*, whereas RPs 2–4 include not only an *one to many* association but also an *one to one* association, i.e., certain linguistic elements that encode Path tend to be revolving around a particular verb-island (Tomasello, 1992). Although the preposition *to* is observed to be used in a free combination with both *GO* and *TRAVEL* in RP1, it is used at different points in time. The very first use of *to* is observed in *I went to America*, and its combination with *come* is afforded, whereas its combination with *travel* occurs around one month later. Such a slow and piecemeal learning process aligns with Tomasello (1992), which pointed out that because each verb forms its own island, uses of one verb may not be immediately generalizable to other verbs.

### 5.1.2 Ya's *GO*- and *COME*-uses

Ya's *GO*- and *COME*-uses in RP1 are presented in Table 2. The table consists of two parts. The linguistic items that encode Path and Ground in combination with *GO* and *COME* are listed under the columns of PATH and GROUND, and the number of the actual linguistic instantiations of each type (defined by variation of Path expressions) is specified under the column of Tokens. It is organized internally according to token frequency. A cover term, e.g., noun phrase (NP), is given if Ground is expressed by different linguistic items of a same grammatical function. If no linguistic items were used to express Path/ Ground, it is marked as 'Ø' under the column.

| Table 2: Ya's *GO*- and *COME*-uses, RP1 (level B) | | | |
|---|---|---|---|
| | PATH | GROUND | Tokens |
| *GO* | *to* | NP (*America*, *mountain*) | 2 |
| | Ø | Ø | 1 |
| *COME* | *to* | Ø | 3 |
| | | *America* | 1 |

Ya's *GO*-use in RP1 is represented by the use of a particular pattern *GO to NP*, which is instantiated by a non-afforded use *I went to America* and an afforded expression *I went to mountain*. Afforded uses are linguistic expressions that are picked up from the immediate environment (e.g., peers, teachers, textbook, etc.) (van Lier, 2000). The former instantiation is used as an answer to a student's question while the latter one is a reading from the textbook. In addition, *go* is used as an imperative to encourage another student to write something on the blackboard. Although the source of learning the very first *went to* construction is not clear, the appearance of *I went to America* indicates Ya is able to produce the target-like form at an early learning stage.

As to *COME*-use, the total four uses of *come to* constructions fall in the same day in RP1. The first three examples are readings from the blackboard, *when did you come to*, and the last one seems to be reading from Ya's exercise in a pair-work, *when did you come to America*. It seems that, at this very early stage, Ya's *COME*-constructions are, on the one hand, dependent on the immediate environment, that is, readings from the blackboard and the exercise. On the other hand, *when did you come to* seems to be a practiced chunk, which is used in a specific interactional context.

With respect to the lexicalization of Path, the only mean to express Path in combination with *GO* and *COME* is by way of the preposition *to*. Other more generalizable Path expressions do not seem to be available at this stage.

In RP2, as shown in Table 3, both *GO*- and *COME*-uses are represented by more varied types as compared with RP1. A clear predominant pattern *GO* to NP is observed within

*GO*-use, while the four patterns under *COME*-use see an equally distributed number of tokens.

| Table 3: Ya's *GO*- and *COME*-uses, RP2 (level C) | | | |
|---|---|---|---|
| | PATH | GROUND | Tokens |
| *GO* | *to* | NP (e.g., *school*, *the field*) | 14 |
| | *ahead* | Ø | 7 |
| | *where* | | 6 |
| | Ø | Ø | 3 |
| | | *this place* | 1 |
| | *around* | Ø | 1 |
| *COME* | Ø | *school* | 1 |
| | | Ø | 1 |
| | *here* | | 1 |
| | *from* | *two xxx* | 1 |

For *GO*-uses, the pattern *GO to NP* that occurred in RP1 appears to be a predominant pattern in RP2. It is instantiated by both afforded and non-afforded expressions. The very first instantiation *the person go to school* is used in a conversation when Ya is explaining the notion of "education" to another student. It is non-target-like in a sense that *go* has not yet been used in a third-person singular. Subsequently, two target-like expressions *he's going to college* and *which college's he going to* occur in a free conversation in which Ya is asking about the educational background of his co-participant's son. Later on, three afforded expressions *went to bed* occur in a practice of *(I/ you) went to bed*. Within the same practice, another afforded example, *went to work*, occurs. Moreover, three repetitions of *went to the field* occur in another exercise, in which the task is to make a sentence using a past irregular verb. *Went to the field* is uttered as an alternative expression to the teacher's utterance *I played Frisbee*—further evidence supporting that Ya is capable of producing the target-like *went to* construction. Interestingly, about five minutes later, another free use, *I went to library*, occurs as a response to his co-participant's question *what did you do on the weekend*. An utterance

schema *GO to x* seems to emerge at this point, in which the open slot *x* is filled by different noun phrases that encode Ground.

Another frequently occurring *GO*-pattern, instantiated by a particular afforded expression *go ahead*, occurs seven times within a specific usage event in which the students are practicing how to use the expression in different situations. The third most frequently occurring *GO*-type is also afforded, instantiated by six instances of *where did you/ I/ she go*. Furthermore, other types within *GO*-uses in RP2 include a non-target-like expression *you usually go this place* and an afforded expression *the earth go around* as a partial repetition of the teacher's utterance *the earth goes around*. Ya seems to be slowly developing more varied *GO*-uses in RP2 as compared with RP1.

In terms of *COME*-uses, the previously occurred patterns, which are all afforded in RP1, do not recur in RP2. Rather, Ya's *COME*-use in RP2 is represented by newly occurred non-afforded patterns with an equally distributed number of tokens. The total four instantiations of *COME*-uses include non-target-like expressions *when the bus come late* and *I Thursday come school*, an incomplete expression *we come from ah two xxx*, and a target-like expression *San Francisco embassy came here*. In RP2, more diversified expressions come into use in Ya's *COME*-inventory.

As to the expression of Path and its association possibilities with *GO* and *COME*, the preposition *to* continues to be used in combination with *GO* but not with *COME* in RP2. Bearing in mind the afforded nature of *ahead* and *around* and the construction afforded meaning of Path and Ground in *where* and *here*, the only combination possibilities are seen between *GO* and *to* and between *COME* and *from*. Developmentally, although there is a moderate increase in the number of different patterns, the linguistic means that express Path still tend to be quite restricted in both *GO*- and *COME*-uses.

Later on, as shown in Table 4, new patterns of *GO*- and *COME*-uses occur in Ya's motion inventory. Furthermore, both *GO*- and *COME*-uses in RP3 contain more varied types, as compared with previous RPs, and share the same number of linguistic patterns.

| Table 4: Ya's *GO*- and *COME*- uses, RP3 (level D) | | | |
|---|---|---|---|
| | PATH | GROUND | Tokens |
| *GO* | *to* | NP (e.g., *the mountain, library*) | 31 |
| | Ø | NP (e.g., *mountain, college* ) | 4 |
| | | Ø | 3 |
| | *where* | | 4 |
| | *out* | Ø | 3 |
| | *there* | | 2 |
| | *ahead* | Ø | 1 |
| *COME* | *back* | Ø | 6 |
| | *here* | | 6 |
| | *home* | | 3 |
| | in | Ø | 2 |
| | Ø | Ø | 2 |
| | | NP (*China, America*) | 2 |
| | *back in* | *the* | 1 |

For *GO*-use, two newly occurred patterns, *GO there* and *GO out,* are added to the inventory. Furthermore, other patterns that were used in previous RPs were recycled again in RP3.

The pattern *GO to NP*, which was the most dominant one in RP2, continues to keep its predominant role in RP3, and it contains more varied noun phrases (e.g., *the mountain, the yellow stone*) as compared with RP2. The instantiations of this pattern include not only new expressions but also previously used ones. For example, the practiced expression *went to bed* in RP2 recurs in RP3 and is used in a non-afforded manner, suggesting that previous practice may help the learner to reuse the same construction in a different situation. Furthermore, the number of the total instantiations within the pattern *GO to NP* increases while the percentage of the afforded instantiations decreases from 0.29 (4/14) in RP2 to 0.19 (6/31) in RP3, indicating that the pattern is used in a comparatively freer manner here. Although the pattern *GO to NP* seems to be entrenched

in RP3, its non-target-like variety *GO Ø NP* is still present in the data, instantiated by four non-afforded uses (e.g., *go Australia, go college*).

Moreover, another previously used pattern *GO where* is instantiated by both afforded (e.g., *where go goes*) and non-afforded (e.g., *where you will go*) instantiations. The pattern *go ahead,* which was recurring in an afforded situation in RP2, continues to be afforded in RP3. Apart from those previously experienced patterns, the pattern *GO there* is instantiated by two non-afforded expressions *I like to go there* and *you going there*. Moreover, another newly occurred pattern *GO out* is instantiated by a non-afforded expression *go out* and two recurrent uses of an afforded expression *went out*. Developmentally, Ya's *GO*-use in RP3 not only built on previously used patterns but also includes new patterns.

In terms of *COME*-use in RP3, more varied patterns occur as compared with RP2; two dominant patterns *COME here* and *COME back* are observed. The pattern *COME here,* instantiated by six instances of *come/ came here,* seems to be built on a previously used expression *San Francisco embassy came here* in RP2. Apart from the previously occurred linguistic expressions, new patterns *COME back* and *COME home* appear in RP3, instantiated by both afforded and non-afforded uses of *come/ came back* and non-afforded *come home*. Furthermore, other new types include *COME in* and *COME back in the,* both of which are non-afforded. Ya, at this stage, seems to slowly develop his *COME*-use to include more varied patterns, part of which tends to be built on previous experience and recurring expressions.

In terms of the lexicalization of Path, besides the construction-afforded meaning of Path and Ground in *where, there, here* and *home, GO* is associated with the previously used preposition *to* and a newly occurred satellite *out,* while *COME* is associated with three new linguistic means to express Path, which are *back*, *in*, and *back in*. It seems that Ya is not only able to reuse previously experienced expressions but also slowly develops new means to express Path.

Later on, as depicted in Table 5, previously used *GO* and *COME* patterns recur in RP4; three new patterns, *GO back*, *GO home*, and *COME out*, are added to the motion inventory. The total number of *GO* patterns decreases slightly in RP4, while the total number of *COME* patterns increases as compared with RP3. Different from RP3 in which *GO* and *COME* patterns share an equal number of linguistic patterns, the total number of *COME* patterns exceeds the total number of *GO* patterns in RP4.

Table 5: Ya's *GO*- and *COME*- uses, RP4 (level D)

| | PATH | GROUND | Tokens |
|---|---|---|---|
| *GO* | *to* | NP (e.g., *library*, *the Mexico*) | 8 |
| | Ø | Ø | 7 |
| | *ahead* | Ø | 3 |
| | *home* | | 3 |
| | *back* | Ø | 1 |
| *COME* | *back* | Ø | 7 |
| | *here* | | 6 |
| | *home* | | 3 |
| | Ø | Ø | 3 |
| | | *Europe* | 1 |
| | *out* | Ø | 2 |
| | *to* | *school* | 1 |
| | *from* | *the Normandy Beach* | 1 |
| | *back from* | *China* | 1 |

In terms of *GO* patterns, one of the predominant patterns, *GO to NP*, continues to be used in RP4 but with a decrease in the number of tokens as compared with RP3. It not only builds on previously used expressions, e.g., *go to library*, but also includes newly occurred expressions, e.g., *go to the Mexico*. Another dominant pattern in RP4, *GO* Ø Ø, is instantiated by a number of auxiliary modal verb constructions, e.g., *want to/ can/ can't go*. Furthermore, a previously practiced exemplar *go ahead*, which is afforded in both RP2 and RP3, appears again in RP4 but in a spontaneous and free manner. Such a recycling of linguistic resources is in accordance with the usage-based perspective that

the learner picks up previously experienced utterances and applies them to another situation (Eskildsen 2009, 2012). In addition, later free uses of a previously afforded expression may indicate that Ya is actively doing learning by reusing earlier experienced expressions—previously afforded expressions may help Ya to produce later similar constructions in a freer and spontaneous manner. Aside from the previously experienced *GO* patterns, two new patterns *GO home* and *GO back* are added into the inventory. Developmentally, *GO* patterns in RP4 are not only built on previously recurring types and exemplars, but also evolve to include new types.

Similar to *GO*-use, Ya's *COME*-use in RP4 is also largely dependent on previously used linguistic patterns. It is interesting to note that three main patterns in RP3, i.e., *COME back*, *COME here*, and *COME home*, continue to keep a predominant role in RP4. Furthermore, a new pattern *COME out* occurs, instantiated by two non-target-like expressions *the moon is/ was come out*. Moreover, it is interesting to note that while Ya is able to produce a target-like expression *come to school*, he fails to use the preposition *to* in a non-target-like expression *I will not come (.) Europe*. Bearing in mind that the *COME to* construction only occurs in an afforded manner in RP1 and has not been used in a free manner until RP4, it is difficult to judge whether it is internalized at this stage. This further suggests that learning of a specific construction is slow and gradual (Ellis & Larsen–Freeman, 2006), that is, while Ya produces afforded *come to*-construction early in RP1, it is not until RP4 that the free and non-afforded use of *come to school* occurs. Furthermore, although traditional SLA researchers tend to assume that language always develops towards the target (Ortega, 2009), the development of *come* uses at least pose a different picture as both target-like and non-target-like uses co-exist in RP4, bringing a more dynamic picture of language development. Such a cohabitation of both target-like and non-target-like uses in the same period also aligned with the Dynamic Systems Theory's view on language learning, i.e., that variation is part of language development (e.g., De Bot et al., 2007). In addition, there is evidence suggesting that *GO* and *COME* uses may converge at this point, as both verbs share the same satellites *back* and *home*, as seen in *go back/home* and *come back/home*, suggesting an interconnectedness between both *GO* and *COME* constructions.

As to the expression of Path, besides the construction afforded meaning of Path and Ground in *home* and *here*, *GO* is combined with the previously used *to* and *ahead* and a new satellite *back*, while *COME* is combined with previously occurred *back*, *to*, and *from*, and two newly occurred expressions *back from* and *out*. It seems that the linguistic means to express Path at this stage are heavily built on previously used linguistic resources, as many are traceable in previous RPs. Developmentally, the number of linguistic items that encode Path remain the same in combination with *GO* while it increases in combination with *COME*.

In sum, the development of Ya's *GO* constructions differs from his learning of *COME* constructions. For *GO* uses, a central *GO to NP* pattern is observed to be the most predominant one throughout the entire learning stage. Although the initial source of learning *went to America* in RP1is not clear, the heavy practices of *went to* construction in early RP2 may help entrench the pattern. Later on in RP2, an utterance schema *GO to x* emerges as a result of more varied uses of noun phrases filled in the open slot *x*. Other less frequently occurring patterns, some restricted to only affordances while others are used in more spontaneous and free manners, are appearing and disappearing at different points in time, suggesting a dynamic learner adaption to the ever-changing environment in the classroom. For the learning of *COME* constructions, neither is a particular pattern observed to be predominant through RP1–RP4, nor are any utterance schemas observed across time. Rather, different *COME* patterns are occurring at different points in time. Furthermore, three patterns, which are related to three types of recurring expressions (*come back, come here, come home*), appear to be the dominant patterns in RP3 and RP4. These patterns do not evolve into any schematicity; however, the relatively frequent uses may help entrench these exemplars.

As to the development of linguistic means that express Path, the data have shown that Path expressions generally develop from a heavy reliance on affordances and restricted linguistic resources at an early learning stage to include more diversified and free linguistic means in later RPs. In terms of the associations between Path expressions and *GO* and *COME*, both *GO* and *COME* are initially combined with a limited number of linguistic means to encode Path, and later on are combined with increasingly varied

Path expressions. Furthermore, there seems to be a correlation between *GO* and *COME* uses, as both motion verbs share similar Path particles at a certain point in development, e.g., both verbs are combined with a particular satellite *back* that encodes Path in RP4.

### 5.2 Type–token analysis of *GO* and *COME* patterns

This sections aims to examine whether L2 motion constructions develop towards an increasingly growing degree of productivity. As was shown earlier that *GO* and *COME* are the most frequently used motion verbs throughout the entire RPs, while other motion verbs are not consistently used over time, the focus of this section is on the development of Ya's *GO* and *COME* patterns across time.

Table 6 and Table 7 illustrate the type and token frequencies for both the total *GO*- and *COME*-related uses and non-afforded uses as motion constructions. Tokens refer to the actual instantiations of *GO/COME*-related uses as motion expressions, while types refer to the various linguistic patterns that are defined on the variation of linguistic expressions that encode Path.

Table 6: Type and token frequencies for *GO* constructions

| RPs | Total *GO* uses as motion expressions | | | Non-afforded *GO* uses as motion expressions | | |
|---|---|---|---|---|---|---|
| | Tokens | Types | Ratios | Tokens | Types | Ratios |
| RP1 | 3 | 2 | 0.67 | 2 | 1 | - |
| RP2 | 32 | 5 | 0.16 | 13 | 2 | 0.15 |
| RP3 | 48 | 6 | 0.13 | 37 | 6 | 0.16 |
| RP4 | 22 | 5 | 0.23 | 18 | 5 | 0.28 |

| Table 7: Type and token frequencies for *COME* constructions | | | | | | |
|---|---|---|---|---|---|---|
| RPs | Total *COME* uses as motion expressions | | | Non-afforded *COME* uses as motion expressions | | |
| | Tokens | Types | Ratios | Tokens | Types | Ratios |
| RP1 | 4 | 1 | 0.25 | - | - | - |
| RP2 | 4 | 3 | 0.75 | 4 | 3 | 0.75 |
| RP3 | 22 | 6 | 0.27 | 17 | 6 | 0.35 |
| RP4 | 25 | 8 | 0.32 | 21 | 8 | 0.38 |

As shown in Table 6 and Table 7, the type–token ratios for Ya's total *GO*- and *COME*-related uses as motion expressions yields a messy developmental picture, as they are fluctuating at different points in time. The degree of the fluctuations, however, seems to decrease after the afforded uses are excluded. For *GO* patterns, the type token ratios for the non-afforded uses as motion expressions gives a clear developmental picture, as they follow a linear increase from RP2 to RP4, indicating an increase in the degree of productivity over time. For *COME*, excluding the afforded uses does not seem to give a clearer picture of development, as the type–token ratios still fluctuate at different points in time. As indicated by the ratios in Table 6, RP2 has the highest ratio, which indicates the highest degree of productivity, while the lowest ratio in RP3 suggests a low degree of productivity for *COME* patterns. On the one hand, the ratio in RP4 is higher than in RP3, suggesting an increase in the degree of productivity in RP4. On the other hand, the ratio in RP4 is still lower than in RP2, indicating a decrease in the degree of productivity and also a decrease in abstractness. Recalling Table 4, which includes a few recurring exemplars of *COME* uses, the low type–token ratios suggest that these recurring exemplars may be entrenched, which, in turn, leads to a comparatively low type–token ratio. However, the comparatively higher number of *COME* types alone in RP4 indicates that *COME* is associated with more varied linguistic expressions that encode Path.

### 5.3 Comparisons between two Chinese learners of English

This section aims to compare the learning outcomes of English motion constructions between Ya and the Chinese learner Lan in PL1. PL1compared the individual learning

trajectory of motion constructions between a Chinese learner and a Spanish learner of English, suggesting that similarities exist irrespective of the learner's L1. These commonalities mainly lie in five aspects, which can also well summarize the main findings in the present study. First, *GO* and *COME* are the most frequently used motion verbs to encode Motion, while the preposition *to* is the most frequently used item for the expression of Path. Second, both learners develop their motion constructions from using a restricted number of linguistic items to encode Motion and Path towards including more varied linguistic means. Third, both *GO* and *COME* were found to be combined with increasingly varied linguistic items that encode Path. Fourth, the development of the non-afforded *GO* patterns was shown to have a general increase in the degree of productivity across time, but with fluctuations at a certain point in time, which may be due to the ever-changing environments in the classroom. Finally, an utterance schema *GO to x* emerged in both learners; however, no ultimate abstraction that sanctions all the motion verb constructions was observed.

Apart from these similarities that seem to be L1-independent, PL1reported the differences between the two learners, including potential cross-linguistic influences from the learner's L1 and individual learner differences, which may partially be a result of different exposures to various learning activities in the classroom. As expressed in Larsen–Freeman (2006), it is common to observe similarities in developmental paths within learners in a "grand sweep view"; greater variations are inevitable on an individual basis. Comparing the learning outcome between Ya in the present study and the Chinese learner Lan in PL1, the following differences are observed. First of all, Lan's motion inventory was heavily dependent on afforded uses while Ya's motion inventory consists of more spontaneous and free uses. Second, Ya's motion inventory contains a greater variety of motion verbs across time, as compared with Lan's motion inventory. Third, the motion verbs used in both learners' motion inventory differ, and so do their combination possibilities with different Path expressions. Fourth, the recurring expressions constituting a large part of both learners' *COME*-inventory differ –Ya frequently uses *COME back/here/home* in later learning stages while Lan uses *come to US/USA* throughout the whole learning stage. Fifth, an emergent utterance schema *come*

*to x* was observed in Lan's *COME*-inventory as a result of earlier heavy practices of the *come to*-construction, while it was not observed in Ya's *COME*-inventory.

In addition to the above-mentioned observations that seem to be L1-independent, PL1also reported that the Chinese learner Lan exhibits L1-dependent learner patterns in the learning of motion constructions, as two constructions seem to be a result of a potential transfer from her L1 Chinese, namely, *running go home* (Chinese equivalent *pao3 hui2 jia1*), and three instances of using *from* (*cong2*) as a possible motion verb. The use of *from* as a potential motion verb by Lan was tentatively proposed in PL1 because the Chinese equivalent *cong2* cannot be used alone as a motion verb in Chinese. It was argued in PL1that Lan may regard *from* in English as a Path verb in a similar sense to L1 Chinese, such as *hui2* in *hui2 jia1 qu4* "return home go", as she may generalize a similar structure to the use of *from*, as can be exemplified by a Chinese expression *cong2 jia1 lai2* "from home come". Tracing these potential L1-dependent learner patterns in Ya's linguistic inventory, the use of *from* as a motion verb was also found in the present study. The instantiations are *I from (.) I (.) I went to (.) America* (RP1), *I from here (.) nine month* (RP1), and *from the (.) from (.) from France* (RP4). They are used in situations of expressing a past event in which there is a Figure approaching to or departing from a Ground of the movement. As was suggested in PL1, the seeming L1-dependent learner patterns provide a new angle for future research to examine whether Chinese learners use Path particles to express Motion in L2 English.

### 5.4 Qualitative microanalysis on the occurrence of *come to*-construction

As has been mentioned earlier (section 5.1.2), Ya's uses of *come to*-construction is initially dependent on afforded uses. By tracing the use of *come to*-construction in Ya's inventory, it is suggested that usage events prompt learning, as Ya's learning of the expression *when did you come to (America)* seems to be a result of affordance. There is some evidence, as depicted in Extracts 1–3, to indicate that this context might be the initial learning of *come to*-construction.

In Extract 1, Ya and Pa (co-participant) are working in pairs on a task. The task is to ask each other questions based on the instructions (i.e., *when did you come to America*) that

are written on the blackboard. Shortly before Extract 1, the target form *when did you come to America* was instructed and practiced in the classroom.

Extract 1[12], 24-Sep-2002

| | | |
|---|---|---|
| 01 | Pa: | when did you to (.) [did you come to America *reads from exercise* |
| 02 | Ya: | [*moves the head toward PA, and looks at PA's* |
| 03 | | *notebook* |
| 04-> | Pa: | when did you come (.) to America [*right hand's index finger lifts up* |
| 05 | | *and moves quickly towards his body* |
| 06 | Ya: | [*continues looking at* |
| 07 | | *PA's writing* |
| 08 | Ya: | oh:: *returns his body slightly backward* what↗ *bends his body slightly* |
| 09 | | *forward towards PAR and looks at PAR's writing* |
| 10-> | Pa: | when did you move |
| 11 | Ya: | [ah yes yes |
| 12-> | Pa: | [from China→ to America *right hand moves from his left to right* |
| 13 | Ya: | [I enh::: |
| 14 | Pa: | [from China |
| 15 | | (2) *Ya's fingers on his right cheek, PA's looking at Ya* |
| 16-> | Ya: | I from (.) I (.) I went to (.) America (1) ah |
| 17 | Pa: | three month↗ four month↗ before you came here to America |
| 18-> | Ya: | I from here (.) nine month (.) I from here nine month |
| 19 | Pa: | enh *starts writing in the exercise* |

PA initiated the turn by reading from the instruction *when did you to (.) did you come to America* from his exercise in line 1. Since no answer is given by Ya, Pa repeats the question *when did you come (.) to America* with a gesture showing a movement towards his body, during which Ya continues looking at Pa's writing (lines 4–7). Ya uses an acknowledgement token *oh* and retreats his body slight backward in line 8. Normally,

[12] Transcription conventions: xxx = inaudible; *Italic text* = transcriber's comments; [ = begin overlap; ] = end overlap; (3.0) / (.) = 3 seconds pause/ micro pause; : = prolongation; ↗/↓/→ = intonation marker, rising/ falling/ continuing; <u>word</u> = stressed. --> = marker of the target expressions.

this kind of response is regarded as a reactive token, which normally does not necessarily claim the floor (Greer et al., 2009). Then he initiated a repair *what↗* to Pa's question. Pa reformulates his question *when did you move* in line 10 by changing the motion verb from *come* to *move* in line 10. The repair of the motion verbs is especially interesting. On the one hand, Pa seems to assume that the misalignment may be a result of the verb *come*. On the other hand, such a misalignment suggests that Ya may not know *come*. Ya utters another acknowledgement token in line 11 *ah yes yes*, displaying his listenership and receipt of the question. This is in overlap with Pa's continuing self-repair in line 12 *from China→ to America*. Ya starts to formulate his answer in line 13, which is in overlap with PA's reaffirmation of his question *from China* (lines 13-14). This is followed by a two-second pause in line 15 in which Ya is putting his fingers on his right cheek while Pa is looking at Ya, waiting for his answer. Normally, pauses in some cases indicate trouble in a conversation (Schegloff et al., 1977); however, it is not the case in this interaction—the pause suggests that Ya is thinking while Pa is giving Ya the ground. Ya gives his answer in line 16 *I from (.) I (.) I went to (.) America*. Another one-second pause follows, which may indicate that Ya is having trouble giving a complete answer. Pa then starts a new turn by offering some suggestions to Ya's answer in line 17, after which Ya reformulated his answer in line 18 *I from here nine month*. The sequence ends as Pa starts to write the answer in his exercise book (line 19).

Pa's turns in line 10 and line 12 are especially interesting; here he is repairing his utterances as a result of misalignment in the interaction, which seems to be a result of Ya's lack of knowledge on *come*. Extract 1 further shows that the resources that Ya seems to have at his disposal tend to be the available linguistic resources (non-instructed *went to* construction and non-target-like use of *I from*) at hand. No matter whether target-like or not, these linguistic resources that get him closest to his target construction *come/came to* are *from* and *went*. Furthermore, Extract 1 shows that Ya does not understand *come*. All the pausing and delays and looking at Pa's writing may indicate that he is having trouble producing the task-relevant form. This can further be seen from the repair sequence (lines 10–12) as Pa orients to Ya's use of *what* with a rising intonation (line 8) as a repair-initiation (Schegloff et al., 1977). Then Ya claims understanding immediately following Pa's repair from *come* to *move*. The non-target-

like use of *from* seems to be a 'make-do solution' as a result of lacking vocabulary (Larsen–Freeman, 2012). This suggests that language learning is a slow process and the instructed form of *when did you come to America* in the classroom may not produce an immediate impact on learning of this form. Several minutes later, after Extract 1, three afforded *come to*-constructions occur as readings from the blackboard (Extract 2), and shortly after, Ya seems to be able to pick up the form as he initiated a new turn by addressing his co-participant using the afforded expression *when did you come to America* (Extract 3).

Extract 2, 24-Sep-2002

20 Ya: when did you come to, when did you come to *looking at the*
21 *blackboard and talking to himself while writing, seems to have a bad*
22 *eyesight* when did you come to (.) I don't *laughs*
23 *long pause, writing on the exercise book*

Extract 3, 24-Sep-2002

24 Ya: when did you come to America↗ *seems like reading from exercise*
25 Pa: I come to America (.) eight month
26 Ya: eight month↗
27 Pa: yeah

Looking at the three extracts above, it is interesting to note the process of incipient understanding and learning of the form *when did you come to America.* In Extract 1, Ya does not understand *come* as he makes this non-comprehension publicly visible through a number of phenomena: repairs from him and his co-participant, his claim of understanding, and his use of a non-target-like form of *from* in which a more appropriate use should be *came*. In Extract 2, his self-repetition indicates that he is playing around with the *come to*-construction on his own. In Extract 3, he initiates a question for his co-participant by using an afforded task-relevant form *when did you come to America*. These three extracts demonstrate the environment in which Ya is first using *come to*-construction and doing incipient learning of the expression *when did you come to America*.

However, it is not until RP4 that Ya starts to produce a target-like expression *come to school* in a spontaneous and free manner (Extract 4).

Extract 4, 12-Oct-2004

28 Te: give me an example *asking the students to give an example using "often"*

29 Ya: I often come:: to: school

Apart from the use of *come to school* in RP4 and the four afforded uses in RP1, no further *come to*-construction was observed. This differs from the findings on Lan in PL1, as the *come to*-construction is heavily practiced in early learning stages and based on which emerges an utterance schema *come to x*. As previously mentioned, such differences may largely be due to the different usages events in which the learners are engaging in. The slow picking ups and limited uses of *come to*-construction for Ya and the emergence of *come to x* for Lan as a result of heavy practice further bring out the idea that language learning is locally contingent and dependent on usage events (Eskildsen, 2012; Li et al., forthcoming).

## 6. Discussion

This study has presented how an adult L2 Chinese learner of English developed his motion constructions during his participation in the classroom.

In alignment with Li et al. (forthcoming) and PL1, the data showed that Ya's motion inventory developed from initially relying on restricted uses of linguistic resources to express motion towards including more varied motion expressions. *GO* and *COME* are the most frequently occurring motion verbs to encode Motion, which may be because they are semantically light verbs and are prototypical in meaning (Ellis & Ferreira-Junior, 2009a, 2009b). The preposition *to* is the most frequently used item for the expression of Path. As to the association possibilities between the linguistic item that encodes Path and the motion verb, the study traced a development from a *one to many* association (the preposition *to* is used in a free combination with the motion verbs *COME*, *GO*, and *TRAVEL*) to a co-existence of both *one to many* and *one to one* associations. This differs from Li et al. (forthcoming) and PL1, as a *one to one* association was initially observed

in the two studies. This may be due to the different proficiency levels that the learners started with – both Carlos and Lan started from Level A while Ya started from Level B. Furthermore, although Ya combines the preposition *to* with both *GO* and *TRAVEL* in RP1, such combinations occur at different points in time. The very first use of *to* is observed in *I went to America,* and its combination with *come* is afforded, whereas its combination with *travel* occurs around one month later. As Tomasello (1992) pointed out, because each verb forms its own island, it is almost impossible to immediately generalize uses of one motion verb to another motion verb. The learning process is very slow until later in development, when language learners start to make generalizations, indicating a slow and piecemeal fashion of language learning.

In addition, the study showed that the development of Ya's *GO* and *COME* patterns exhibit different developmental pathways. The development of *GO* uses complies with the UBL proposed assumption that linguistic patterns become more productive over time, as there is a general increase in the type–token ratios for *GO* patterns. In contrast, *COME* patterns exhibit a different developmental path, as the fluctuations in the type–token ratios suggest that the patterns are not getting increasingly productive over time. As shown in Table 6, both the number of types and the number of tokens in RP2 are relatively low, which may be due to the limited number of available linguistic resources that Ya can use in RP2. As was discussed earlier, the relatively lower type–token ratios in RP3 and RP4 at least suggest that a few exemplars may be entrenched because of frequent occurrences in *COME*-inventory.

Besides uses of *GO* and *COME*, other motion verbs seem to be restricted to particular usage events, as they are not constantly used across the whole RPs. Over time, apart from the emergence of *GO to x* as an utterance schema, none of the motion constructions has evolved into an abstract schema such as "verb preposition/satellite NP" that sanctions all the motion constructions in Ya's entire motion inventory. However, the degree of abstractness seems to be an empirical issue, as the learning process still advances outside of the classroom and the classroom cannot represent a complete picture of language development in the learner's entire life (Li et al., forthcoming).

Furthermore, by comparing the two Chinese learners (Ya and Lan), both similarities and differences were observed. In alignment with PL1, the present study documented the use of *from* as a potential motion verb, suggesting that the use of *from* may be a result of cross-linguistic influence from L1 Chinese. However, a greater number of informants are needed in future studies in order to support this argument. The differences are partly due to individual learner differences. As expressed in Larsen–Freeman (2006), it is common to observe similarities in developmental paths within learners in a "grand sweep view"; greater variations are inevitable on an individual basis. Furthermore, different exposures to various learning activities in the classroom may be another factor for the differences, as changing of the usage events will yield different learning outcomes. For example, Ya's *come to*-construction is initially dependent on afforded uses. Extracts 1–3 display the environment in which the initial learning of *come to*-construction as a result of incipient learning is situated, showing that language learning is locally situated and contextualized. It is suggested to examine in detail the interactional learning environments in future studies to further understand the locally contingent nature of language and language learning. As a consequence, it may provide further explanations to the ongoing change in the process of constructing motion expressions in an L2 and may also help in understanding the influence of usage events in different learning outcomes among learners.

## 7. Conclusion

The study has investigated the learning trajectory of English motion constructions by an adult Chinese learner of English in an English as a foreign language classroom setting. It has shown that Ya constructs his motion inventory from using a limited number of linguistic resources to encode Motion and Path to be able to generate more varied means. Likewise, the combination possibilities between a motion verb and its associated Path expressions also generally increase as learning advances. Two of the most frequently used motion verb constructions, i.e., *GO* and *COME* uses, exhibit different developmental pathways. *GO* patterns develop towards an increase in the degree of productivity while *COME* patterns display fluctuations at different points in time. These fluctuations do not completely oppose the UBL proposed path of language learning; rather, they reveal a non-linearity and dynamicity of language development (de Bot et al., 2007; Eskildsen,

2012; Li et al., forthcoming). Furthermore, no ultimate abstract pattern that sanctions all the motion constructions was observed; rather, Ya's motion inventory consists of *GO to x* as an utterance schema and concrete uses of other motion verb constructions. The emergence of *GO to x* as an utterance schema aligned with Lieven & Tomasello (2008), which pointed out that in language acquisition, low-scope patterns such as utterance schemas mostly emerge "around a single high-frequency word or chunk that is prototypical of the pattern" (Ortega, 2009, p. 115). Similarly, Ellis & Ferreira-Junior (2009a, 2009b) observed in the ESF studies that *GO* is the most frequently used verb and is prototypical in meaning.

Furthermore, the study compared the learning outcomes between the Chinese learner Ya in the present study and the Chinese learner Lan in PL1. It was shown that in addition to individual learner differences, both learners share commonalities in terms of both L1-independent and a seeming L1-dependent learner pattern, i.e., the potential use of the preposition *from* as a motion verb. The fact that both Chinese learners' use of *from* as a potential motion verb was not observed in the Spanish-speaking learner in Li et al. (forthcoming) may indicate that such a use may be a result of cross-linguistic influence from L1 Chinese. However, this is the only observation of a potential cross-linguistic influence in the present study. Further research is encouraged to include more informants from different L1s to examine in detail the cross-linguistic influence of the learner's L1 on longitudinal development of motion constructions in L2 English.

In addition, by tracing Ya's learning of *come to*-construction, it was shown that Ya starts to use *come* as a result of incipient learning in classroom interactions. This further brought out the locally contingent and situated nature of language learning, as both linguistic constructions and learning of these constructions are highly dependent on usage events in which language learning and use are taking place (Eskildsen, 2012). The findings in the present study are based on classroom data, which may not well represent learning in other situations. Further studies are encouraged to investigate the emergence of linguistic constructions in different data settings.

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