Chapter 8.　General Discussion and Conclusions

This thesis has focused on Chinese and English speakers' multimodal representation of the temporal contours of events (i.e., grammatical aspect) while thinking for speaking and gesturing. It has provided a comprehensive account of multimodal grammatical aspect-marking constructions in Chinese and English by employing qualitative and quantitative corpus-analytical methodologies. In this final chapter, the main findings of the dissertation are summarized and discussed, the contributions and limitations of the dissertation are addressed, and directions for future research on the multimodality of aspect are also proposed.

8.1 Summary of the main findings and general discussion

Before a series of empirical studies were carried out, the theoretical framework of the thesis was presented in Chapter 2. I reviewed the previous studies on grammatical aspect in English and Chinese from the perspectives of linguistics and psychology. The main linguistic realizations of grammatical aspect in English and Chinese were presented and the cognitive account of their meanings was provided as the main objectives for the empirical studies that followed. Then I reviewed the psychological studies on grammatical aspect in language comprehension and production. Based on them, a multimodal approach to grammatical aspect was proposed to accommodate the multimodal realities of human interaction.

This thesis consists of five empirical studies from Chapter 3 to Chapter 7, with the first (see Chapter 3) investigating and comparing the gestural forms and gestural functions of the Chinese grammatical aspects at the macro as well as micro levels. It was revealed that at the macro level (perfective vs. imperfective aspect), there were no significant differences in gesture handedness, but the gestures accompanying the imperfective aspect were much more likely to be repeated in form and had greater potential to be iconic in function than those with perfective utterances. At the micro-

level, there were no significant differences of gesture handednesss either, but the gestures accompanying the progressive aspect showed a greater tendency to be repeated than those with the other aspect forms. The gestures accompanying the progressive aspect had the greatest potential to be iconic (metaphorically in particular), followed by the durative aspect (concretely iconic in particular). Gestures with the actual aspect and the experiential aspect were less likely to be iconic. However, the gestural behaviors accompanying actual aspect are much more similar to those with imperfective aspect rather the experiential aspect of the perfective aspect. In addition, the perfective aspect and the imperfective aspect were both used more for abstract events than for concrete events, except that the durative aspect was more frequently used for concrete events.

Chapter 4 furthered the study in Chapter 3 by investigating gestures accompanying grammatical aspect-marked utterances (imperfective vs. perfective aspect) in three different event types ─ concrete events, metaphoric events and inherently abstract events ─ in natural Mandarin Chinese conversations. The results showed that the gestures accompanying imperfective aspect speech were more prone to be iconic than those with perfective speech for concrete and inherently abstract events. The gestures were mainly iconic for the combination of semantic elements and for the schematic process in imperfective aspect speech contexts, whereas they were predominantly iconic for entities in perfective aspect speech contexts in the concrete and inherently abstract events. The gestures accompanying the imperfective and perfective aspect-marked utterances in the metaphoric events demonstrated the same patterns in both the frequencies to be (highly) iconic and the semantic elements (i.e., action) that they were iconic for. The findings extended the research on multimodal event construal, suggesting that the aspectual modulation of event conceptualization increases with concrete and highly abstract events, and diminishes for metaphoric events.

In Chapter 5, I used evidence from speakers' gestures to augment semantic debates on the Chinese progressive aspect versus the durative aspect, the different meanings of the durative aspect in particular. I investigated the dynamic or static properties of the gestures accompanying utterances with the progressive *zài* and the durative *zhe*. I found that almost all of the gestures co-occurring with the *zài*-framed utterances were

dynamic, iconically encoding the action or process of the events, but that gestures accompanying the *zhe*-framed utterances were either static or dynamic, depending on the situation. The multimodal evidence suggests that dynamicity is the prototypical meaning of the progressive, and that the durative has the semantic potential for either dynamicity or stativity, depending on the linguistic contexts that instances are embedded in.

Chapter 6 extended the research on multimodality of Chinese imperfective constructions to the polysemous or multi-functional aspect constructions ─ the progressive (*be V-ing*) construction in English. It compared the potentiality to be multimodal and the gestural functions (i.e. types) for the different meanings of the progressive construction in the community as well as in an individual. In addition, it was made clear what elements of the events were referred to by iconic gestures. The results showed that the progressive construction as a whole was more likely to be multimodal, regardless of the level of the community or the individual. In addition, the prototypical function of gestures accompanying the progressive construction was pragmatic. Only when the progressive denotes "continuous ongoingness" were the gestures more likely to be iconic, representing the action of an event.

Some preliminary differences between co-speech gestures accompanying progressive utterances among the native Chinese speakers and the native English speakers were observed in Chapter 5 and Chapter 6. Based on them, Chapter 7 furthered the investigation to whether, and to what extent, FL learners (L1 Chinese L2 English) changed their thinking for speaking and gesturing patterns from L1 to L2. I examined FL learners' verbal and gestural features when taking the progressive aspect to construe events, using those data from native Chinese and English speakers as baselines. The results showed that FL learners maintained their L1 thinking for speaking patterns by making the negative transfer of Chinese progressive aspect in form and following the semantic uses of the Chinese progressive aspect. In addition, FL learners transferred the iconic gesture frequency from the L1 Chinese thinking for gesturing pattern. However, they demonstrated a mixed gesturing pattern in terms of the referents that their gestures were iconic for.

The findings further attest the close interrelation between grammar, gesture and cognition. While conceptualizing events in different aspectual views, the speakers may have simulated the events in different ways, represented by the gestural indices. Some gesture forms can directly predict the aspectual differences (e.g., iteration and dynamicity of gestural movements), but others cannot (e.g., gesture handedness). Gestural repetition characterizes the progressive aspect in Chinese. The ongoingness of the progressive aspect-marked events is embodied in the dynamic gesture stroke, while the durativity of the durative aspect-marked events is encoded by the stative gesture stroke hold. The single hand dominates with gestures accompanying speech, regardless of the aspectual view the speaker takes. In addition, the gestural functions reflected that the gestures co-occurring with imperfective aspect utterances were more likely to iconically represent the elements of events, and the nucleus of events, i.e., action or process, in particular. Despite the similar function of the actual aspect and the experiential aspect (for expressing perfectivity), and the progressive aspect and the durative aspect (for expressing imperfectivity), their co-speech gestures revealed that it appears not to be the case that mental simulation and access to the details of events are in fact totally comparable. Thus, types of thinking-for-speaking apparently differ not only across the basic aspectual contrast but also within the same aspectual category.

In addition, the findings also highlight that grammatical aspect plays different roles in the expression of concrete and abstract events, so it suggests that speakers cognitively process concrete and abstract events in different manners. For concrete and metaphoric events, grammatical aspect does not correlate with what is gestured (i.e., gesture content is determined by the lexical aspect), but with how the speaker gestured (i.e., in the iterated and more complex gesture forms), while for inherently abstract events, the grammatical aspect used probably correlates with what to gesture in certain image schemas. English and Chinese prefer different image schemas to demonstrate the ongoingness and durativity of the progressive constructions. Native English speakers prefer the CYCLE schema, whereas the Chinese speakers tend to use the BALANCE schema.

Furthermore, the dissertation found that the degree of progressive aspect use (that

presumably facilitates access to mental imagery of events) is different across languages according to the different cross-linguistic gestural behaviors. The gestures accompanying Chinese progressive utterances were more likely to be iconic, representing multiple semantic elements of an event, and action or process in particular. However, the gestures accompanying English progressive utterances were predominantly pragmatic, which were closely related with the discourse management in the conversations. This pattern is apparently even transferred to the L1 Chinese L2 English FL learners' interlanguage system. Therefore, Chinese progressive constructions are more likely to activate the native Chinese speakers' mental simulation of the details of events than the English progressive construction does for the native English speakers.

8.2 Contributions and limitations

This dissertation has refreshed the study of grammatical aspect with a new multimodal perspective by investigating its living use in spoken language (i.e., spoken Chinese and English). Previous studies in this area have typically focused on the use of grammatical aspects in written language, and were often based on the researchers' intuitions about usage. Such a multimodal approach to grammatical aspect has presented a more comprehensive picture of speakers' online thinking for speaking and gesturing about events when using different grammatical aspects. The gestures accompanying grammatical aspect-marked utterances have provided new insight into the visual image of what event details are saliently activated while thinking for speaking. The multimodal evidence partly confirms the linguistic and psychological claims about grammatical aspects and also provides new perspectives on them. The more iterated, more complex (encoding more than one event element in a gesture) and/or more action or process focusing gestures accompanying the imperfective utterances (c.f., Chapter 3 and Chapter 4) confirmed the linguistic claim that the Chinese imperfective aspect takes an internal view on the events, focusing on the internal details of them. However, this

is only restrained to concrete and inherently abstract events. In metaphoric events, the perfective aspect-marked and the imperfective aspect-marked utterances have equally high potential to correlate with iconic gestures, metaphorically representing the action as the nucleus of the events (cf. Chapter 4). Such significant similarities between the two basic aspectual contrasts might have been blurred by linguistic evidence alone and not noticed in the psychological studies. To our knowledge, this is the first study that brought the importance of the nature of events to the investigation of the basic aspectual distinction. The multimodal approach to grammatical aspect doubtlessly deepened our understanding of the role of grammatical aspect in mental simulation of various events and complemented what cannot be found in psychological studies about abstract events.

In addition, through its converging evidence focusing on the study of grammatical aspect, this dissertation to some extent has also empirically verified the basic tenets of cognitive linguistics that grammar is inherently meaningful in everyday language and meaning as conceptualization is embodied in our experience in or interaction with the world. Cross-linguistic data (Chinese and English) and diversified kinds of subjects (native Chinese speakers, native English speakers, and FL learners) were taken into consideration. In terms of the polysemous grammatical aspect constructions, both the Chinese durative aspect construction and the English progressive aspect construction, coordination has been found of specific meanings with specific gestural behaviors (c.f. Chapter 5 and Chapter 6). For instance, when the Chinese durative aspect expresses the stative duration of an event, the co-speech gesture tends to be a static stroke hold, whereas when the same durative aspect expresses the dynamic ongoingness of an event, the co-speech gesture correspondingly exhibits a dynamic stroke (c.f. Chapter 5). Such gestural evidence is not only conducive to settling the semantic dispute on the durative aspect in Chinese, but also illustrates which meaning the durative aspect encodes in what specific contexts. The results can also be used to teach the imperfective aspect for L1 English L2 Chinese FL learners. The durative and ongoing nature of the imperfective (or English progressive) aspect is embodied by iterated gestures or the conduit metaphor gesture (holding hands with palm towards center apart in front) (c.f. Chapter 3 and Chapter 5), mostly by the back and forth gesture in native Chinese

speakers, and mostly by the cyclic gestures in native English speakers, with equal use of the last two in the FL learners (c.f. Chapter 3, 6 and 7). The abstract grammatical meanings have been visibly materialized in the speakers' hands.

This dissertation has also contributed to our understanding of the relations between language and thought, or thinking and speaking, from the perspective of multimodal communication. It touched upon the thinking for speaking patterns within a single language (c.f. Chapter 3 and Chapter 4), across languages (c.f. Chapter 6 and Chapter7), and from the L2 developmental view (c.f. Chapter 7). Within language, the fine-grained grammatical aspectual options do influence the native Chinese speakers' speaking and gesturing about events. The multimodal evidence revealed that the internal or external view on the events between perfective and imperfective aspect is not a black or white question but a matter of degree in the process of speaking. In terms of access to the details of events while thinking for speaking and gesturing, the continuum appears to be as follows: (Totally internal view) the progressive aspect > the durative aspect> the actual aspect >the experiential aspect (Mostly external view). Across languages, though the progressive aspects in both Chinese and English were claimed to take an internal view on events, focusing on their intermediate part or phase, the co-speech gestural data suggest that native Chinese speakers and native English speakers think rather differently for speaking and gesturing. It appears that the progressive aspect (including the durative aspect) in Chinese motivated its native speakers to pay much more attention to the internal structures of events via rich iconic gestural representations. However, the progressive aspect in English did not show this tendency, and it appears to have motivated the native English speakers in my study to focus more on the discourse of the conversation itself via rich pragmatic gestures. From the developmental view of thinking for speaking and gesturing in FL learning, FL learners have been found to transfer their L1 thinking for speaking about events in the progressive aspect, and adopt mixed thinking for gesturing patterns from the most salient L1 and L2 gesture features while taking an internal viewpoint on events. Such interesting results provide a lot of new ideas about the influence of grammatical aspect on speakers' thought or thinking about events. They encourage more studies on language and thought, or thinking for

speaking, in future multimodal research.

Beyond the contributions of the dissertation, some limitations should also be mentioned. First, the aspectual meaning was only based on the grammatical aspect constructions without considering the influence of the lexical verbs, arguments, temporal adverbials, and so on at the sentential level. Langacker (1987, 1991a, 2008a), Talmy (2000) and Croft (2012) valued the importance of the verbs, arguments etc. in determining aspectual meanings on the sentential level, taking a uni-dimensional approach to aspect study with a consideration of English grammatical aspect markers as a stativizer. Thus, we should express caution on some occasions when interpreting the results in the dissertation. Second, some of the data samples are a little small, holding the risk of some results having occurred by chance. The progressive aspects in both Chinese and English are not so frequently used, so the samples of them were relatively small, particularly when the use with iconic co-speech gestures was concerned. Consequently, some results relative to the iconic gestures were not able to be subjected to statistical analyses in some sections of the dissertation. Third, the proficiency of FL participants' spoken English is not advanced enough to be comparable to that of near-native English speakers. Previous studies showed that the level of language proficiency and the amount of exposure to the target language influence the adaptation to L2 thinking for speaking and gesturing patterns (e.g., Athanasopolous et al. 2015; Athanasopoulos & Albright 2016; Brown 2015; Brown & Gullberg 2008, 2013; Choi & Lantolf 2008; Flecken et al. 2015; Stam 2008, 2010, 2015). Thus, highly advanced FL learners would be needed to investigate the change of thinking for speaking and gesturing without difficulties in L2 linguistic expression.

8.3 Future directions for further studies

Although research on aspect has a very long history dating back to Aristotle, it has become a flourishing field since the 1960s. While in earlier decades the focus of research was on the logical action type (i.e., lexical aspect), the focus has shifted to the

constraints on the integration of lexical aspects into the grammatical aspect. With increasing interest and developments in research on grammar and cognition, the role of grammatical aspect in event cognition and mental simulation has attracted attention from psycholinguists, cognitive linguists and gesture researchers. The present dissertation has attempted to add to their work with a systematic study on grammatical aspect from a multimodal perspective. It has provided a number of interesting findings and solved some critical problems that are impossible to deal with from the study of linguistic (verbal) data alone. Indeed, aspect is a fundamental field of research which still calls for much research in the future within the framework of multimodal communication.

First, the interaction effects of grammatical aspect and lexical aspect on gestures warrant further explorations. Lexical aspect (i.e., verbs or verb phrases) represents the inherent qualities of the event. When different lexical aspects co-occur with the same grammatical aspect (i.e., temporal perspective on the event), different aspectual meanings may arise, which we would also expect to be represented in co-speech gestures. In addition, most of the events in spoken English and Chinese are not marked by grammatical aspect, i.e., zero aspect (Xiao & McEnery 2004: 236). When speakers take such a "neutral viewpoint" on events (Smith 1997), it is of great significance to examine how they present such an in-between perfective and imperfective view in their gestures. It would also be interesting to compare the gestures accompanying the same lexical aspect category with the perfective aspect, imperfective aspect and zero aspect, in order to provide a more exact idea about how grammatical aspect relates to gesture use in event cognition.

Second, studies should investigate the thinking for speaking and gesturing differences between aspect languages and non-aspect languages. Although there have been more and more studies on the behavioral differences such as attention allocation to the different parts of motion events between aspect language speakers and non-aspect language speakers, no studies, to my knowledge, have touched upon the gestural differences between them. Grammatical aspects are viewpoints highlighted by how language is used to present events, but it may be universal for people to perceive how

events unfold with time in reality. The ongoingness or completion of events is not grammatically marked in non-aspect language, but it is possible for such information to be complementary in co-speech gestures. Thus, the nature of the relations between language and thought or thinking and speaking awaits to be comprehensively understood via more studies on the grammatical options from the viewpoint of multimodality.

Third, proficiency is considered as an important predictor of adaptation to L2 thinking for speaking and gesturing, so a study with different proficiency levels should be designed in the future. The high-intermediate L1 Chinese L2 English FL learners have still negatively transferred the L1 thinking for speaking patterns, and tended to adopt some L2 thinking for gesturing patterns when construing events in the progressive aspect in the present study. Thus, it is of great importance to see whether beginners completely follow the L1 thinking for speaking and gesturing about events, and whether highly advanced FL learners mainly adopt the L2 thinking for speaking and gesturing about events. It is worth noting that the conversation prompts used to elicit data can only lead to very limited use of the progressive aspect, even with three among twenty speakers making no progressive utterance at all. Therefore, researchers should carefully develop some other better or more useful methods to collect data. In addition, according to a dynamic usage-based perspective on language learning and use, L2 development is a dynamic process (e.g., Larsen-Freeman 2006; Verspoor et al. 2011). As Chan et al. (2015) found, even identical twins have different dynamic development patterns in speaking versus writing in terms of syntactic complexity. It is of great importance for us in the future to investigate the development patterns of syntactic complexity (like grammatical aspects) and gestural complexity based on longitudinal studies.

Finally, it is also promising to apply the results in this dissertation to FL or SL teaching about grammatical aspects. Grammatical aspect is one of the most difficult teaching and learning points in SLA. The integration of tense with aspect and the wide range of semantic functions of the English progressive aspect is a great challenge for L1 Chinese L2 English FL speakers to learn. The absence of a formally expressed

perfective aspect in the English grammatical aspect system and the finer-grained aspectual distinction within the imperfective aspect in Chinese impose great pressure on L1 English L2 Chinese FL learners. Our studies have shed light on the visible differences in the gestural representations of different grammatical aspects underlying the conceptualization of events. Grammar is potentially multimodal and embodied. However, the field of SLA has a lingual bias, overlooking the multimodality and embodied nature of human communication (Block 2014). Therefore, it is time for FL teaching and learning to take a multimodal turn to make grammar teaching and learning more effective and more enjoyable.