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BRIEF RESEARCH REPORT

Why *jumped* is so difficult: tense/aspect marking in Mandarin–English bilingual children

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Abstract

Learning to mark for tense in a second language is notoriously difficult for speakers of a tenseless language like Chinese. In this study we test two reasons for these difficulties in Chinese–English sequential bilingual children: (1) morphophonological transfer (i.e., avoidance of complex codas), and (2) interpretation of *–ed* as an aspect marker of completion, like the Mandarin *–le*. Mandarin–English bilingual children and age-matched monolinguals did a cartoon retell task. The verbs used in the stories were coded for accuracy in English, telicity, and suppliance of *–ed* or *–le*. The results were consistent with morphophonological transfer: the bilingual children were more accurate with irregular past forms in English than regular forms. The results were also consistent with the bilingual children's interpretation of *–ed* as an aspect marker: most of their production of *–ed* was on telic verbs. We discuss possible reasons for the children's interpretation of *–ed* as an aspect marker.

Both adults and children learning English as a second language (L2) have difficulties learning to mark English verbs for past tense (Andersen & Shirai, 1994; Bardovi-Harlig, 1999; Collins, 2002; Paradis, 2011). Many L2 learners of English pass through a phase of using unmarked or bare verbs (e.g., *I run*) to refer to past events (Bardovi-Harlig, 1999; Collins, 2002). There is some evidence that L2 English learners whose first language (L1) is a tenseless language (like Chinese) have a particularly hard time learning to mark English verbs for tense (Brebner, McCormack, & Rickard Liow, 2016; Goad, White, & Steele, 2003; Lardiere, 1998; Paradis, 2011; cf. Leung, 2006). For example, Paradis (2011) showed that child L2 learners of English were better at marking for tense if they spoke an L1 that marked for tense than if they did not. Similarly, Lardiere (1998) reported that a Chinese L1 speaker used mostly bare verbs in English in contexts in which tense marking was obligatory even after 18 years of living in the United States. These results suggest that there are properties of L1 Chinese that contribute to L2 English speakers' difficulty with tense marking. The purpose of the present study was to test two explanations for Chinese–English bilinguals' difficulties with tense marking in

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English: (1) morphophonological transfer, and (2) influence from Chinese aspect marking.

One possible reason for the lack of tense marking in English among Chinese L1 speakers is morphophonological (Bayley, 1994; Goad *et al.*, 2003; cf. Hawkins & Liszka, 2003). In Chinese, only a few simple codas are allowed (Duanmu, 2007). Chinese L1 speakers who learn English as an L2 have been shown to avoid complex codas (Hansen, 2001). In English, adding the regular past tense morpheme –*ed* to verbs can result in a complex coda (e.g., *hop → hopped*). In contrast, many irregular past tense forms in English are realized internally, such as through a vowel change (e.g., *run → ran*) and might therefore be less affected by morphophonological properties of Chinese (Song, Sundara, & Demuth, 2009). In support of this prediction, Nicoladis, Song, and Marentette (2012) found that five- to twelve-year-old Chinese–English bilinguals were more accurate with irregular verbs than regular verbs in English (see also Brebner *et al.*, 2016; Woon, Yap, Lim, & Wong, 2014). This result is particularly surprising because monolingual English-speaking children show the reverse pattern: that is, they are more likely to produce regular past tense forms accurately than irregular past tense forms between the ages of three and twelve years (Marchman, 1997; Marcus, Pinker, Ullman, Hollander, Rose, & Xu, 1992; Nicoladis, Palmer, & Marentette, 2007; Nicoladis *et al.*, 2012). Thus, English monolingual children likely learn that –*ed* is the default way of marking verbs for tense. In the present study, we tested whether Chinese–English bilinguals were more accurate with irregular verbs than regular verbs in English, as in Nicoladis *et al.* (2012), with somewhat younger children who had only started learning English. If so, these results would be consistent with morphophonological transfer from L1 Chinese.

Another possible reason for omitting tense marking in English is influence from the Chinese aspectual system (Hawkins & Liszka, 2003; Lardiere, 1998). Chinese does not mark for tense, but it does mark verbs for aspect, including –*le* (completion), -*zai* (ongoingness), and -*zhe* (duration) (Chen & Shirai, 2010; Yang, 2014). The perfective –*le* usually appears on telic verbs, like accomplishments or achievements (e.g., painting a picture), while the other aspect markers are more likely to occur on atelic verbs like activities and statives (Chen & Shirai, 2010; Yang, 2014). There is some evidence that bilinguals sometimes use –*ed* and –*le* as translation equivalents. Some studies have shown that adult L2 learners of Chinese used –*le* to mark a past event rather than perfective aspect (Bayley, 1994; Yang, 2014). Furthermore, Liu (2015) found a positive correlation between the number of times Chinese–English bilingual children's produced English –*ed* and Chinese –*le* on a sentence repetition task. In the present study, we test the possibility that young sequential Chinese–English bilinguals interpret English –*ed* as an aspect marker (i.e., a translation of –*le*, marking completion).

This study

In this study, we tested two possible explanations for Chinese–English early sequential bilingual children's tense omission in English. We asked the children to watch a cartoon and tell the story back. Previous research has shown that children generally tell the story of a cartoon in the past tense (Hoang, Nicoladis, Smithson, & Furman, 2016; Nicoladis *et al.*, 2007). We first tested whether there is morphophonological transfer from L1 to L2. If so, the bilingual children would be more accurate with irregular verbs than regular

verbs. In contrast, we predicted that the English monolingual children would be more accurate with regular verbs than irregular verbs, as has often been found in previous studies (e.g., Marcus *et al.*, 1992).

We next tested whether the bilingual children use –*ed* in English as an aspect marker of completion. To do that, we first verified that, in Mandarin, the bilingual children used –*le* equally often as monolinguals and largely on telic verbs. We expected that they would, as aspect marking is acquired early in Chinese (Chen & Shirai, 2010). To test if –*ed* is used as an aspect marker, we predicted that the bilingual children would use –*ed* primarily on telic verbs. We further predicted that the bilinguals would use –*ed* in English equally often as –*le* in Mandarin, equally often on telic verbs, and that their use of –*ed* in English would correlate with their use of –*le* in Mandarin (Liu, 2015).

Methods

Twenty-seven Mandarin–English bilingual children were included in the analyses for this study, averaging in age 5;7 (SD = 0;9; range 4;0–6;7). Forty bilingual children originally participated, but thirteen did not tell a story in English that included at least one verb (i.e., one child simply said "a cat" and then laughed as her entire story; twelve others simply claimed that they did not remember the story; see Nicoladis and Jiang [2018] for a discussion of the differences between the children who did and did not tell the story). The children were living in Edmonton, Alberta, Canada when they participated. According to parental report, the children had learned Mandarin as a first language from both parents and subsequently started learning English between the ages of two and five years, usually in the context of daycare or preschool. We recruited children who had a minimum of six months of exposure to English. The average length of exposure to English was 1.3 years (SD = 0.6). According to parental report, the children were Mandarin-dominant at the time of participation.

The Chinese monolinguals were living in Beijing, China. We included in the analyses the 27 children (out of 38) who were closest in age to the bilingual children. The average age among the children included ranged from 4;0 to 6;5 (M = 5;6; SD = 0;7). Having matched on age, there was no significant difference between the monolingual group and bilingual group on age in months ($t < 1$).

The English monolinguals were living in Edmonton, Alberta, Canada. We included in the analysis the 27 children (out of 79) whose ages most closely matched the bilingual children's. The range of age for those children was 3;11 to 6;3 (M = 5;5; SD = 0;7). These children's age in months did not differ significantly from either the bilingual children's or the Chinese monolinguals' (ts < 1).

Material

The participants were asked to watch a 4-minute segment of a Pink Panther cartoon titled *In the Pink of the Night*. In this segment, the Pink Panther gets annoyed at a cuckoo bird that is trying to wake him up. He throws the bird into the river and goes back to bed. He then starts to feel guilty for having killed the bird and runs back to the river to save him. Meanwhile, the bird returns to the Pink Panther's house. When the Pink Panther returns home and finds the bird alive, they fall asleep

together in bed. This same cartoon was shown in both language sessions for the bilingual children.

To measure the children's receptive vocabulary in English, we used the Peabody Picture Vocabulary Test-III (PPVT), Version A (Dunn & Dunn, 1997). The children's Mandarin vocabulary was measured by administering a translated version of the PPVT, Version B. The translated Mandarin version has not been standardized. One study showed that the raw scores on this translated version were correlated with age among Mandarin-speaking monolingual children (Barbosa, Jiang, & Nicoladis, 2019), suggesting some degree of validity. In the present study, we used the raw scores in the analyses, as we were interested in individual differences across children.

Procedure

This study was part of a larger study, and the children participated in a battery of tasks assessing language and cognition. The bilingual children participated in two language sessions, with an experimenter who was a native speaker of the target language of the session and who spoke only that language throughout the session. The order of the two language sessions was counterbalanced and the two sessions were separated by approximately a week.

For both monolingual and bilingual children, within a language session, the order of the tasks varied according to the experimenter's judgment of the child's interest and engagement. Tasks requiring more passive participation (like the PPVT) were usually presented earlier within a session, and tasks requiring more active participation (like the cartoon retell) were presented later.

The PPVT was administered and the scores calculated according to the examiner's manual (Dunn & Dunn, 1997). For the cartoon retell, the children watched the cartoon on a computer screen turned away from the experimenter. When the cartoon was done, the experimenter asked the children to tell what they had seen in the cartoon (e.g., "What happened in the cartoon you just saw?"). When the children paused in their retelling, the experimenter asked the children open-ended questions, like, "Then what happened?" or "Was there anything else?". The children's stories were videotaped for later transcription and coding.

Transcription and coding

The children's stories were transcribed orthographically in the target language. Each verb that they used was coded for whether it was used as a telic (i.e., the action had an endpoint) or atelic verb. This coding was done on the children's use of the verbs in context so that it was not simply the choice of a particular verb but the use in context. For example, "he threw flowers all around" was coded as atelic while "he threw flowers into the ocean" was coded as telic. A second coder independently coded the verbs of 11 randomly selected children for telicity. Out of the 276 verbs produced by these children, the two coders agreed on 92% of the classifications, with a Cohen's kappa of .772, conventionally characterized as excellent agreement. The disagreements were mostly due to the second coder identifying more telic verbs than the first coder. For example, the second coder coded "he didn't see anything" as telic while the first coder classified this as atelic. In order to be consistent with the first coder's more conservative coding, we retained the first coder's judgments for the analyses.

In English, we coded for the accuracy of regular and irregular past tense forms (e.g., *jumped* as the past tense of the regular *to jump*, and *was* as the past tense of the irregular *to be*). For each child, we calculated a percentage of accurate regular and irregular verbs out of the total number of verbs produced, excluding any verbs that were marked with a third person *–s* (mean number of verbs in present = 1.7, SD = 2.6). We excluded the present tense because we reasoned that children could choose to tell the story in the present tense (even adults do sometimes; see Hoang *et al.*, 2016), so the choice of present tense could not be considered incorrect.

In English we also coded the suppliance of *–ed* on telic and atelic verbs. In Mandarin, we coded both telic and atelic verbs with and without suppliance of *–le*. We included in the analyses two percentages measuring suppliance: the percentage of telic verbs marked by either *–ed* or *–le* and the percentage of *–ed* or *–le* that appeared on telic verbs. These percentages measure a slightly different but related construct about suppliance. We consider each of these measures in turn.

The percentage of telic verbs marked by either *–ed* or *–le* addresses the frequency with which telic events were marked for past or completion, respectively. In English, since many high-frequency verbs are irregular (Marcus *et al.*, 1992), only a small percentage of telic verbs might be marked by *–ed* for monolingual children, and the bilingual children might produce even less *–ed* since they may produce bare verbs. In Mandarin, since aspect marking for completion is optional, we anticipated that only a minority of telic verbs would be marked *–le* and that there would be no difference between bilinguals and monolinguals.

The percentage of *–ed* or *–le* that appeared on telic verbs captures something about children's interpretation of the function of the morpheme. In English, we expected monolingual children to use a minority of *–ed* on telic verbs because *–ed* marks past tense for them and so the use would be unrelated to telicity. In contrast, bilingual children might use *–ed* as an aspect marker, in which case the majority of their uses of *–ed* would be on telic verbs. As for the percentage of *–le* that appears on telic verbs in Mandarin, previous studies have shown a link between perfective aspect and telicity (Andersen & Shirai, 1994; Chen & Shirai, 2010), so we expected that the majority of uses of *–le* by both monolingual and bilingual children would be on telic verbs.

Analytic approach

In Chinese, parametric statistics could be used for all analyses since the variance in the two groups was equivalent. In English, for accuracy, variances were equivalent so parametric statistics were used. For other measures, there were often differences in variance between the two groups (usually the bilingual children were more variable than the monolingual children). When this was the case, we used Mann–Whitney non-parametric tests to compare the two groups.

Results

In English, the bilingual children's raw PPVT scores were significantly lower ($M = 35.3$ ($SD = 22.5$) than the monolinguals' ($M = 95.5$ ($SD = 27.6$)) ($t(52) = 8.73$, $p < .001$). This result is not surprising, given how little exposure to English the bilinguals had had. In Chinese, the bilinguals' vocabulary scores were also significantly lower ($M = 107.9$ ($SD = 14.7$)) than the monolinguals' ($M = 125.4$ ($SD = 5.5$)) ($t(52) = 4.80$, $p < .001$).
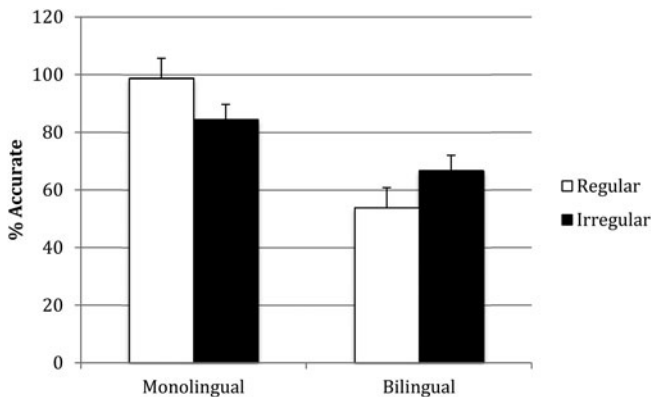
Figure 1. Average percentage accurate production of regular and irregular past tense verbs in English by monolingual and bilingual children. Error bars show standard error around the mean.

Accuracy of regular/irregular verbs in English

We first consider the possibility of morphophonological transfer. The monolingual children used, on average, 11.0 ($SD = 7.3$) irregular verbs and 2.2 ($SD = 2.0$) regular verbs. The bilinguals used an average of 17.5 ($SD = 17.6$) irregular verbs and 3.0 ($SD = 3.6$) regular verbs (see Table 2 for the total number of verbs used in English). There were no significant differences between groups on Mann–Whitney tests, for irregular ($p = .30$) or regular verbs ($p = .94$).

Figure 1 summarizes the accuracy of regular and irregular verbs by the two groups. On a 2×2 [Group $\times$ Verb Type] ANOVA with Verb Type as a repeated measure, there was no main effect of Verb Type ($F < 1$, $p = .94$, $\eta_p^2 = .001$). There was a main effect of Group ($F(1,40) = 18.77$, $p < .001$, $\eta_p^2 = .319$): the bilinguals were less accurate than the monolinguals. There was also a significant interaction between Group and Verb Type ($F(1,40) = 7.59$, $p = .009$, $\eta_p^2 = .160$). As can be seen in Figure 1, the source of that interaction is that the monolinguals were more accurate with regular verbs than with irregular verbs, while the bilinguals showed the reverse pattern. We did not systematically analyze children's errors, but the bilingual children produced more bare verbs ($M = 3.8$, $SD = 4.2$) than the monolingual children ($M = 0.3$, $SD = 0.6$).

For the bilingual children, accuracy was not significantly correlated with age for either regular ($r(25) = 0.368$, n.s.) or irregular verbs ($r(25) = 0.342$, n.s.). Accuracy was not correlated with Chinese vocabulary scores for either regular ($r(25) = 0.407$, n.s.), or irregular verbs ($r(25) = 0.330$, n.s.). Accuracy was, however, significantly correlated with English vocabulary scores for both regular ($r(25) = 0.447$, $p < .05$) and irregular verbs ($r(25) = 0.513$, $p < .01$).

Chinese aspect use

We next verified that the bilingual children demonstrated age-typical usage of –le in Chinese. Table 1 summarizes the number of verbs used to tell the stories and the suppliance of –le. There was no difference between the groups on the total number of verbs used ($F < 1$, $p = .52$, $\eta_p^2 = .008$), the number of telic verbs ($F < 1$, $p = .84$, $\eta_p^2 = .001$), and the percentage of –le on telic verbs ($F < 1$, $p = .72$, $\eta_p^2 = .003$). The

Table 1. Average (SD) number of verbs and –*le* production in Mandarin

	Monolingual	Bilingual
Total # Verbs	21.9 (16.1)	24.8 (16.9)
#Telic Verbs	10.6 (10.1)	13.3 (10.3)
% Telic verbs with –*le*	46.8% (26.1%)	31.2% (13.3%)
% –*le* on Telic Verbs	70.3% (20.9%)	68.1% (20.8%)

Table 2. Average (SD) number of verbs and –*ed* production in English

	Monolingual	Bilingual
Total # Verbs	13.2 (8.1)	20.5 (20.8)
#Telic Verbs	7.4 (5.7)	13.4 (15.5)
% Telic verbs with –*ed*	31.0% (26.6%)	19.2% (21.9%)
% –*ed* on Telic Verbs†	69.9% (40.0%)	93.3% (12.1%)

Note. † Based on the 22 monolingual children and the 19 bilingual children who produced –*ed* at least once.

monolingual children did, however, use a significantly higher percentage of telic verbs with –*le* than bilinguals ($F(1,47) = 7.54$, $p = .008$, $\eta_{p}^{2} = .129$). Thus, for the most part, the bilinguals were using –*le* like the same-aged monolinguals.

English tense use

Table 2 summarizes the number of verbs, and –*ed* in English. Mann–Whitney tests revealed no significant differences between the two groups on the number of verbs they used ($p = .44$), the number of telic verbs ($p = .32$), or the percentage of telic verbs with –*ed* ($p = .18$). There was a trend for the bilingual children to use a greater percentage of –*ed* on telic verbs than the monolingual children ($p = .08$). As shown in Table 2 and Figure 2, when the bilingual children supplied –*ed*, they almost always did so on telic verbs.

Bilingual children: Differences and similarities between –le and –ed

To see if the bilingual children used –*le* and –*ed* differently, we compared their performance in the two languages with paired *t*-tests. The bilingual children produced significantly more telic verbs marked for –*le* in Mandarin than telic verbs marked for –*ed* in English ($t(25) = 2.22$, $p = .036$) (see Tables 2 and 3). They produced more –*ed* on telic verbs in English than they did –*le* on telic verbs in Mandarin ($t(17) = 4.72$, $p < .001$) (see Figure 2). These results suggest that they are using –*ed* differently from –*le*.

The percentage of telic verbs marked for –*le* was not correlated with the percentage of telic verbs marked for –*ed* ($r(24) = -0.193$, $p = .35$). And the percentage of –*le* produced on telic verbs was not correlated with the percentage of –*ed* produced on telic verbs ($r(17) = 0.128$, $p = .60$). These results further suggest that they are using –*ed* differently from –*le*.

Table 3. Correlations between age/vocabulary and suppliance of –*le* and –*ed*

	%Telic verbs with –*le*		%Telic verbs with –*ed*	
	Chinese monolingual	Bilingual (Chinese)	Bilingual (English)	English monolinguals
Age	−0.047	−0.002	0.261	−0.226
Chinese PPVT	0.100	0.182	0.183	n.a.
English PPVT	n.a.	0.070	−0.039	−0.076
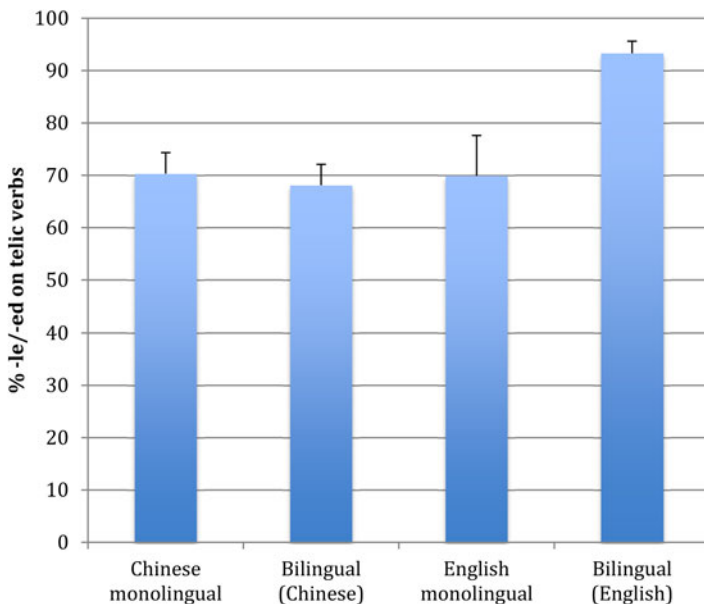
Figure 2. Average percentage of –*le* or –*ed* suppliance on telic verbs. Error bars show standard error around the mean.

Correlations to age and vocabulary scores

Table 3 summarizes the Pearson correlations for age/vocabulary and the percentage of telic verbs on which the children added –*le* or –*ed*. None of these correlations reached significance.

Discussion

The purpose of this study was to test two reasons why Mandarin–English bilingual children might show difficulties with –*ed* in English: (1) morphophonological transfer from Mandarin, and (2) interpretation of –*ed* as an aspect marker of completion like –*le* in Mandarin.

We found evidence in line with the prediction of morphophonological transfer. As has been found in other studies (Nicoladis *et al.*, 2012), the Mandarin–English bilingual children in this study produced irregular past tense forms more accurately than regular forms. Recall that the addition of –*ed* on an English verb can often result in complex codas that do not appear in Mandarin. The bilingual children may therefore be attempting to avoid complex codas. Due to the small number of regular verbs produced in this study, we could not perform a systematic phonological analysis to verify this interpretation. Such an analysis awaits future research that elicits many regular verbs from participants.

As for the prediction that bilingual children might initially interpret –*ed* as an aspect marker of completion like the Mandarin –*le*, some results appeared consistent with this prediction, supporting some previous research (Collins, 2002). For example, the vast majority of their suppliance of –*ed* (93%) was on telic verbs, suggesting that when they used it, they meant to mark completion. Moreover, as seen in Figure 2, the suppliance of –*ed* on telic verbs in English was higher than any other group.

However, it was not clear that the bilingual children were using –*ed* as a translation of –*le* (cf. Liu, 2015). The suppliance of –*ed* on telic verbs was higher than the suppliance of –*le* on telic verbs in Mandarin. Moreover, the percentage of telic verbs marked with –*ed* was significantly lower than for –*le*, and the percentages were not correlated across languages (cf. Liu, 2015). One possible explanation for these results is that the input in English allows the interpretation that –*ed* is an aspect marker (Andersen & Shirai, 1994). In line with this explanation, the majority of the English monolingual children's suppliance of –*ed* (70%) was on telic verbs. Since regular verbs in English often appear less frequently than irregular verbs (Nicoladis *et al.*, 2007), L2 learners of English may receive little evidence in the early phases of L2 acquisition that –*ed* does not mark aspect. Future studies can test this explanation by analyzing the input to L2 learners.

This interpretation of the results is compatible with the Aspect Hypothesis (Andersen & Shirai, 1994). According to this hypothesis, language learners are highly sensitive to and therefore learn early semantic characteristics of their input (like aspect). Anderson and Shirai argue that distributional characteristics in the input to even English monolingual children bias them to use past tense marking as aspectual marking of completeness when they first start producing it. If so, then the present results are consistent with the argument that bilinguals acquire the past tense in English through the same process as monolinguals, but lag behind due to less exposure (Jia, 2003; Nicoladis *et al.*, 2007; Nicoladis *et al.*, 2012; Shirai, 2003). In a case study, Gavruseva (2002) showed that a Russian–English sequential bilingual child initially produced bare verbs in English before starting to mark for tense in English, following the same developmental patterns that have been reported for English monolingual children (Marchman & Bates, 1994). Indeed, even in the present study, we showed that the bilingual children's accuracy was correlated with their English vocabulary scores, suggesting that they improve as their exposure to English increases.

There are a number of limitations to this study. The study included only a small number of participants so it is important to replicate the results using larger samples. The present study relied on an indirect measure of morphophonological transfer (i.e., accuracy with regular and irregular verbs). As noted earlier, the children only produced a small number of regular verbs. Future studies can elicit more regular verbs with greater control over the allophonic variations of –*ed* as well as

irregular verbs that include targeted codas that could be difficult for L1 Chinese speakers. Finally, of particular import to testing the argument that these results are consistent with the Aspect Hypothesis, future studies should include analyses of the distributional properties of tense and aspect marking in the input to bilingual children (Andersen & Shirai, 1994).

Despite these limitations, the data presented here are consistent with the argument that Mandarin–English sequential bilinguals have difficulties with –*ed* in English at least in part because of morphophonological transfer from Mandarin. In addition, they may initially interpret –*ed* as an aspect marker rather than a tense marker. We have interpreted the results as being in line with the Aspect Hypothesis, suggesting that the children may not have had sufficient exposure to English to learn –*ed* as a tense marker. However, we cannot entirely rule out the possibility that the bilingual children interpreted –*ed* as a translation of the Chinese aspect marker –*le* with the present results. Future research can test for the origin of children's interpretation of –*ed* as an aspect marker.

References

Andersen, R. W., & Shirai, Y. (1994). Discourse motivations for some cognitive acquisition principles. *Studies in Second Language Acquisition*, *16*, 133–56.

Barbosa, P. G., Jiang, Z., & Nicoladis, E. (2019). The role of working and short-term memory in predicting receptive vocabulary in monolingual and sequential bilingual children. *International Journal of Bilingual Education and Bilingualism*, *22*(7), 801–17.

Bardovi-Harlig, K. (1999). From morpheme studies to temporal semantics: tense–aspect research in SLA. *Studies in Second Language Acquisition*, *21*, 341–82.

Bayley, R. J. (1994). Interlanguage variation and the quantitative paradigm: past tense marking in Chinese–English. In S. Gass, A. Cohen, & E. Tarone (Eds.), *Research methodology in second language acquisition* (pp. 157–81). Hillsdale, NJ: Erlbaum.

Brebner, C., McCormack, P., & Rickard Liow, S. (2016). Marking of verb tense in the English of preschool English–Mandarin bilingual children: evidence from language development profiles within subgroups on the Singapore English Action Picture Test. *International Journal of Language & Communication Disorders*, *51*, 31–43.

Chen, J., & Shirai, Y. (2010). The development of aspectual marking in child Mandarin Chinese. *Applied Psycholinguistics*, *31*, 1–28.

Collins, L. (2002). The roles of L1 influence and lexical aspect in the acquisition of temporal morphology. *Language Learning*, *52*, 43–94.

Duanmu, S. (2007). *The phonology of standard Chinese*. Oxford University Press.

Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test–Third Edition*. Circle Pines, MN: American Guidance Service.

Gavruseva, E. (2002). Is there primacy of aspect in child L2 English? *Bilingualism: Language and Cognition*, *5*, 109–30.

Goad, H., White, L., & Steele, J. (2003). Missing inflection in L2 acquisition: Defective syntax or L1-constrained prosodic representations? *Canadian Journal of Linguistics*, *48*, 243–63.

Hansen, J. G. (2001). Linguistic constraints on the acquisition of English syllable codas by native speakers of Mandarin Chinese. *Applied Linguistics*, *22*, 338–65.

Hawkins, R., & Liszka, S. (2003). Locating the source of defective past tense marking in advanced L2 English speakers. In R. van Hout, A. Hulk, F. Kuiken, & R. Towell (Eds.), *The lexicon–syntax interface in second language acquisition* (pp. 21–44). Amsterdam: John Benjamins.

Hoang, H., Nicoladis, E., Smithson, L., & Furman, R. (2016). French–English bilingual children's tense use and shift in narration. *International Journal of Bilingualism*, 20, 750–69.

Jia, G. (2003). The acquisition of the English plural morpheme by native Mandarin Chinese-speaking children. *Journal of Speech, Language, and Hearing Research*, 46, 1297–311.

Lardiere, D. (1998). Case and tense in the 'fossilized' steady state. *Second Language Research*, 14, 1–26.

Leung, Y. I. (2006). Verb morphology in second language versus third language acquisition: the representation of regular and irregular past participles in English–Spanish and Chinese–English–Spanish interlanguages. *EUROSLA Yearbook*, 6, 27–56.

Liu, H. (2015). Imperfective and perfective aspect comprehension in bilingual Mandarin–English children. Unpublished master's thesis at The University of Texas at Austin. Online <https://repositories.lib.utexas.edu/handle/2152/32235?show=full>.

Marchman, V. A. (1997). Children's productivity in the English past tense: the role of frequency, phonology and neighborhood structure. *Cognitive Science*, 21, 283–304.

Marchman, V. A., & Bates, E. (1994). Continuity in lexical and morphological development: a test of the critical mass hypothesis. *Journal of Child Language*, 21, 339–66.

Marcus, G. F., Pinker, S., Ullman, M. T., Hollander, M., Rose, T. J., & Xu, F. (1992). Overregularization in language acquisition. *Monographs of the Society for Research in Child Development*, 57 (4, Serial No. 228).

Nicoladis, E., & Jiang, Z. (2018). Language and cognitive predictors of lexical selection in storytelling for monolingual and sequential bilingual children. *Journal of Cognition and Development*, 19, 413–30.

Nicoladis, E., Palmer, A., & Marentette, P. (2007). The role of type and token frequency in using past tense morphemes correctly. *Developmental Science*, 10, 237–54.

Nicoladis, E, Song, J., & Marentette, P. (2012). Do young bilinguals acquire past tense morphology like monolinguals, only later? Evidence from French–English and Chinese–English bilinguals. *Applied Psycholinguistics*, 33, 457–79.

Paradis, J. (2011). Individual differences in child English second language acquisition: comparing child-internal and child-external factors. *Linguistic Approaches to Bilingualism*, 1, 213–37.

Shirai, Y. (2003). The acquisition of tense–aspect morphology and the regular–irregular debate. *ZAS Papers in Linguistics 29*, 195–209.

Song, J. Y., Sundara, M., & Demuth, K. (2009). Phonological constraints on children's production of English third person singular –s. *Journal of Speech, Language, and Hearing Research*, 52, 623–42.

Woon, C. P., Yap, N. T., Lim, H. W., & Wong, B. E. (2014). Measuring grammatical development in bilingual Mandarin–English speaking children with a sentence repetition task. *Journal of Education and Learning*, 3, 144–57.

Yang, S. (2014). The L2 acquisition of the Chinese aspect marking. In W. Aroonmanakun, P. Boonkwan, & T. Supnithi (Eds.), *Proceedings of 28th Pacific Asia Conference on Language, Information and Computation* (pp. 299–308). Bangkok: Department of Linguistics, Faculty of Arts, Chulalongkorn University.