Different results have been reported between the offline questionnaire tasks eliciting preferred interpretations and the studies measuring reading speed (e.g., self-paced reading and eye-tracking studies) on the relative-clause (RC) attachments in the complex noun phrases (NPs), i.e., NP1 of NP2 followed by a relative clause, such as “the teacher of the student who was singing a song”. In the offline questionnaire studies, low attachments (LA) were preferred over high attachments (HA) in L1 English (Cuetos & Mitchell, 1988) and high attachments were preferred over low attachments in L1 Japanese (Kamide & Mitchell, 1997). The tendencies, however, were reversed in some online studies, for instance, reading times were faster in the LA-biased condition than in the HA-biased condition in L1 Japanese. The involvement of working memory (WM) capacity also made the results differ, i.e., HA preferences rose with the increase of working memory (WM) capacity in L1 English (Traxler, 2007) and in L1 Japanese (Nakano, 2008).

In contrast, in L2 studies the discrepancies found in L1 studies have not been reported. Offline judgment tasks and online self-paced reading tasks in English (Felser et al., 2003) showed that advanced L2 learners (70% or more correct in the Oxford Placement Test) did not show any particular preference when NP1 and NP2 were linked with the preposition of (the GEN condition as in (1)), whereas when the two NPs were linked with the preposition with (the PP condition as in (2)), low attachments were preferred. The results also indicated native speakers’ preferences for low attachments over high attachments in both conditions. The difference between L1 and L2 studies calls for further investigations on L2 RC attachments with different language speakers. Structural differences between English and Japanese and different preferences by native speakers of English and Japanese enable us to contrast RC attachment preferences in L1 and L2.

1  2  3  4  5  6  7  
(1)  a. The runner /saw /the students /of /the teacher /who was singing /a song.  
    b. The runner /saw /the teacher /of /the students /who was singing /a song.  
(2)  a. The runner /saw /the students /with /the teacher /who was singing /a song.  
    b. The runner /saw /the teacher /with /the students /who was singing /a song.

We investigated RC attachments in the LA-biased (1a & 2a) and HA-biased (1b & 2b) sentences in English by using an offline questionnaire task and an eye-tracking technique with lower- and upper-level Japanese learners of English as well as native speakers of English as participants. An English reading-span test was also conducted for WM capacity.

The results for the questionnaire revealed that the native speakers preferred low attachments both in the GEN and PP conditions, regardless of their WM capacity, and that the high-span upper-level learners indicated HA preferences in the GEN condition and LA preferences in the PP condition. The rest of the participants showed no particular preferences for the GEN condition and LA preferences in the PP condition.

First-pass time, first-pass regressions, regression path time and total reading time were computed for each region. Region 6 was critical because the verb form, e.g., “was”, solved
the ambiguity of the two antecedents. It has been assumed that the four types of data are related to different cognitive processing stages (Pickering et al., 2004). We found the following results in Region 6 and/or 7.

Native speakers of English showed no particular preferences in the first-pass time. They showed no preferences in the GEN condition but the LA preference in the PP condition for the first-pass regressions. For the regression path time they showed the LA preference but they did not indicate any preferences in the PP condition. As for the total reading time, for the GEN condition they indicated the HA preference, and for the PP condition the LA preference. Upper-level learners showed the HA preference in the GEN and the PP conditions for the first-pass time. They showed no preference in either the GEN or the PP condition for the first-pass regressions. For the regression path time as well as for the total reading time, they showed the LA preference in the GEN condition but no preference in the PP condition. Low-level learners showed no preference in either the Gen or the PP condition for the first-pass time, the regression path time or the total reading time. They indicated no preference in the GEN condition but showed the LA preference in the PP condition for the first-pass regressions.

The upper-level learners made attachment decisions in the early stage of processing, whereas the native speakers did not until they had read the sentences through. In other words, the two groups took different strategies. The attachment decisions at the initial stage (reflected in the first-pass time) lead us to assume the incremental parser for the upper-level learners, and the shift from HA to LA preferences indicated the later occurrence of a reanalysis. When the native speakers encountered structural ambiguities, even if their parser was also incremental, they looked for cues to solve the ambiguities. No preference found in the lower-level learners in the GEN and the PP conditions could be due to the difficulties of the experimental sentences for them to decide antecedents.

Different attachment preferences for the three participant groups could be attributed to varying proficiency levels and working memory capacity. Consistent with Traxler (2007), the results for the native speakers of English indicated an increase of HA preferences and a possible influence of different WM capacity on the attachment decisions. In contrast, no clear influence of WM capacity on the attachment decisions was found in the non-native speakers, which could result in the above-mentioned different attachment preferences.

References: