

Psycholinguistic Evidence on RTO construction in Japanese

1. GENERAL AIM

The aim of the present experiment is to provide psycholinguistic evidence to the issue of the structure of *Raising-to-Object* (RTO) constructions in Japanese (as in (1a)); especially, the controversial issue on the position of the accusative case-marked subject (ACC subject)—(i) [Spec, TP] in the embedded clause or (ii) [Spec, CP] in the embedded clause. Our experimental results show that the ACC subject in RTO is generated in the embedded [Spec, CP].

2. SYNTACTIC ISSUE: THE POSITION OF THE ACC SUBJECT IN RTO

Japanese has some types of small clause, one of which we are concerned with is the finite small clause, as exemplified in (1). The subject of an embedded finite small clause can be marked with accusative case (as in (1a)), which is called *Raising-to-Object* (RTO) constructions. A question to be addressed is what the internal structure of RTO is; especially, our concern is where the ACC subject (e.g., ‘Hanako-o’ in (1a)) is generated. As to the position of the ACC subject in RTO, opinions are divided into two lines of research in the Japanese generative grammar:

- (i) *ACC subject in [Spec, TP] in the embedded clause* (Ueda 1988; cf. Hiraiwa 2002; Kuno 1976; Tanaka 2002)

Taro-ga [CP [TP Hanako-o [VP kashikoi]] to] omot-ta.

- (ii) *ACC subject in [Spec, CP] in the embedded clause* (M. Kuno 2001; cf. Massam 1984, 1985)

Taro-ga [CP Hanako-o [TP [VP kashikoi]] to] omot-ta.

3. PROCESSING OF WH-DEPENDENCY

To interpret *wh*-sentences in Japanese, the parser needs to link a *wh*-phrase to a question particle Q, *-ka* or *-no*, as in (2). Miyamoto & Takahashi (2001) demonstrated that in (3a) reading times slowed down at the declarative complementizer *-to* ‘that’ (*a slow-down effect*), as compared with (3b), which indicates that the Japanese parser expects a *wh*-phrase to make a dependency relation with a question particle Q as soon as possible (see also Aoshima *et al.* 2003).

As the (un)grammaticality of the sentences in (4) indicates, in Japanese a *wh*-phrase must be c-commanded by a question particle Q of a clause in which it takes scope (*the Licensing condition on wh-phrase* (cf. Nishigauchi 1990)). Let us look at (3a) in light of the licensing condition; the *wh*-phrase in (3a) is in the domain as required by the licensing condition, but the complementizer is not adequate for *wh*-licensing since it is not a question particle Q. Thus a slow-down effect at the complementizer *-to* was observed when a *wh*-phrase is within TP (i.e., within the c-commanding domain of a question particle Q) and a complementizer is *not* a question particle Q. Hence, a slow-down effect at the complementizer *-to* diagnoses whether a *wh*-phrase is within TP or not. By examining whether such a slow-down effect is observed in RTO, we will get a hint for where the ACC subject is generated; [Spec, TP] (as in (i)) or [Spec, CP] (as in (ii)).

4. READING-TIME EXPERIMENT: WHERE IS THE ACC SUBJECT IN RTO?

Twenty-nine native speakers of Japanese were timed in a phrase-by-phrase self-paced moving-window reading task. Fifteen sets of experimental items were constructed, each with the three conditions (see (5) for an example set).

Following Miyamoto & Takahashi (2001), a slow-down effect at the complementizer *-to* in (5a) is expected, as compared with (5b). We have replicated their findings, such that reading times at the complementizer were significantly slower in (5a) ($M=899$, $SD=305.42$) than those in (5b) ($M=759$, $SD=215.50$) ($t(28)=4.549$, $p=.000$). What has to be noted here is that if a parallel slow-down effect is *not* observed in the case of the ACC subject as in (5c), it tells us that the *wh*-phrase (i.e., ACC subject) is not within TP in RTO; the remaining option for the position of the ACC subject is [Spec, CP] (as in (ii)). Interestingly enough, reading times at the complementizer *-to* in (5c) ($M=734$, $SD=207.75$) were no slower than those in (5b) ($M=759$, $SD=215.50$) ($t(28)=1.727$, $p=.095$). Thus, in RTO (as in (5c)) a slow-down effect at the complementizer *-to* was not observed. This suggests that the ACC subject in RTO is *not* within TP. The structure of RTO is (6): The ACC subject in RTO is in [Spec, CP].

EXAMPLES

- (1) a. Finite Small Clauses with ACC subject (*Raising-to-Object (RTO) Constructions*):
 Taro-ga [_{finite small clause} **Hanako-o** kashikoi] to omot-ta.
 Taro-NOM Hanako-ACC intelligent that think-PAST
 ‘Taro thought that Hanako was intelligent.’
- b. Finite Small Clauses with NOM subject:
 Taro-ga [_{finite small clause} **Hanako-ga** kashikoi] to omot-ta.
 Taro-NOM Hanako-NOM intelligent that think-PAST
 ‘Taro thought that Hanako was intelligent.’
- (2) Taro-ga **donna**-pasokon-o kaimashi-ta *(ka)?
 Taro-NOM what-kind-computer-ACC buy-PAST Q
 ‘What kind of computer did Taro buy?’
- (3) a. Senmu-ga **donna**-pasokon-o tukat-teiru **to** kakarichoo-ga it-ta no?
 Director-NOM what-kind-computer-ACC use-PROG that supervisor-NOM say-PAST Q
 ‘What kind of computer did the supervisor say the director is using?’
- b. Senmu-ga **donna**-pasokon-o tukat-teiru **ka** kakarichoo-ga it-ta no?
 Director-NOM what-kind-computer-ACC use-PROG Q supervisor-NOM say-PAST Q
 ‘Did the supervisor ask what kind of computer the director is using?’ (Miyamoto & Takahashi 2001)
- (4) a. Taro-ga Hanako-ni [[Jiro-ga **dare-o** nagut-ta] **ka**] oshie-ta.
 Taro-NOM Hanako-DAT Jiro-NOM who-ACC hit-PAST Q tell-PAST
 ‘Taro told Hanako who Jiro hit.’
- b.* Taro-ga **dare-ni** [[Jiro-ga Hanako-o nagut-ta] **ka**] oshie-ta.
 Taro-NOM who-DAT Jiro-NOM Hanako-ACC hit-PAST Q tell-PAST
- (5) Experimental Items:
- a. *Wh*-phrase_{NOM} + *that*: Taro-ga [_{CP} [_{TP} **dono-ko-ga** kashikoi] **to**] it-teimashi-ta ka?
 Taro-NOM which-girl-NOM intelligent that say-PROG-PAST Q
 ‘Which girl was Taro saying is intelligent?’
- b. *Wh*-phrase_{NOM} + *Q*: Taro-ga [_{CP} [_{TP} **dono-ko-ga** kashikoi] **ka**] it-teimashi-ta ka?
 Taro-NOM which-girl-NOM intelligent Q say-PROG-PAST Q
 ‘Was Taro saying which girl is intelligent?’
- c. *Wh*-phrase_{ACC} + *that* (*Raising-to-Object construction*):
 Taro-ga **dono-ko-o** kashikoi **to** it-teimashi-ta ka?.
 Taro-NOM which-girl-ACC intelligent that say-PROG-PAST Q
 ‘Which girl was Taro saying is intelligent?’
- (6) *Raising-to-Object Constructions* (cf. (1a))
 Taro-ga [_{CP} **Hanako-o** [_{TP} kashikoi] to] omot-ta.
 Taro-NOM Hanako-ACC intelligent that think-PAST

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