

Frequency regulates argument sharing effects in Hindi light verb constructions

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Light verb constructions (LVCs) e.g. *make an announcement* differ from their non-light counterparts (e.g. *make a coffee*) due to the presence of *two* predicating elements (*make* and *announcement*) in the former. Cross-modal lexical decision tasks (CMLD) in German and English (Wittenberg and Pinango, 2011, Pinango et. al, 2006) have shown that reaction times (RTs) for LVCs are higher for a secondary task while processing LVCs, compared to fully transparent constructions; longer reading times in LVCs have also been found in Italian (Caiola, 2017). Other studies have shown that they show a different processing profile in neurobehavioral studies (Briem et al., 2010; Wittenberg et al., 2014;).

Hindi shows a substantially higher percentage of LVCs, compared to Indo-European languages. The question we ask is whether frequency effects can modulate, or even override, such previously found robust effects. We replicate these studies for Hindi using both self-paced reading (SPR) and a CMLD task. With about two-thirds of data collected, we find no difference in RTs between light and non-light cases, indicating that frequency effects seem to modulate argument sharing effects.

The CMLD and SPR studies each consist of 15 items across three conditions: Light (1a), Non-Light (1b) and Anomalous (1c) (see Appendix). Each item had the same verb, but a different noun balanced for frequency. Items were presented auditorily in a latin square design for the CMLD study. A semantically unrelated lexical probe was shown 300ms (Study 2) or immediately (Study 3) after the verb was heard and reaction times were recorded. Each participant also heard 25 filler sentences and was asked 20 comprehension questions on both the filler and experimental items. The same items were presented for the SPR study using Linger, with reading times measured.

Study 1. In the self-paced reading version of this study, we found significantly longer RTs were for the anomalous condition at the verb (Anom=576; Light=491; NonLight=466; $p < 0.02$). This indicates that Hindi behaves similarly to English and German with respect to anomalous light verb constructions.

Study 2 (CMLD). The results from 38/40 Hindi speakers (avg age=20.5) show no significant difference in reaction times between the three conditions (Light=485.68, NonLight=484.114, Anom=526.22, $ps > .05$). In **Study 3 (CMLD, 63/83 native speakers)**, we found again no significant differences between the three conditions (Light=517.5; NonLight=592.0, Anom=514.5; $ps > .05$).

Study 4 (CMLD). We also carried out an additional experiment to understand the effect of frequency. We examined cloze probabilities for the light and non-light conditions, and extracted 10 of the original 15 items based on their maximally different cloze probabilities. To this, we added 5 new items with similar cloze. While the reaction times showed a trend where the Light condition took longer than the others (44/65 native speakers, Light=850.8; NonLight=728.4, Anom=741.6;), the differences were not significant. We also analyzed the interaction between noun frequency and the three conditions; half the nouns were high frequency as compared to the other half. We found no significant interaction, although frequency alone was marginally significant ($p < 0.06$).

Although the results for the maximally different cloze items were not significant, we think that the reaction times show a promising trend. At the same time, this work also raises the question of whether the

cognitive mechanisms described previously for Germanic and Romance languages are present for Hindi speakers.

Appendix

(1a) Light verb construction:

apne samay kaa prabandhan karnaa mushkil hai isliye adhyapak ne vidyarthi ko bhaashan diyaa aur kuch aasaan upaay bhi bataaye.

“It is difficult to manage one's time, that's why the teacher **gave** the student **a lecture** and also gave him some useful tips”

(1b) Non-Light construction:

apne samay kaa prabandhan karnaa mushkil hai isliye adhyapak ne vidyarthi ko calendar diyaa aur kuch aasaan upaay bhi bataaye.

“It is difficult to manage one's time, that's why the teacher **gave** the student **a calendar** and also gave him some useful tips”

(1c) Anomalous construction:

apne samay kaa prabandhan karnaa mushkil hai isliye adhyapak ne vidyarthi ko *silsilaa diyaa aur kuch aasaan upaay bhi bataaye.

“It is difficult to manage one's time, that's why the teacher **gave** the student a ***happening** and also gave him some useful tips”

References

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