Word Processing and Narrator Perspective: Differences Between Deaf and Hearing Bilinguals

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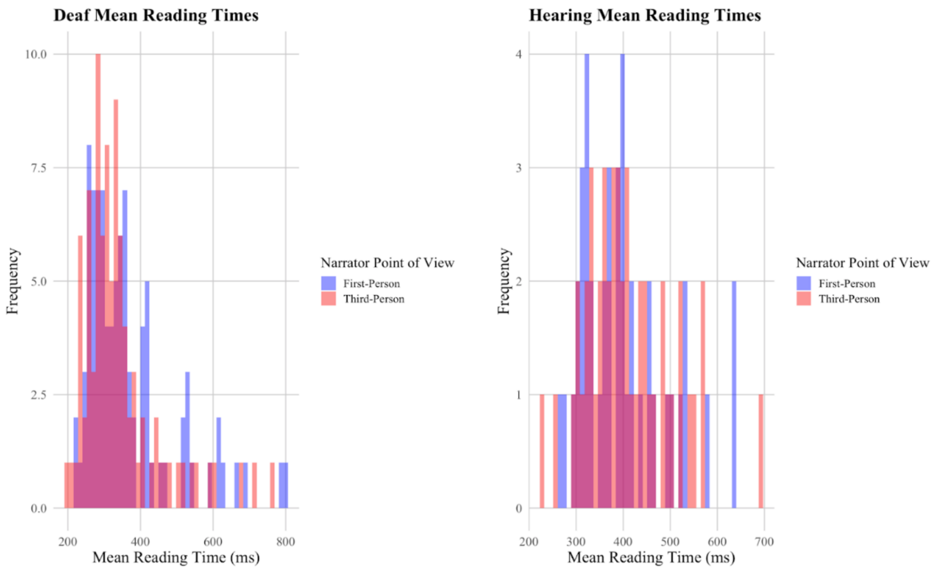
Discourse genre affects online processing, products of comprehension processes, and memory for those products (Zwaan, 1994; Zwaan & Radvansky, 1998; Clinton et al., 2020). Comprehenders take on the perspective of characters and narrators, and this affects their responses to words in texts (Bower, 1979; Morrow et al., 1989; Smith et al., 2023). Narrator person affects outcomes of discourse processing (e.g., Mulcahy et al., 2016), but we have little data about the effects of narrator perspective (first vs. third) on word processing time and little information about these effects in second language processing. In this project, we assessed the effect of narrator perspective on word reading times in both hearing (Chinese-English) and deaf (ASL-English bilinguals). In addition, we used multilevel models to evaluate potential individual reader characteristics (vocabulary knowledge, nonverbal IQ, and phonological decoding ability) as moderators of narrator perspective effects. Recent studies indicate that those two groups of readers respond differently to lexical characteristics of anaphors (first vs. second vs. third person expressions) and have different individual characteristics that moderate surface and conceptual distance effects (Sendek et al., 2023). ASL-English bilinguals' dominant language has *indexical shift*, in which a speaker or signer embodies a third person referent while using first person grammatical form (Deal, 2020; Quer, 2005), while Mandarin reportedly does not. Hence, we predict differences in processing time across deaf and hearing (Mandarin-English) bilinguals rooted in language transfer from their L1.

To test effects of narrator perspective (1st vs. 3rd), we analyzed self-paced reading (moving window) data from 92 ASL-English (deaf) and 49 Mandarin-English (hearing) bilinguals. We analyzed self-paced reading times for just over 5000 words per participant, drawn from 5 naturally occurring English narrative and expository texts. About 1700 words were embedded in first-person and about 3400 words were embedded in third-person narration. Before analysis, we transformed raw reading times to log RT to improve normality. For each reader, we eliminated individual data points lying more than 3 SD from the individual's mean reading time for each condition (first vs. third person narration). In addition, each participant completed the Kaufman Brief Intelligence Test (KBIT), the Nelson-Denny vocabulary measure, and a phonological decision test. We subjected the data to a linear mixed effects regression in R (R core development group), evaluating effects of group (ASL vs. Mandarin-English bilingual), narrator person (first versus third), and group by narrator person interactions. Because the third person narration had slightly longer (7.96%) and slightly less frequent (-9.34%) words, and because length and frequency were highly correlated ($r = -.78$), we included frequency as a covariate in the main analysis. Reading time was modeled as a function of group (deaf vs. hearing), narrator point of view (first vs third), Nelson Denny, KBIT, and phonological accuracy scores for each individual. Word frequency was a covariate. An interaction term between group and narrator point of view was included, along with a random-effect for subject and a crossed-effect for text. Lastly, a random slope for narrator point of view was included.

The group by narrator person interaction was significant ($B=8.13\times10^{-2}$, $SE=2.05\times10^{-2}$, $p< .001$), as was phonological accuracy ($B= -2.51\times10^{-5}$, $SE=7.29\times10^{-6}$, $p< .001$), and group ($B=1.55\times10^{-1}$, $SE=4.84\times10^{-2}$, $p< .01$). For the hearing group, third-person narration produced longer reading times compared to first-person. In the deaf group, third-person narration produced shorter reading times compared to first-person. An exploratory analysis of within group predictors showed that KBIT scores ($B=1.30\times10^{-3}$, $SE=2.10\times10^{-4}$, $p<.001$) and phonological accuracy scores ($B=-1.49\times10^{-3}$, $SE=7.94\times10^{-5}$, $p<.001$) moderated the association between narrator point of view and reading times among deaf readers. Only KBIT scores ($B= 1.33\times10^{-2}$, $SE=6.51\times10^{-4}$, $p<.001$) moderated the association between narrator point of view and reading times among the hearing group.

Hence, deaf and hearing bilinguals responded differently to narrator perspective information. Deaf readers sped up when narrator perspective changed from first to third person. This could be a consequence of language transfer from ASL rooted in *indexical shift*.

Figure 1



Note. Sampling distribution of first and third person mean reading times for deaf (ASL-English) and hearing (Mandarin-English) participants.

Table 1

Model Predicting Log Transformed Reading Times

Term	β	SE	P
Intercept	5.91	8.19E-02	<.001
Narrator (third)	-6.15E-02	1.00E-01	0.58
Group (hearing)	1.55E-01	4.84E-02	0.002
Nelson-Denny	-1.27E-03	1.39E-03	0.36
KBIT	-6.30E-03	5.00E-03	0.21
Phonological Accuracy	-2.51E-05	7.29E-06	<.001
Word Frequency	-2.28E-02	2.53E-04	<.001
Narrator (third) x Group (hearing)	8.13E-02	2.05E-02	<.001

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