

A cross-modality study of prosody in Mandarin and Taiwan Sign Language

Properties of the prosodic system are common to languages in both modalities, spoken and signed (Sandler & Lillo-Martin 2006). This study focuses on the boundary marking of prosodic units in a spoken language, Mandarin Chinese, and a signed language, Taiwan Sign Language (TSL). Narratives of the wordless storybook *Frog, where are you?* (Mayer 1969) of eight native Mandarin speakers and three native TSL signers were analyzed using PRAAT and ELAN, respectively. Prosodic pauses in Mandarin narratives were coded with the Pan-Mandarin M-ToBI System (Peng et al., 2005), in which B3 corresponds to phonological phrase (PP) and B4 corresponds to intonational phrase (IP) in the prosodic hierarchy (Selkirk 1984, Nespor & Vogel 1986). Tokens and durations of B3 (PP) and B4 (IP) of Mandarin narratives were measured. For TSL, three manual prosodic boundary markers were coded, i.e., hold, reduplication, and pause (Nespor & Sandler 1999). Reduplication refers to the repetition of the last sign in a prosodic unit, while hold and pause differ in that there is hand-drop in pause (see Figures 1 and 2). The following are the major findings. Firstly, pauses were used highly frequently in Mandarin (average across speakers – 103 PP pauses and 65 IP pauses), while only sporadically, if any, in TSL (only one of the three signers used pauses - only 3 IP pauses). This could be due to the physical constraint of relatively short breathing span in spoken language production, which does not exist in signed language production, i.e., a modality effect. Secondly, if hold and reduplication are also considered pauses, the average was 31 tokens for PP and 26 tokens for IP in TSL, still much fewer than in Mandarin. Thirdly, regarding the hierarchical prosodic structure (PP < IP < P-utterance), these two languages with different modalities, showed similar patterns with fewer IP pauses (65 in Mandarin, 26 in TSL) than PP pauses (103 in Mandarin, 31 in TSL) and longer IP pauses (244ms in Mandarin, 344ms in TSL) than PP pauses (661ms in Mandarin, 619ms in TSL). Further research will include other issues regarding prosodic cues, e.g., phrase-final lengthening, non-manual markings, such as eye brows raising, eye gaze, blink, head tilt, at prosodic boundaries (e.g., Nespor & Sandler. 1999, Zeshan 2004, Tang et al. 2010).

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Figure 1 An example of Hold in TSL (with the permission of the signer)



MALE-CHILD

CHILD

LOOK-FOR *hold*

"The boy looks for (the frog)."

Figure 2 An example of Pause in TSL (with the permission of the signer)



CHILD

pause (drop-hand)

MALE (BOY)

(end of an IP)

(beginning of another IP)