The Perception of Emotional Prosody in Novice and Advanced L2 Chinese Learners

Emotional prosody refers to the ways in which tone of voice can be modulated to convey emotions, feels, and attitudes (Kemmerer, 2014). In a tonal language such as Mandarin Chinese, the tone of voice can be used to encode both emotional prosody and lexical tone (Xu, 2005; Yip, 2002). This dual function of tone of voice poses a challenge for L2 Chinese learners to process linguistic (e.g., lexical tone) and paralinguistic cues (e.g., emotional prosody) simultaneously (Kao & Zhang, 2020; Taguchi, 2008). Prior research in L2 English learners showed that increasing L2 learning experience interfered with the perception of emotional prosody, particularly for positive emotions (Bhatara et al., 2016). However, it is unknown whether this pattern holds for L2 Chinese learners. Therefore, the current study examines the perception of emotional prosody for novice and advanced L2 Chinese learners in Mandarin Chinese words and sentences.

We recruited two groups of participants: novice (N = 14, L2 Chinese experience < 6 months) and advanced (N = 18, L2 Chinese experience >3 years) L1-English L2-Chinese learners. We asked a professional female voice actress recorded the stimuli expressing four types of emotional prosody: neutral, joy, anger, and sadness. We also manipulated the syllable length of the stimuli: monosyllabic word, disyllabic word, trisyllabic word, and sentence, resulting in a total of 144 utterances. Participants were asked to listen to a series of audio clips, one at a time, and then judged the emotional prosody type for each utterance in a 4-forced-alternative-choice task. Table 1 provides examples of these stimuli.

We tested whether L2 Chinese learners' perception of emotional prosody would be affected by group (novice vs. advance), emotional prosody type (neutral, joy, anger, and sadness), and syllable length (monosyllable, disyllable, trisyllable, and sentence). Overall, both novice and advanced L2 Chinese learners showed very high accuracy in recognizing emotional prosody across different emotional prosody types and syllable lengths (shown in Figure 1). A marginal main effect of group indicated that novice learners (mean accuracy: 96.2%) were more accurate than advanced learners (mean accuracy: 93.5%). Post-hoc analyses using Tukey's tests confirmed that novice learners outperformed advanced learners in the perception of emotional prosody ($p < 0.001$), especially in identifying positive emotions (e.g., joy) and with shorter stimuli (e.g., monosyllable). Moreover, there was a main effect of emotional prosody type: both groups recognized positive emotional prosody (e.g., joy) less accurately than neutral ones ($p < 0.05$); However, there was no significant difference between neutral emotional prosody and negative emotional prosody (e.g., anger or sadness). Furthermore, there was a main effect of syllable length: both groups recognized emotional prosody in monosyllabic word less accurately than in the sentence ($p < 0.001$). Tukey's post-hoc analyses revealed that the recognition of emotional prosody improved as syllable length increased.

In summary, we found that both novice and advanced learners can accurately perceive emotional prosody in Mandarin Chinese words and sentences, even when the emotional prosody is presented in a single syllable. Notably, novice Chinese learners were more accurate at identifying emotional prosody than advanced Chinese learners, especially in positive emotions or shorter stimuli. Our results suggest that second language proficiency may interfere with the perception of emotional prosody in a tonal language, which is consistent with previous findings from Bhatara et al. (2016).

Table 1. Example stimuli of Chinese words and sentences.

Example	**Monosyllabic word**	**Disyllabic word**	**Trisyllabic word**
Pinyin	xiū	shōu yīn	zhāng zhōng bīn
IPA	ɕəu^{1}	ʂəu^{1} in^{1}	ʈʂʷuŋ^{1} ʈʂʷuŋ^{1} pʲin^{1}
Chinese Character(s)	修	收 音	张 中 斌
English Translation	repair	Receive sound	Zhang Zhongbin
Example	**Sentence**		
Pinyin	zhāng zhōng bīn	xīng qī tiān	xiū shōu yīn jī
IPA	ʈʂʷuŋ^{1}ʈʂʷuŋ^{1}pʲin^{1}	ɕəŋ^{1}tɕʰi:^{1}tʰʲæn^{1}	ɕəu^{1} ʂəu^{1}in^{1}tɕi:^{1}
Chinese Characters	张 中 斌	星 期 天	修 收 音 机
English Translation	Zhang Zhongbin repairs radio on Sunday.		

Note. The superscripted numbers indicate the tone marker for each lexical tone. “1”: high-level tone; “2”: rising tone; “3”: low-rising tone; “4”: falling tone. Toneswere controlled for all stimuli condition.

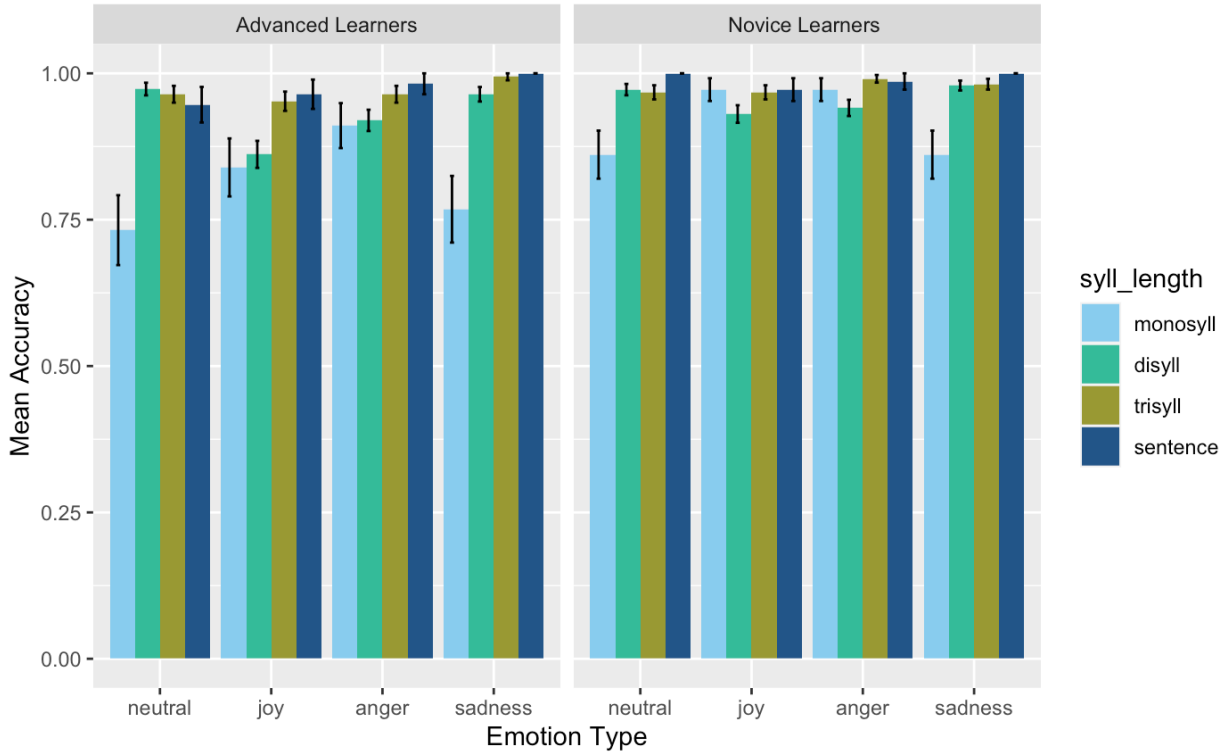

Figure 1. Mean accuracy rates of emotional prosody judgments across four emotion types and syllable lengths in two groups. The black vertical lines show the standard error.

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