

## Effects of learning experiences on emotional speech produced by Italian learners of Japanese

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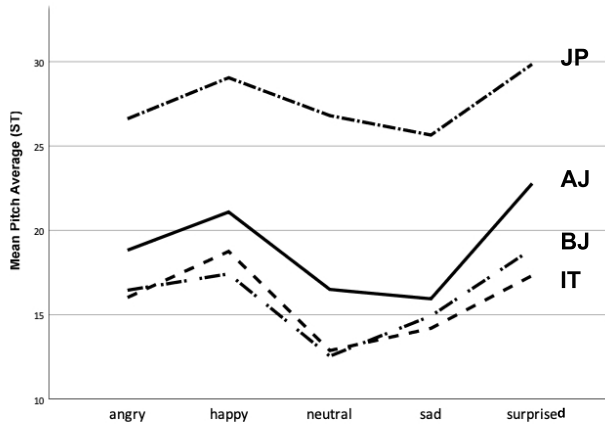
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Are emotions universal? Pioneering research (e.g., Eckman et al., 1971) claimed anger, disgust, fear, happiness, sadness and surprise as six basic universal emotions. Recent accumulating evidence shows cultural differences in emotion norms and ideal emotions (De Leersnyder et al. 2015): e.g., Western individualistic and Asian collectivistic cultures prefer high-activation positive (e.g., excitement) and low-activation positive states (e.g., serenity), respectively (Tsai et al., 2006). Cross-linguistic differences are also reported for emotional speech (e.g., Erickson, 2005). Such differences could lead to misunderstandings in cross-cultural communication: e.g., Chinese learners of Japanese cannot distinguish anger and sadness produced by L1 Japanese speakers (Li et al., 2018); L2 English-L1 Japanese does not sound dynamic enough for L1 American English speakers, projecting monotonous, cold or unfriendly impressions (Kaneko & Yamane, 2022).

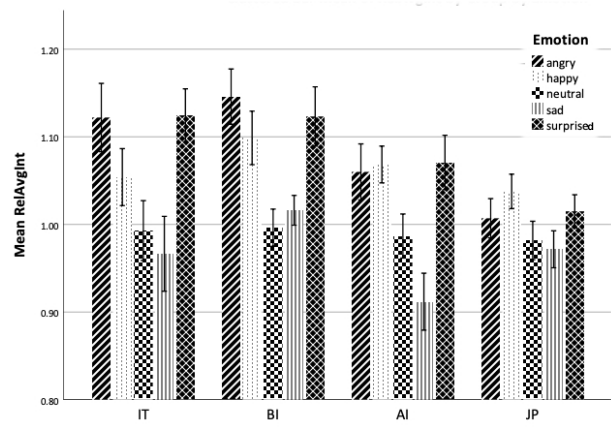
One of the biggest challenges for language learning is fitting in with the culture of the target language, which may involve some adjustment for how to express emotions. In face-to-face communication, emotion is a complex multimodal phenomenon – it is expressed and perceived using multiple cues. Italians are known to be expressive in the way they communicate verbally and nonverbally while Japanese are their opposite. What adjustment is likely to take place in the course of their development of Japanese emotional speech by Italian learners of Japanese immersed in the Japanese culture for a significant period of time? This small-scale study explores the question by analyzing acoustic patterns of emotional speech produced by experienced Italian learners of Japanese, considering both possible transfer and their experiences reported in a questionnaire.

We collected the data of advanced L2 Japanese-L1 Italian (3 males, 1 female; learning experiences of 16–22 years; living in Japan for 2–5 years; teaching Japanese in Italy), which was compared with that of L1 Japanese/JP (4 females), L1 Italian/IT (4 females) and beginning L2 Japanese-L1 Italian/BJ (4 females) from Ueyama and Li (2020). We followed the procedure of the construction of the KANI-J-Corpus (Hayashi et al., 2018): 5 single-word utterances were elicited for 5 emotions (neutral, angry, happy, sad and surprise) through a mimicked conversational task, i.e., 25 stimuli in total per speaker. Average, max and min values were measured for pitch (F0 in Hz) and intensity (amplitude in dB), using Praat; range values were calculated with max and min values. Pitch and intensity values were converted into semitones and relative intensity, respectively.

Pitch results show overall pitch was higher with a greater range in JP than in IT and BJ, whereas AJ is found somewhere in the middle (Fig. 1). For all four pitch parameters, two-way ANOVA analysis shows significant effects for both Emotion Type and Speaker Group ( $\alpha=0.05$ ). For pitch average, max and range, post hoc Tukey tests show significant mean differences among the four groups except for IT and BJ, which results in the following ranked grouping: (JP) > (AJ) > (BJ, IT). For intensity, the “eyeball” inspection of mean plots (Fig. 2 for average intensity) shows a clearer differentiation of emotions and an overall greater intensity in IT, BJ and AJ than in JP. Two-way ANOVA analysis shows significant effects for Emotion and Speaker Group for all four parameters. Post hoc analysis shows different ranked groupings of the speaker groups for different parameters: for average (BJ, IT) > (AJ, JP); for max (IT, BJ, AJ) > (JP); for min (BJ) > (IT) > (JP) > (AJ); for range (AJ) > (IT, BJ) > (JP). Intensity results showed two common characteristics for IT, BJ and AJ. First, intensity is more actively used to differentiate emotions than in JP (Table 1). Second, overall intensity is greater than in Japanese. Results suggest that experienced Italian learners make some adjustment to their speaking style in conveying emotions in L2 Japanese, such as using an overall higher pitch and lowering the volume of their voice to some extent while keeping their L1 Italian active use of intensity to differentiate emotions. Their responses to the questionnaire show that they made some effort to change their speaking style to fit in to the Japanese culture with the awareness of differences between the native and target languages in expressing emotions.



**Fig. 1.** Average pitch (in semitones) means plotted for speaker groups and emotions



**Fig. 2.** Average intensity means and standard errors plotted for speaker groups and emotions

<b>L1 Japanese/JP</b>	angry-happy	angry-neutral	angry-sad	angry-surprised
	*	n.s.	n.s.	n.s.
		happy-neutral	happy-sad	happy-surprised
		*	*	n.s.
			neutral-sad	neutral-surprised
		n.s.	n.s.	
<b>Advanced L2 Japanese/AJ</b>	angry-happy	angry-neutral	angry-sad	angry-surprised
	n.s.	*	*	n.s.
		happy-neutral	happy-sad	happy-surprised
		*	*	n.s.
			neutral-sad	neutral-surprised
		*	*	
<b>Beginning L2 Japanese/BJ</b>	angry-happy	angry-neutral	angry-sad	angry-surprised
	n.s.	*	*	n.s.
		happy-neutral	happy-sad	happy-surprised
		*	*	n.s.
			neutral-sad	neutral-surprised
		n.s.	*	
<b>L1 Italian/IT</b>	angry-happy	angry-neutral	angry-sad	angry-surprised
	n.s.	*	*	n.s.
		happy-neutral	happy-sad	happy-surprised
		n.s.	*	*
			neutral-sad	neutral-surprised
		n.s.	*	

\*= statistically significant ( $p < 0.05$ )      n.s. = statistically nonsignificant

**Table 1:** Results of post hoc Tukey tests for mean differences of average intensity between five emotions for each speaker group

## References

- [1] De Leersnyder, J., M. Boiger, & B. Mesquita. (2015). Cultural differences in emotions. In R.A. Scott and S.M. Kosslyn (Eds.), *Emerging Trends in the Social and Behavioral Sciences*. <https://doi.org/10.1002/9781118900772.etrds0060>
- [2] Eckman, P., & W. V. Friesen. (1971). Constants across cultures in the face and emotion. *Journal of Personality and Social Psychology*, 17, 124–129.
- [3] Erickson, D. Expressive speech: Production, perception and application to speech synthesis. *Acoustic Science & Technology*, 26(4), 317–325.
- [4] Hayashi, R., K. Isomura, S. Abe, M. Matsuda & M. Ueyama. (2018). Development of sound archives for learning Japanese prosody (in Japanese) presented at the 2018 International Conference on Japanese Learning (ICJLE), Venice, Italy, Aug. 4, 2018.
- [5] Kaneko, I., & M. Yamane. (2022). Emotional prosody of love and sorrow: L1 English, TTS, and EFL learners. In J. Levis & A. Guskaroska (Eds.), *Proceedings of the 12th Pronunciation in Second Language Learning and Teaching Conference*, 1–15.
- [6] Li, X., M. Luo & R. Hayashi. (2018). Perception of Japanese emotional speech by Chinese, *Journal of the Phonetic Society of Japan*, 22, 2018, 31–38.
- [7] Tsai, J. L., B. Knutson & H. H. Fung. (2006). Cultural variation in affect valuation. *Journal of Personality and Social Psychology*, 90, 288–307.
- [8] Ueyama, M., & X. Li. (2020). An acoustic study of emotional speech produced by Italian learners of Japanese. *Proceedings of the International Conference on Speech Prosody 2020*, 36–40.