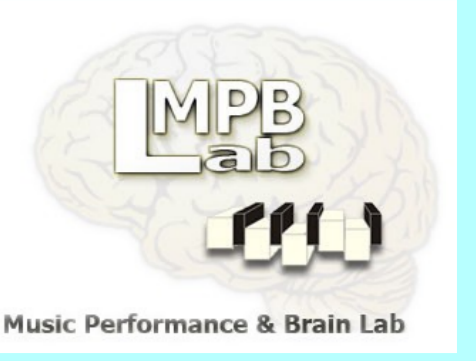




Occasional singers sing more proficiently when linguistic information is reduced.

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Introduction

Most believe that individuals without musical training are unable to carry a tune. In contrast, it has been recently shown that occasional singers can sing proficiently in tune and in time, provided that they perform at a slow tempo (Dalla Bella et al., 2007; Dalla Bella et al., 2009). Still, some individuals (10-15%) are poor singers (e.g., Dalla Bella et al., 2007; Pfordresher & Brown, 2007; Wise & Sloboda, 2008; Dalla Bella & Berkowska, 2009).

Goal

Examine non-musicians' singing proficiency when they are singing on a syllable /la/ thus limiting linguistic complexity as compared to singing with lyrics.

Method

Participants

50 occasional singers (15 males and 35 females), mostly university students, aged between 19 and 39 years (Mean = 25.1 years), general education = 12.3 years on average, without formal musical training.

Tasks

Familiar Melody Production Task (spontaneous tempo)

Participants sang 3 familiar melodies (i.e., Brother John, Jingle Bells, Sto lat) with lyrics and on the syllable /la/.

Familiar Melody Imitation Task (controlled tempo)

Participants imitated the same melodies with lyrics and on /la/ as in the previous task, but at a given slow tempo (quarter note = 100 beats/min.) as indicated by a metronome.

Measures of singing proficiency

By acoustical analysis of the renditions measures of pitch and time proficiency were obtained.

Pitch dimension

N. of pitch interval errors

An error was scored when the produced interval was larger or smaller than at least 1 semitone as compared to the interval prescribed by the score.

Pitch interval deviation

Mean absolute interval deviation of the performance from the score.

Time dimension

N. of time errors

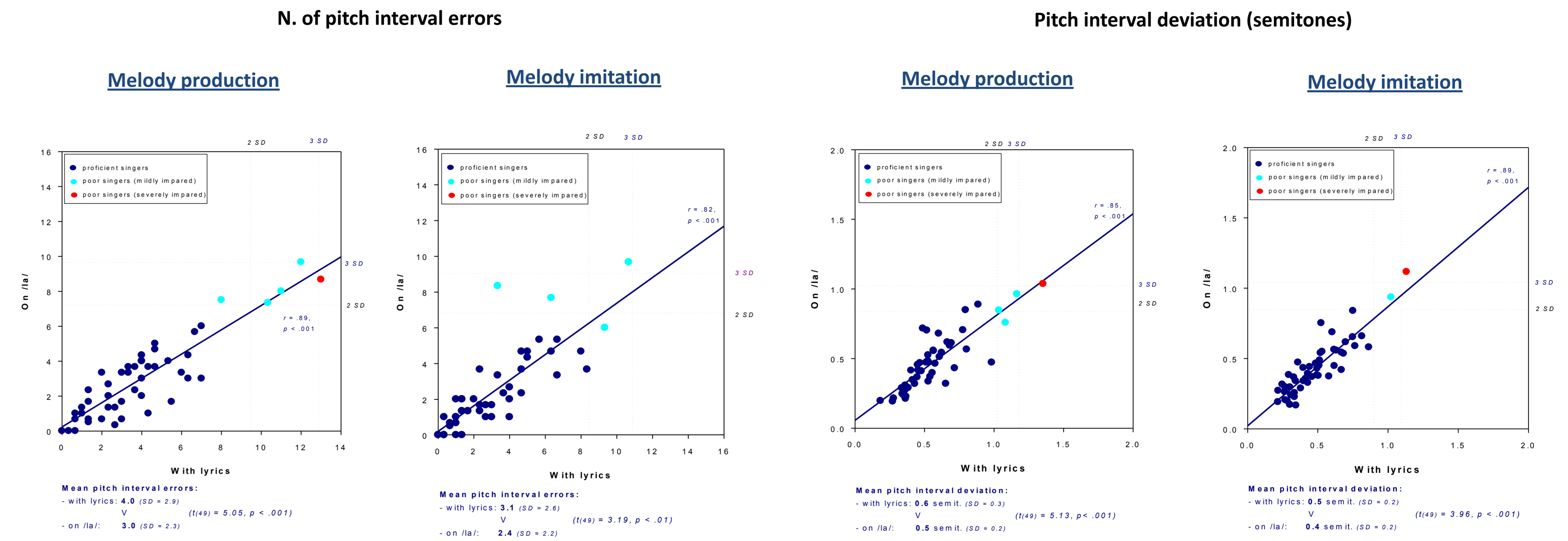
An error was scored when the produced note was at least 50% longer or shorter than the duration predicted from the preceding note, as prescribed by the score.

Temporal variability

Coefficient of variation (CV) of the quarter-note IOIs, calculated by dividing the Standard Deviation of the IOIs by the mean IOI.

Question 1:

Were occasional singers more proficient on the pitch dimension when singing with lyrics than when singing on /la/?

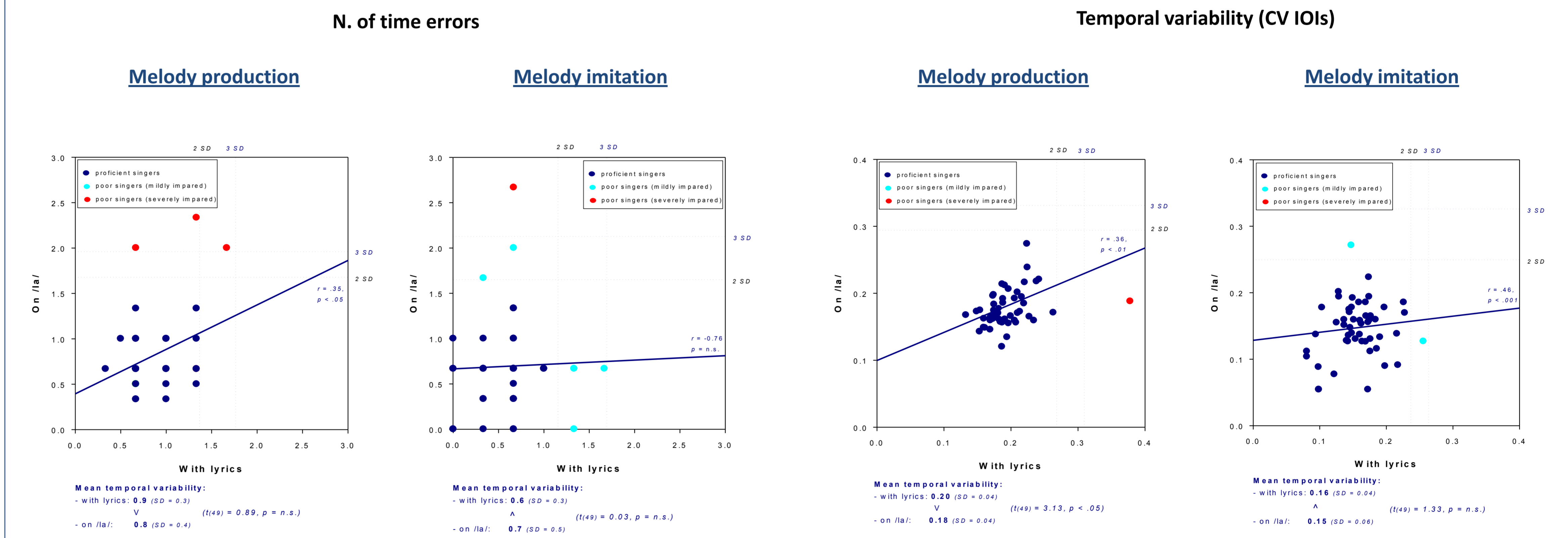


Participants made fewer pitch interval errors when singing at the controlled tempo than at the faster spontaneous tempo ($F(1,49) = 18.90, p < .001$).

Pitch interval deviation was smaller when participants sung at the controlled tempo than when they sung at the faster spontaneous tempo ($F(1,49) = 13.75, p < .001$).

Question 2:

Were occasional singers more proficient on the time dimension when singing with lyrics than when singing on /la/?



Participants made fewer time errors when singing at the controlled tempo than at the faster spontaneous tempo ($F(1,49) = 15.52, p < .001$).

Participants were less temporally variable when singing at the controlled tempo than at the faster spontaneous tempo ($F(1,49) = 43.82, p < .001$).

Question 3:

Are poor singers more proficient when singing with lyrics than when singing on /la/?

Light blue: Mildly impaired
Red: Severely impaired

PARTICIPANT	PITCH				TIME			
	LYRICS		LA		LYRICS		LA	
	PITCH ERRORS	PTCH INT. DEV.	PITCH ERRORS	PTCH INT. DEV.	TIME ERRORS	TEMP. VAR.	TIME ERRORS	TEMP. VAR.
o 12								
o 23								
o 26								
o 27								
o 31								
o 32								
o 33								
o 42								
o 43								
o 44								
o 47								
o 62								
o 64								
s 12								

Conclusions

Occasional singers were more accurate both on the pitch and on the time dimensions when they sang with reduced linguistic information (i.e., on a syllable) than when they sang with lyrics.

This finding is likely the result of the reduced memory load when singing on a syllable. In this condition, singers can focus on the retrieval of melodic information, thus leading to improved production of pitch intervals and pitch direction.

Fourteen occasional singers were qualified as „poor singers“. Still, in pitch dimension, poor singers were more accurate when sung on the syllable copaterd to sung with lyrics, but in time dimension there were no difference.

References

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