

MTO 18.1 Examples: Martens, *Tactus* in Performance

(Note: audio, video, and other interactive examples are only available online)

<http://www.mtosmt.org/issues/mto.12.18.1/mto.12.18.1.martens.php>

Example 1. Haydn, String Quartet op. 33, no. 3, IV, measures 1–8

♩ = 144

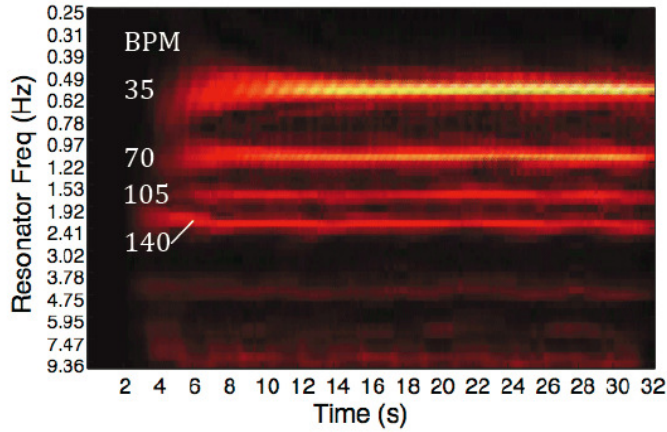


Example 2. Sample target and distractor stimulus (Haydn Op 33/3)

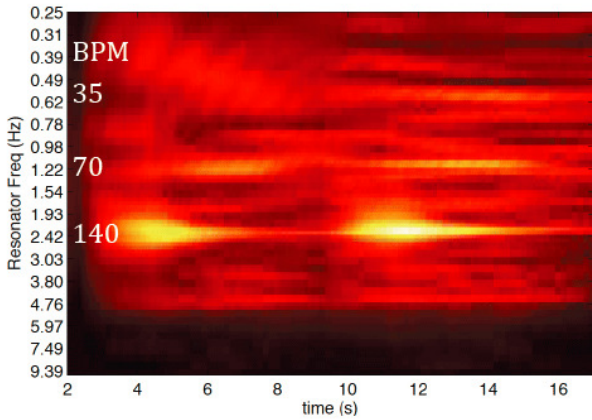


Example 3. Energy profiles from Tomic & Janata (2008)

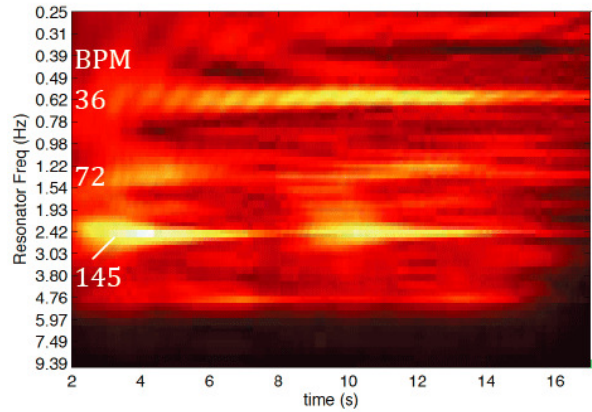
a. Energy profile from a single pulse at 35 BPM with timing deviations of 10 ms.



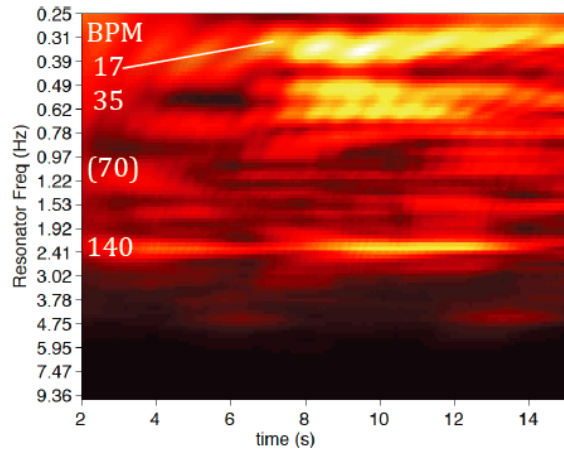
b. Energy profile from Haydn, 33/3 Audio (faster tactus version)



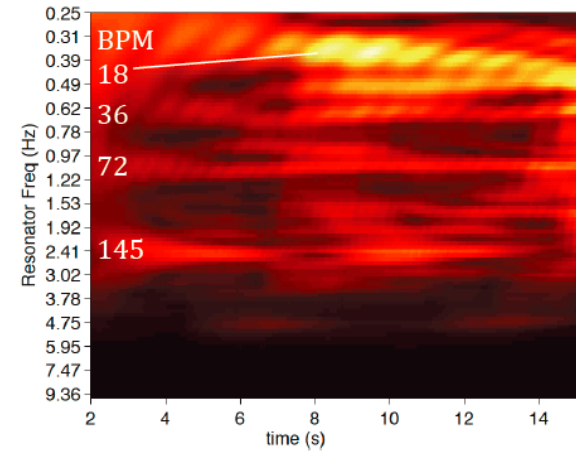
c. Energy profile from Haydn, 33/3 Audio (slower tactus version)



d. Energy profile from Haydn, 33/3 Video (faster tactus version)



e. Energy profile from Haydn, 33/3 Video (slower tactus version)



Example 4. Steps in video conversion and analysis

a) a single frame



b) the same frame rendered black & white and with the middle portion blacked out



c) the frame immediately following the frame shown in b)

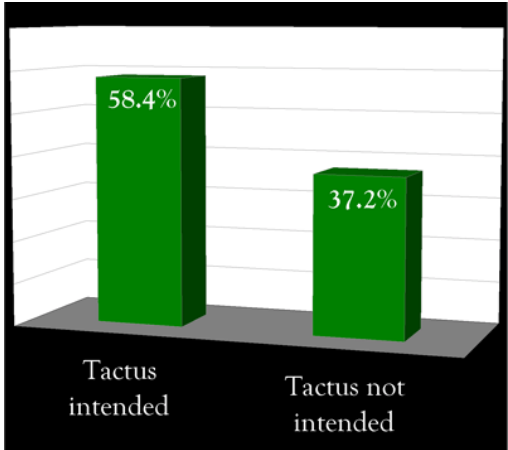


d) pixels that changed between these two frames



Figure 1. Main results (full A/V condition)

a. Overall



b. By specific intent

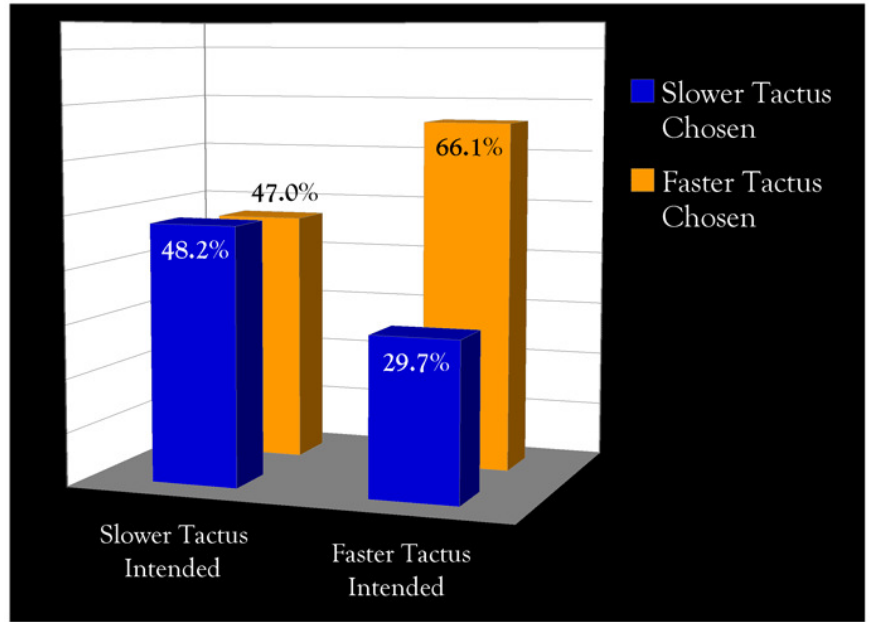
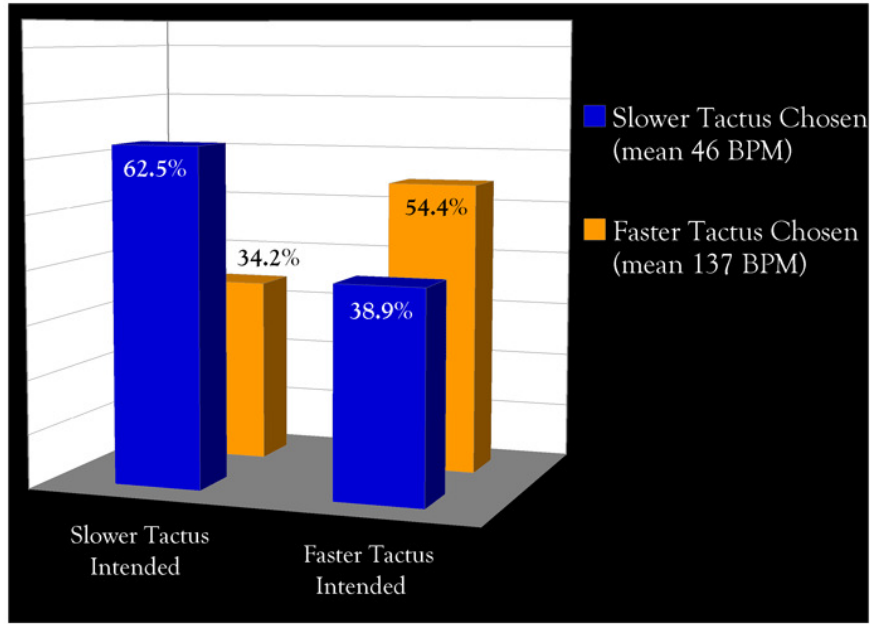


Figure 2. Main results by meter type

a. Responses to triple-meter excerpts



b. Responses to duple-meter excerpts

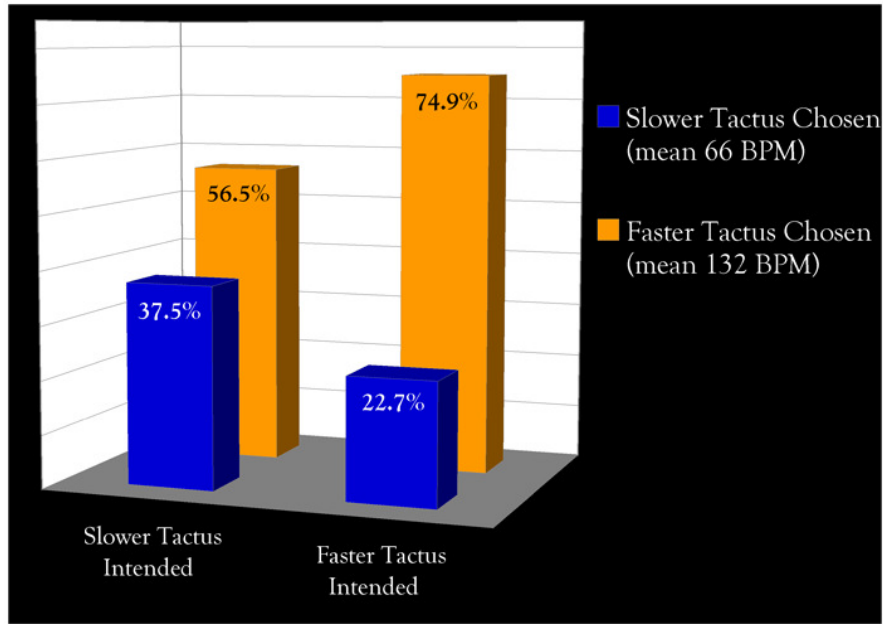


Figure 3. Responses and energy profiles for Haydn, Op. 50/2, I

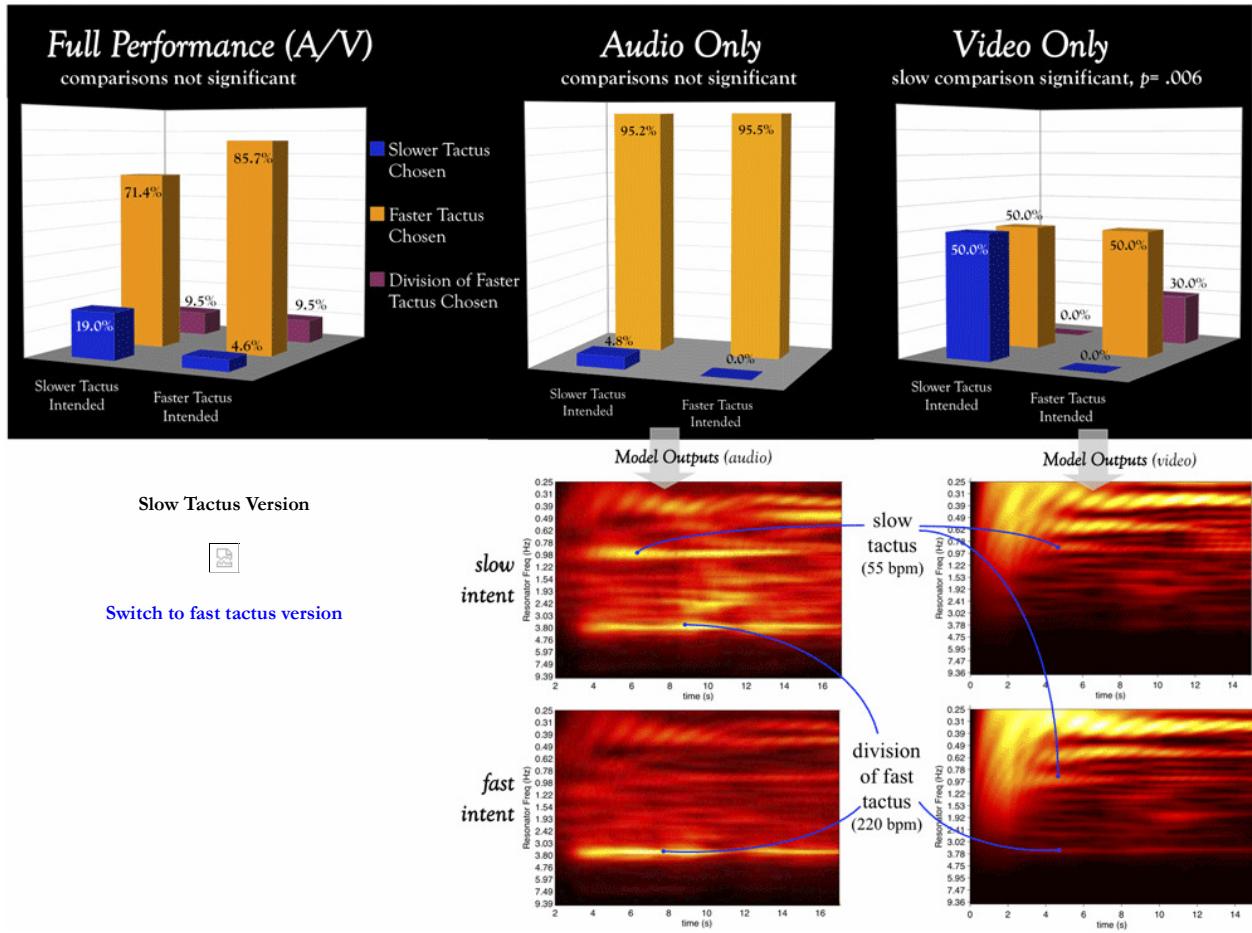


Figure 4. Responses and energy profiles for Caldara, "Sebben, crudele"

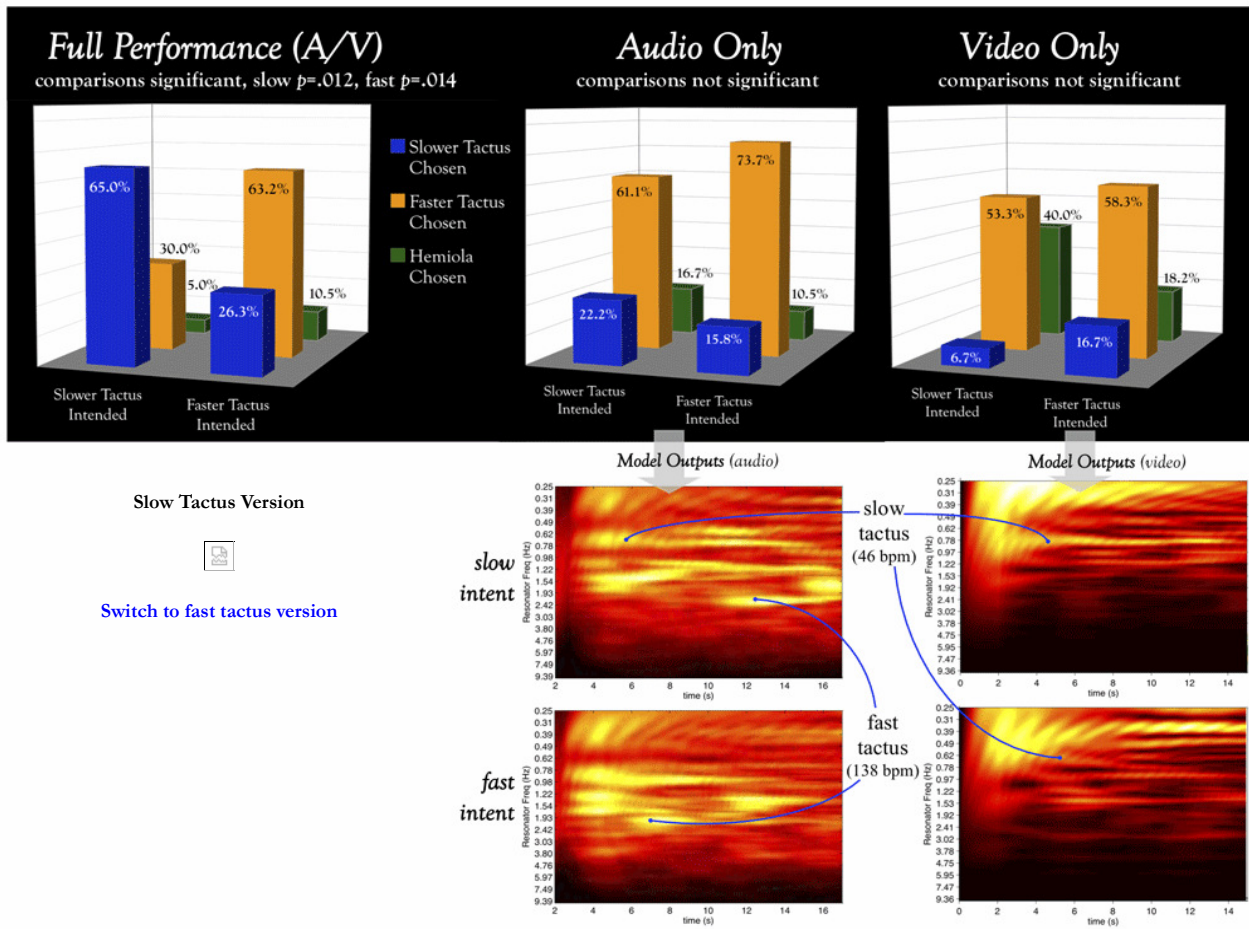


Figure 5. Responses and energy profiles for Haydn Op. 20/5, II

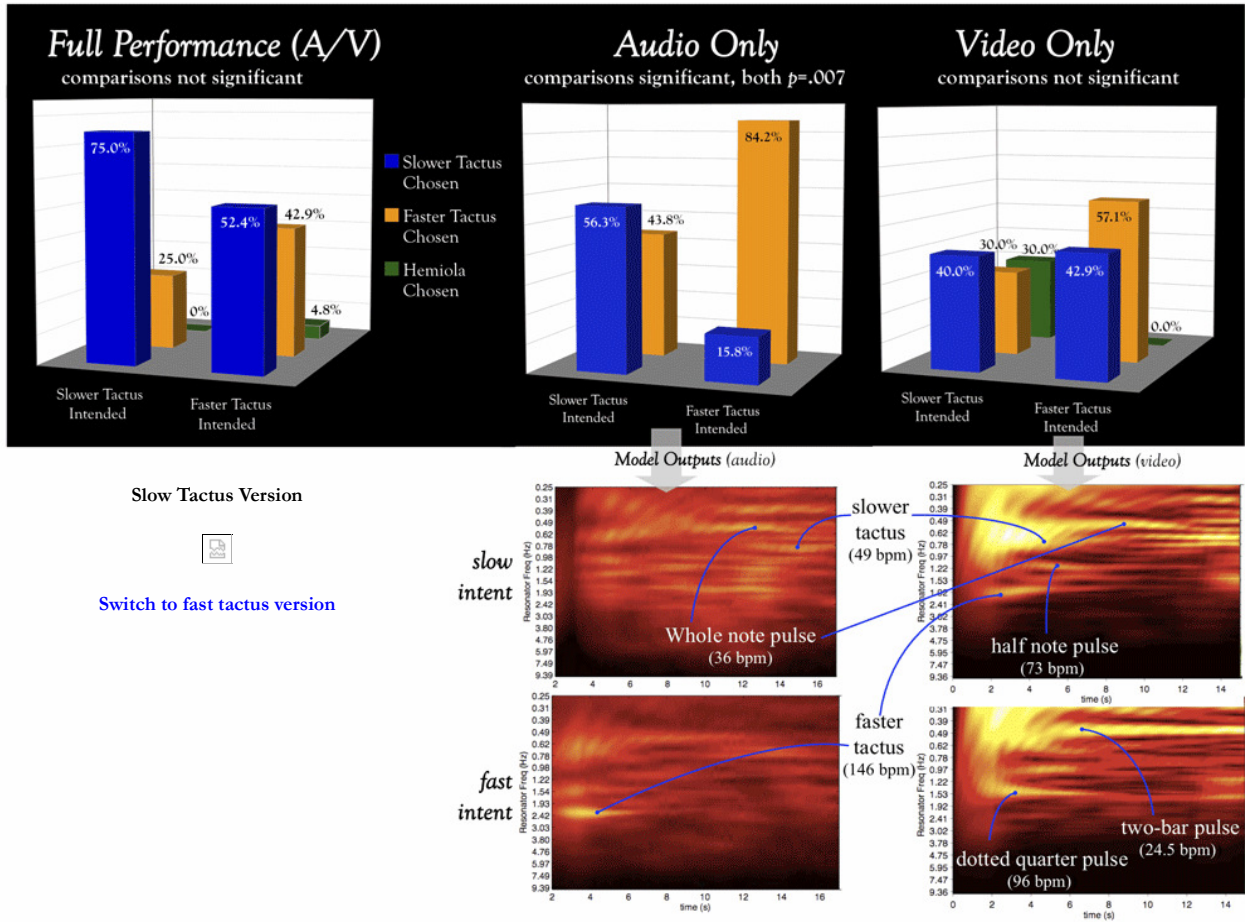
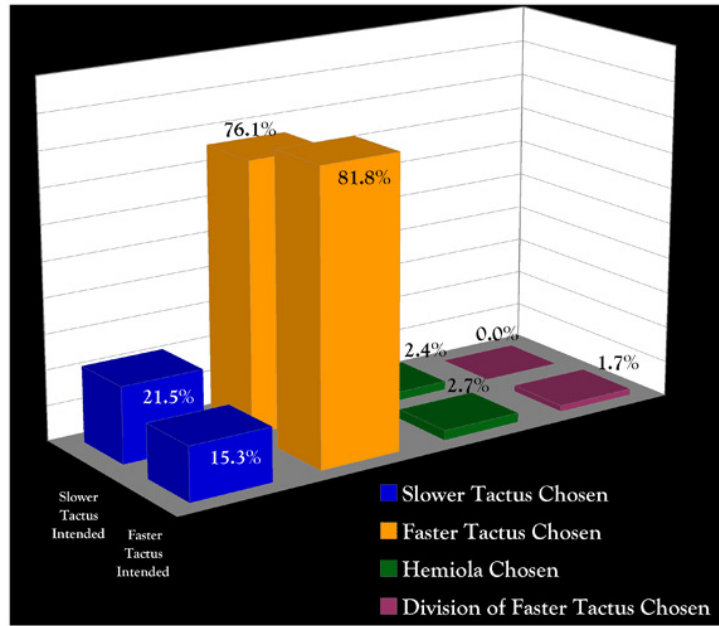
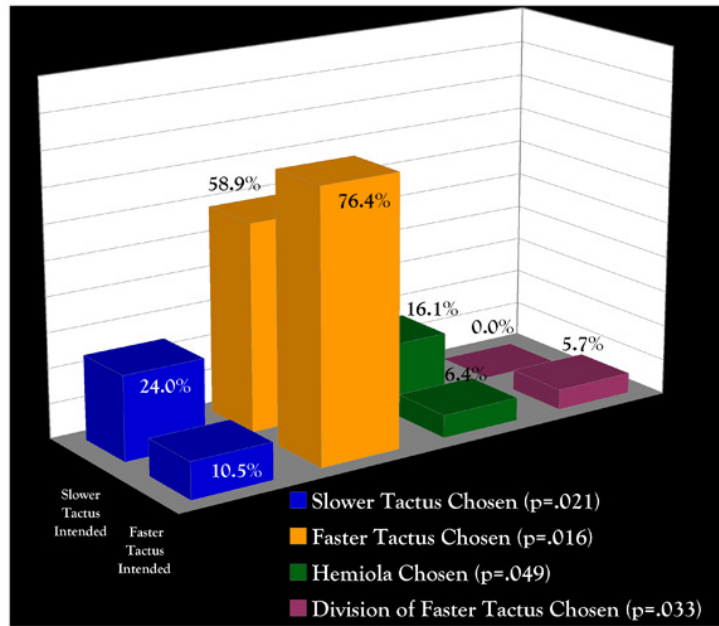


Figure 6. Responses to Audio- and Video-only conditions

a. Audio-only



b. Video-only



Appendix A. Scores, alphabetical by composer, and response summary chart

L. van Beethoven, Piano Sonata, op. 57, I, measures 1–8

Violin 1
Violin 2
Viola
Violoncello

A. Caldara, "Sebben, crudele," measures 1–10

Violin 1
Violin 2
Viola
Violoncello

F. J. Haydn, String Quartet op. 20, no. 5, II, measures 1–15

Violin 1
Violin 2
Viola
Violoncello

F. J. Haydn, String Quartet op. 33, no. 3, IV, measures 1–8

Violin 1: *p* (measures 1-4), *f* (measures 5-16). Includes first and second endings.

Violin 2: *p* (measures 1-4), *f* (measures 5-16). Includes first and second endings.

Viola: *p* (measures 1-4), *f* (measures 5-16). Includes first and second endings.

Cello: *p* (measures 1-4), *f* (measures 5-16). Includes first and second endings.

F. J. Haydn, String Quartet op. 50, no. 2, IV, measures 1–16

Violin 1: Melodic line with eighth-note patterns.

Violin 2: Melodic line with eighth-note patterns.

Viola: Melodic line with eighth-note patterns.

Cello: Melodic line with eighth-note patterns.

C. Monteverdi, Ritornello from *L'Orfeo*, measures 1–8

Violin 1: Melodic line with quarter and eighth notes.

Violin 2: Melodic line with quarter and eighth notes.

Viola: Melodic line with quarter and eighth notes.

Cello: Melodic line with quarter and eighth notes.

W.A. Mozart, String Quartet K.160, I, measures 1–8

Responses by excerpt and condition; “Division” indicates a duple division of the faster tactus;
 “Hemiola” includes any tactus rate between the faster and slower tactus, and in any type of 3:2 relationship with either the faster or slower tactus;
 Responses to the intended tactus are boldface throughout.

		Beethoven	Caldara	Haydn 20/5	Hadyn 33/3	Haydn 50/2	Monteverdi	Mozart	
Full A/V condition	Faster tactus intended	division	0.00%	0.00%	0.00%	0.00%	9.52%	0.00%	0.00%
		faster	57.14%	63.16%	42.86%	90.00%	85.71%	66.67%	57.14%
		hemiola	4.76%	10.53%	4.76%	0.00%	0.00%	0.00%	0.00%
		slower	38.10%	26.32%	52.38%	10.00%	4.76%	33.33%	42.86%
	Slower tactus intended	division	0.00%	0.00%	0.00%	4.76%	9.52%	0.00%	9.52%
		faster	47.62%	30.00%	25.00%	57.14%	71.43%	50.00%	47.62%
		hemiola	4.76%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		slower	47.62%	65.00%	75.00%	38.10%	19.05%	50.00%	42.86%
Audio-only condition	Faster tactus intended	division	0.00%	0.00%	0.00%	0.00%	4.55%	0.00%	0.00%
		faster	78.95%	73.68%	84.21%	90.48%	95.45%	73.68%	76.19%
		hemiola	0.00%	10.53%	0.00%	0.00%	0.00%	5.56%	0.00%
		slower	21.05%	15.79%	15.79%	9.52%	0.00%	21.05%	23.81%
	Slower tactus intended	division	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		faster	80.95%	61.11%	43.75%	80.95%	95.24%	80.00%	90.91%
		hemiola	0.00%	16.67%	0.00%	0.00%	0.00%	0.00%	0.00%
		slower	19.05%	22.22%	56.25%	19.05%	4.76%	20.00%	9.09%
Video-only condition	Faster tactus intended	division	0.00%	0.00%	0.00%	0.00%	30.00%	0.00%	10.00%
		faster	86.67%	58.33%	57.14%	92.86%	50.00%	100.00%	90.00%
		hemiola	6.67%	18.18%	0.00%	0.00%	20.00%	0.00%	0.00%
		slower	6.67%	16.67%	42.86%	7.14%	0.00%	0.00%	0.00%
	Slower tactus intended	division	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
		faster	76.92%	53.33%	30.00%	84.62%	50.00%	57.14%	60.00%
		hemiola	7.69%	40.00%	30.00%	7.69%	0.00%	14.29%	13.33%
		slower	15.38%	6.67%	40.00%	7.69%	50.00%	28.57%	20.00%