Pitfalls and Windfalls in Corpus Studies of Pop/Rock Music

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Corpus Studies of Music

✤ Any methodological investigation (a "study") of some body of work (a "corpus")

✤ Typically involves the statistical analysis of encoded music using a computer

✤ Recent interest within music research
  ✤ *Music Perception*, Special Issue, vol. 1 (2013)
  ✤ *Music Perception*, Special Issue, vol. 2 (2014)
  ✤ *Empirical Musicology*, Special Issue, vol. 1 (2016)
  ✤ *Empirical Musicology*, Special Issue, vol. 2 (2016)

Corpus Studies of Pop/Rock Music

- ✤ Those created by a single author
    - ✤ Summach (2012)
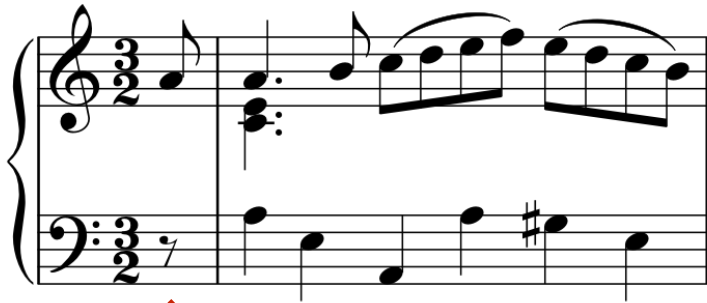   - ✤ Tough (2013)

- ✤ Those created by multiple authors
    - ✤ Burgoyne et al. (2011)
        - ➡ i.e., the *Billboard* corpus
    - ✤ Temperley & de Clercq (2013)
        - ➡ i.e., the *Rolling Stone* corpus

- ✤ Those created by a computer algorithm
    - ✤ Bertin-Mahieux et al. (2011)
        - ➡ i.e., the "Million Song Dataset"

I. Collection and Representation

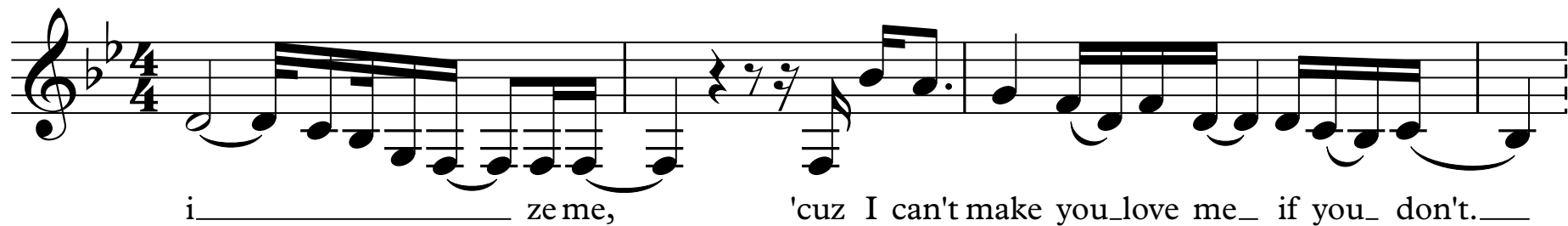J. S. Bach, English Suite no. 2 in A minor,
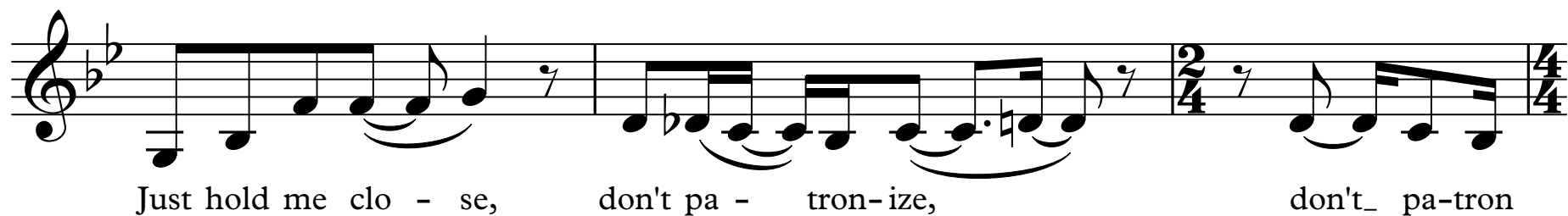BWV 807, Courante, opening

Collection and Representation

J. S. Bach, English Suite no. 2 in A minor, BWV 807, Courante, opening

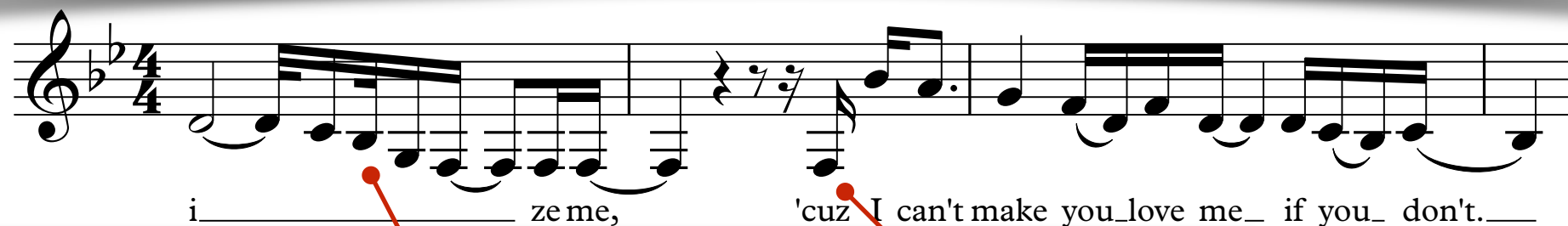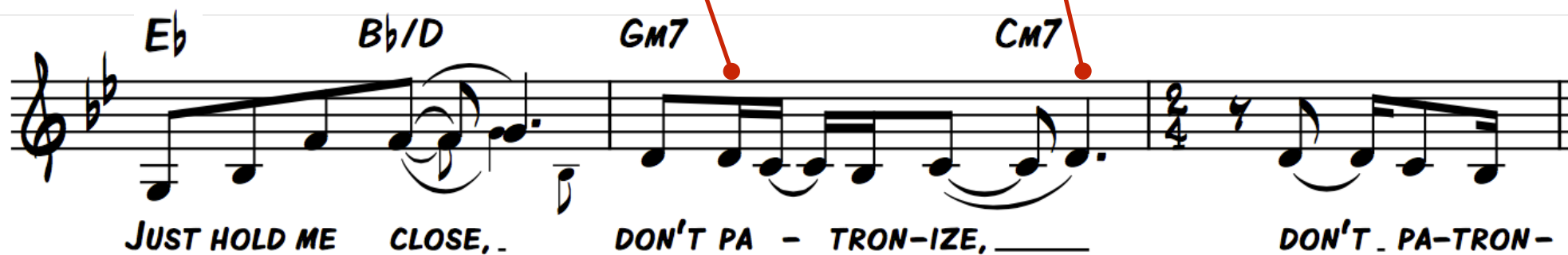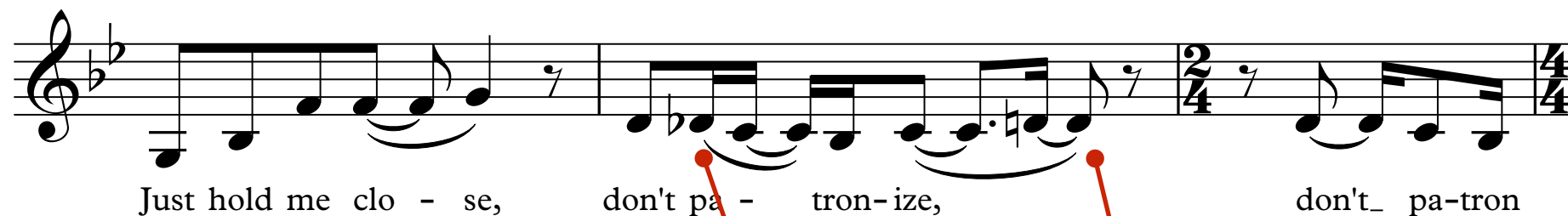| offset	Chord
0.3.4	<music21.chord.Chord A4>
1.1.1	<music21.chord.Chord C4 E4 A4 A3>
1.1.3	<music21.chord.Chord C4 E4 A4 E3>
1.1.4	<music21.chord.Chord B4 E3>
1.2.1	<music21.chord.Chord C5 A2>
1.2.2	<music21.chord.Chord D5 A2>
1.2.3	<music21.chord.Chord E5 A3>
1.2.4	<music21.chord.Chord F5 A3>
1.3.1	<music21.chord.Chord E5 G#3>
1.3.2	<music21.chord.Chord D5 G#3>
1.3.3	<music21.chord.Chord C5 E3>
1.3.4	<music21.chord.Chord B4 E3>

"I Can't Make You Love Me"
(Bonnie Raitt, 1991)

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$\text{IV} \qquad \text{I}^6 \qquad \text{vi}^7 \qquad \text{ii}^7$

Just hold me clo - se,   don't pa - tron-ize,   don't_ pa-tron

reading 2: V^{6-}_{4-} $\quad$ $^{-5}_{-3}$ $\quad \text{I}^6 \quad \text{IV} \quad \text{I} \qquad \text{IV}$

reading 1: I^6_4 $\qquad\qquad \text{V} \qquad \text{I}^6 \quad \text{IV} \quad \text{I} \qquad \text{IV}$

i_____ ze me,   'cuz I can't make you_love me_ if you_ don't.___

Assessing subjectivity in harmonic analysis
(de Clercq & Temperley 2011)

✤ agreement on key (or pitch center): 97.3 %

✤ agreement on absolute root (e.g., A vs. D): 94.4 %

✤ agreement on chromatic relative root (e.g., I vs. IV): 92.4 %

Top 40 songs from *Billboard* Hot 100 year end charts, 1965–2009
(Schellenberg & von Scheve 2012, Table 2)

Years	% Major	Mean tempo	Mean duration (Min' Secs")	
1965–1969	85.0	116.4	176.9	(2' 56.9")
1975–1979	75.1	103.0	225.3	(3' 45.3")
1985–1989	78.0	104.2	256.8	(4' 16.8")
1995–1999	62.7	89.4	248.2	(4' 08.2")
2005–2009	42.5	99.9	230.7	(3' 50.7")

"Teardrops on My Guitar" (Taylor Swift, 2006)
"pop" version (chorus)

He's the rea son for the tear drops on my gui tar, the on-ly thing that keeps me wish in' on a wish in' star.

Tempo ~ 100 BPM

"Teardrops on My Guitar" (Taylor Swift, 2006)
original album version (chorus)

Tempo ~ 50 or 100 BPM?

Meter ID

BACK

SAVE NEW PLAYLIST

Minimum BPM 0   Maximum BPM 1000   Include Doubled BPM ☑

#	TITLE	ARTIST	RELEASE	BPM	ENERGY	DANCE	LOUD	VALENCE	LENGTH	ACOUSTIC	POP.
1	Human Nature	Michael Jackson	1982-11-30	93	41	63	-14	73	4:06	50	56
2	I'm on Fire	Bruce Springsteen	1984-08-21	89	45	62	-14	87	2:36	59	68
3	Out Of My Mind	Colbie Caillat	2009	180	63	46	-6	37	4:40	19	22

Spotify's "Sort Your Music"

#⬇	TITLE⬇⬆	ARTIST⬇⬆	RELEASE⬇⬆	BPM⬇⬆
1	Human Nature	Michael Jackson	1982-11-30	93
2	I'm on Fire	Bruce Springsteen	1984-08-21	89
3	Out Of My Mind	Colbie Caillat	2009	180

Comparison of BPM estimates to crowd-sourced values, in percentages
(Levy 2011, Table 2)

	bpm * 4	bpm * 3	bpm * 2	correct	bpm / 2	bpm / 3	bpm / 4	unrelated
EchoNest	0.6	1.7	30.5	40.7	2.4	0.0	0.1	24.0
Bpm List	0.0	0.2	8.2	68.1	5.2	0.1	0.0	18.3
VAMP	0.7	1.6	23.0	58.3	4.0	1.6	0.0	12.3

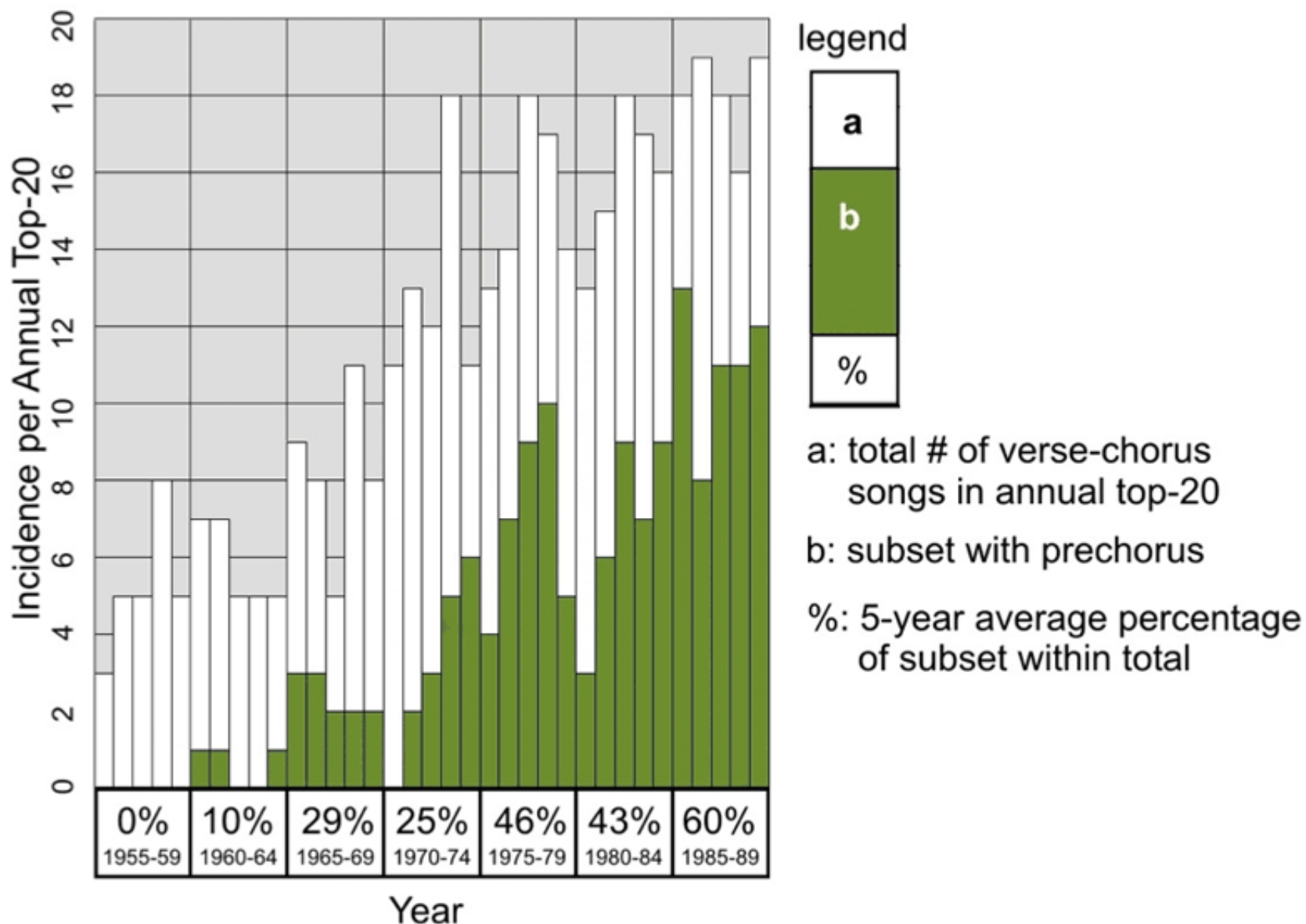**Median Length of Verse-Chorus Songs, with and without Prechorus, in a *Billboard* Corpus, 1955–1989**
(Summmach 2012, Ex. 27)

	Median Length (in seconds)				
VC	177	210	224	238	251
VPC	174	215	221	240	254
	1965-69	1970-74	1975-79	1980-84	1985-89

Incidence of Verse-Chorus Songs, with and without Prechorus, in a *Billboard* Corpus 1955–1989
(Summach 2012, Ex. 26)

Lengths of Intro sections in a *Billboard* corpus of songs, Jan. 2011–Apr. 2012 (Tough 2013, Fig. 1)
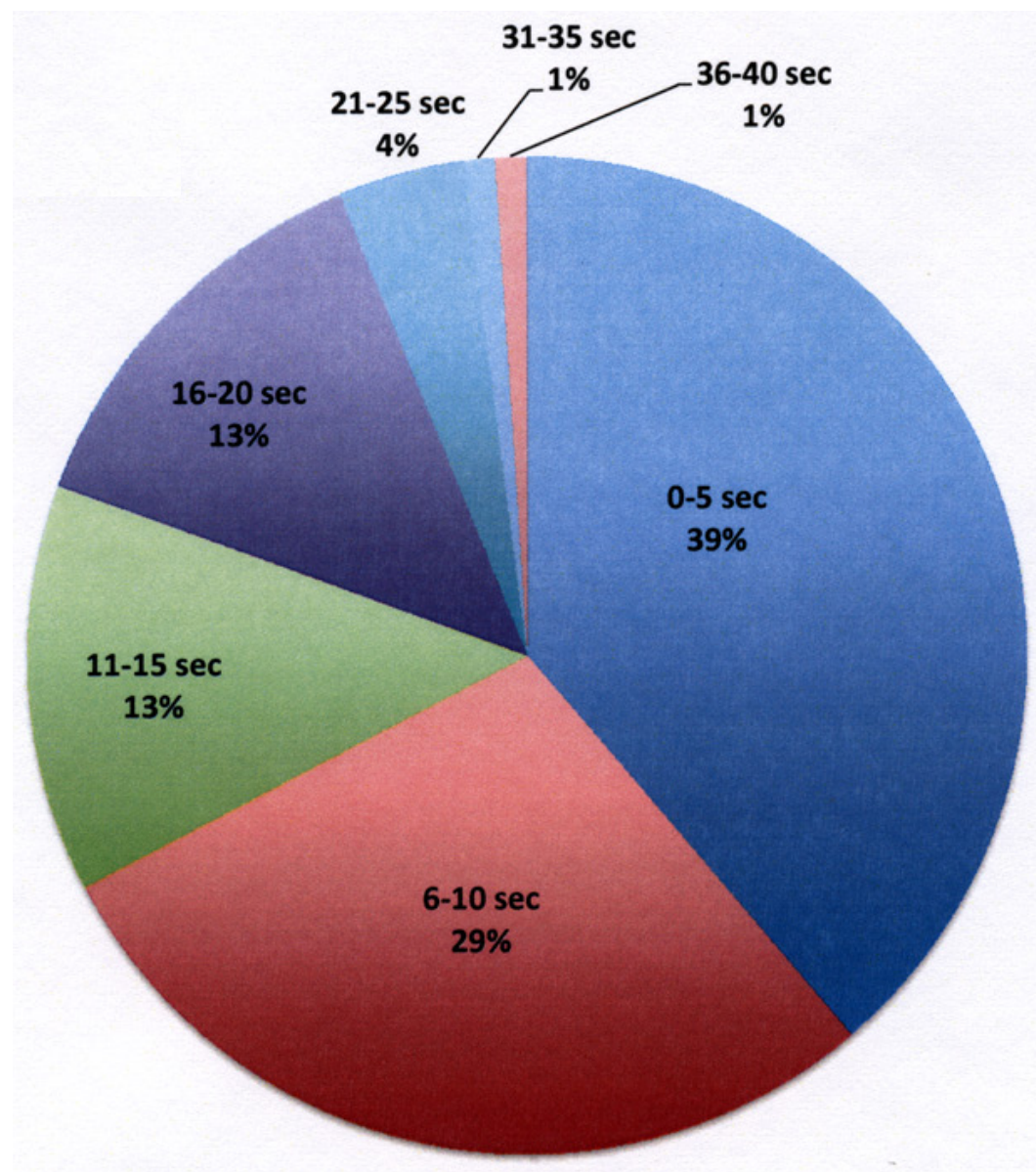
Average chord durations, in bars, for songs in the *Rolling Stone* corpus
(de Clercq 2017, Table 12)

Chords	Analyst	Verse	Chorus	Effect
Overall	DT	2.08	1.55	$t(134) = -2.55, p = .01$
	TdC	2.26	1.70	$t(107) = -2.06, p = .04$
Tonic	DT	2.25	1.57	$t(134) = -3.11, p < .01$
	TdC	2.48	1.75	$t(107) = -2.37, p = .02$
Non-Tonic	DT	0.99	1.10	ns
	TdC	1.10	1.09	ns

THANK YOU!

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