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What Happens When an Invented Language Is Set To Music? A Linguistic Study of Dogorian

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Dogora, suite populaire dogorienne de Proszeshny orientale, composed by Etienne Perruchon for adult and children's choirs, soloists, a symphony orchestra and a band, is made up of twenty short movements.¹ Using *le dogorien* (Dogorian), a language invented by the composer, the piece evokes a fictional nomadic people, the Dogorians. E. Perruchon has stated that Dogorian is an imaginary language "that brings together all the European vocal influences [...] It is a *trompe-oreille* in which the melody of the words allow the listener to find both personal and universal meaning."² Initially composed in 2000, the piece was expanded from 28 to 70 minutes in 2004 for an eponymous film shot by Patrice Leconte in Cambodia. An extract from *Dogora* has also been used as the background music for a TV commercial for the Vinci building and civil engineering company.

This study first describes the soundscape of Dogorian and discusses its status as a language. Using the results of a survey carried out in Saint-Nazaire (France) in May 2008, I examine the perception of Dogorian in the second section. The third section analyzes the interplay between language and music in two movements. This paper also aims to explore several general issues: What happens when a composer creates lyrics in an invented language? To what degree do natural languages shape invented languages? Do the structural constraints of natural languages disappear? Is it possible to create a universal invented language that is devoid of meaning? What kinds of associations are created when an invented language is set to music and to what extent do they vary? What parameters might be used to categorize invented languages and compare them with natural languages?

¹ I wish to thank Florence Cousin, director of *A travers chants*; Yann Le Néchet, director of *Croque-notes*; Etienne Perruchon and the respondents to the survey for their help.

² My translation.

1. Basic Dogorian

1.1. The Dogorian soundscape³

Dogorian has a relatively simple vowel system resembling that of Standard Italian, with three front vowels (close, close-mid, open-mid), three back vowels (close, close-mid, open-mid) and one open vowel. Unlike French, there are no nasal vowels or front rounded vowels and unlike English or German, there are no diphthongs. As shown in Table 1, the consonant system is more complex, with several sounds not found in Standard French, the composer's native language, in particular the velar fricative, which is quite frequent in the lyrics; the glottal fricative /h/, which is rare; and the trilled /r/.

	Bilabial	Lab.Dent.	Dental	Alveolar	Post-alv.	Palatal	Velar	Glottal
Plosive	p b		t d				k g	
Nasal	m		n			ɲ		
Trill			r					
Fricative		f v		s z	ʃ ʒ		x	h
Affricate					tʃ dʒ			
Approximant	w					j		
Lateral approx.				l				

Table 1: Dogorian consonants

Dogorian syllable structure and phonotactics⁴

Dogorian words are mostly polysyllabic. With only one exception (*antz*), consonant clusters are located in the syllable onset and most syllables end with a vowel. With its open syllables, Dogorian is very singable and sounds quite different from Germanic languages like English, which allow complex final consonant clusters (e.g., *sixths*). Phonotactically, Dogorian evokes Slavic languages, with consonant clusters that are illicit in many Indo-European languages, such as French or English. This is especially true of fricatives followed by plosive or nasal consonants (e.g., *zdiès-ka-nou*, *die-tcha-zka*, *shka-mi-tros*, *tou-shni*). Plosives are often followed by /j/ (e.g., *dies-ka*). This widespread palatalization recalls Russian, which has an "almost completely systematic opposition of palatalised and non-palatalised consonants" (Comrie 1990, 67).

Dogorian's flexible prosody

Ira Gershwin once compared lyric-writing to the art of creating mosaics, for he had to

³ As it is impossible to carry out commutation tests based on meaning, the term phoneme cannot be applied to Dogorian. Pronunciation may vary in performance according to the singers' native languages.

⁴ For this analysis I used the vocal score, which aligns syllables and notes, a usually one-to-one relationship as there are few instances of melisma. The score delimits Dogorian graphic 'words', which are surrounded by spaces, and indicates syllable division, marked by hyphens.

carefully choose "the precise verbal shard to fit into each jagged musical space" provided by his brother George.⁵ Anyone who has tried to translate or adapt a song from one language to another is familiar with prosodic constraints, especially when dealing with different stress systems (e.g., English and French). An invented language, on the other hand, is malleable, allowing the composer to meld text and music much more freely. As we have no record of Dogorian outside the musical score, the listener cannot determine whether the melody and rhythm of the lyrics are close to, or at odds with, the "ordinary" spoken variety. Dogorian stress and intonation are perceived through the lenses of traditional Western notation, which is precise about the pitch and duration of notes, but vague about other acoustic parameters such as timbre and intensity. The Dogorian stress system can nevertheless be reconstructed by observing how syllables align with strong and weak metrical positions in the score. In the first movement, for example, we find polysyllabic words whose first syllable is sung on the downbeat (e.g., *Tchun-ga*), but there are also examples where the last syllable is in a strong metrical position (e.g., *ra-to-shnié*) and notated with a musical accent (e.g., *mou-shti-nia*, whose last syllable is also held for eight beats). We can conclude that Dogorian has variable stress, which is quite convenient for the lyricist.

1.2 Is Dogorian a language?

As it does not have a productive grammar, Dogorian cannot be considered a language in the usual sense. Although some word endings evoke the morphology of existing languages, they are not linked systematically to specific meanings. Using musical cues, such as rests or held notes, one can segment the lyrics into phrases that might be compared to sentences or utterances in natural languages, but there are no identifiable grammatical categories. On the other hand, listeners may associate Dogorian words with grammatical categories based on their form, their position in the verbal/musical phrase or their resemblance to words in known languages (e.g., *tristou*, which may be perceived as an adjective). Punctuation occasionally signals grammatical status (e.g., the exclamation *Tchung ya!*).

Although most respondents in our survey found overall meaning in Dogorian (see below), it lacks the broad range of systematic and specific lexical and propositional meanings found in existing languages or in invented languages like Esperanto. Listening to *Dogora* is somewhat like discovering the fragments of a lost Indo-European epic poem, with occasional flashes of possible meaning.

⁵ Cited by Arleo (2002, 73).

2. The perception of Dogorian

As part of the celebration of the 20th anniversary of the Classes à Horaires Aménagées Musiques (CHAM), a music program at Collège Jean Moulin, a middle school in Saint-Nazaire, a project was launched to perform *Dogora* with two adult choirs (*A travers chants* and *Croque-notes*), the CHAM pupils, a youth orchestra and pupils from partner institutions in Ukraine, Italy, Germany and Britain. The work was performed three times in May 2008 for more than 5000 listeners. *Dogora* was chosen in part for its universal message; furthermore, since Dogorian is not linked to any existing culture, no one had the advantage of singing in their native language. As a member of *A travers chants*, I was able to observe the initially negative reactions of some adults, who complained about singing in an apparently meaningless imaginary language.⁶ As rehearsals proceeded, some of them conducted by the composer, these objections abated. Nevertheless, this provided an opportunity to study attitudes towards a sung invented language, and in particular to determine whether there were any significant differences between adults and teenagers, my working hypothesis being that the pupils would be more open to this novel experience. I designed a short questionnaire and conducted a survey in May and June 2008, in the weeks following the performances. 171 questionnaires were returned, including 70 from the adult choirs and 101 from the pupils (see Appendix 1).

The results for Question 1 show a striking difference between adults and pupils: 91.1% of the pupils were attracted to singing in an imaginary language (compared to 60% of adults) and no pupils were bothered by this (compared to 22.9% of adults). Among the possible explanations for this divergence is that adolescence is a period of linguistic experimentation, innovation and play, as has often been noted in relation to teenage slang and secret languages.

The answers to Question 2, which involved whether or not Dogorian evoked images, show little difference between the two age groups. Many respondents had seen the film by Patrice Leconte, but this did not appear to have a strong influence since few of the terms cited relate to Cambodia or Asia. Among the many images cited were frequent references to Slavic culture, Eastern or Central Europe and Russia (occasionally Central Asia and Mongolia) as well as open landscapes, steppes, hills and mountains. Dogorian also evoked traditional rural folklife (*fête de village*, customs, folklore, nomads, folk dance, epics, circuses), childhood and a mythological past (the Middle Ages, magic, fantasy). There were also references to abstract

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My status in this study is therefore that of participant observer.

ideas, including fraternity, liberty, hope and joy. Some pupils underlined the paradox and ambiguity of the piece, stating that *Dogora* dealt with both happiness and misfortune (including poverty, cited by five pupils and no adults). Overall, the terms suggest the hardships of a poor peasant population from Eastern Europe, who nevertheless preserve hope in the future ("*un peuple en marche*") through group cohesion and solidarity ("*les dogoriens s'entraident*"). Several respondents suggested a parallel between Dogorian solidarity and the fraternal spirit of singing together with people of different ages and cultures, as embodied in the project. This sense of involvement and personal identification was expressed by one pupil, who wrote: "*je suis un dogorien.*"

With regard to question 3, 83% of the respondents indicated that Dogorian evoked emotions, and the figure was even higher for the pupils (86.1%). The perceived emotion was no doubt also linked to the music and not only the lyrics.⁷ The emotions cited are categorized below:

- Positive valence (> 5 citations): *joie/joyeux* (57), *plaisir* (6), *bonheur* (6)

- Negative valence (> 5 citations): *triste/tristesse* (41), *colère* (9), *mélancolie* (6)

In the light of recent neural studies on chills induced by music (Patel 2008, 318), it is interesting that three pupils also stated that *Dogora* provoked *frissons*.

Concerning question 4, Dogorian evoked existing languages for 97.1% of adults and 65.3% of pupils. The most frequent languages cited were Slavic languages (53 citations, but only 6 pupils), and Russian (45 citations including 30 pupils). The pupils appeared to have used a basic level hyponym, Russian, to refer to an unknown hypernym, Slavic languages. Some struggled to find a more general term, such as *les langues sirilliques* (sic). Other Slavic languages cited included Ukrainian,⁸ Slovakian, Czech, Polish and Bulgarian. The second most frequently cited language category involved the Romance languages, especially Spanish with 16 citations, including 12 pupils. This may reflect the status of Spanish as the second most studied foreign language after English in French secondary schools. Italian, Corsican, Portuguese or Brazilian, Provençale, Latin, French (1 citation), Rumanian, and Latin were also cited. Germanic languages were cited by only a handful of respondents : German (7) and English (1). Other categories cited included African languages or dialects, and Asian languages, possibly influenced by the film. The pupils, generally less linguistically aware than

⁷ The connections between music and emotions have been a recurrent subject of speculation since Plato's *Republic*, but are now being studied empirically: see Mithen 2006, Patel 2008 and Sacks 2007 for recent discussion.

⁸ Cited by 13 respondents including 11 pupils. This was probably due to the fact that Ukrainian pupils were part of the project.

the well-educated adults, also identified Dogorian as "*la langue de la musique*," "*la langue du coeur*," "*un mélange de toutes les langues*," an "*espéranto*," or "*la langue du monde*."

When asked to provide Dogorian words that evoked words in existing languages, the adults often attributed words to specific languages, while the pupils gave fewer explicit examples. The word *tristou* evoked the French *triste* or *tristesse* for both adults and pupils, and was also associated with Spanish or Provençal by several adults. Ten adults and one pupil associated *mira* with the Spanish verb *mirar*. Among the words that adults associated with Slavic languages, many contain affricates (e.g., *dorniatcha*) or consonant sequences perceived as Slavic (e.g., *zdieskanou*). Adults also associated Dogorian lexical items with Romance languages, especially Spanish (e.g. *festo* evoking *fiesta*). The pupils showed imagination in inventing meanings for Dogorian words: *lavidjiamé* evoked positive notions such as "*la vie*," "*la joie ou l'envie*," and "*la victoire peut-être*." *Souchänishka* was idealistically and oxymorically defined as "*une guerre sans mort ni blessé*."

With regard to question 6, 69% of the respondents indicated that *Dogora* was personally meaningful, with little difference between adults and pupils, and some overlap with questions 2 and 3 related to images and emotions. The meanings cited by the adults often involved positive concepts such as friendship, solidarity, fraternity, union, cohesion between generations, peace, joy, hope, the desire for freedom, optimism (*mouvement vers l'avant*), humanism and universality. A number of phrases convey enthusiasm for the piece: "*hymne à la vie*," "*souffle de la vie*," "*vouloir c'est pouvoir*," and "*une gamme variée d'émotions esthétiques correspondant à divers moments de la vie*."⁹ The pupils cited similar themes, especially unity and solidarity among people in spite of their differences. Several saw Dogorian as a universal language, or even, as one put it, the language of angels. Darker themes were also evoked, such as suffering and poverty, and one pupil commented that "we must stop hunting down and killing certain peoples." A 13-year old girl wrote poignantly that *Dogora* made her think of the many people in her family who had died. Finally, both adults and pupils referred to the meaningful experience of singing together, and their satisfaction in overcoming the technical difficulties of the piece ("*être capable de se surpasser*"). This appeared to reflect the imagined Dogorian values, such as perseverance and social cohesion.

Concerning question 7, 98.2 % of the respondents thought that Dogorian and the music went together well, a tribute to composer's successful shaping of the soundscape to fit the music. When asked to cite a passage in which Dogorian and the music went well together,

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A wide spectrum of aesthetic emotions corresponding to different moments in life.

the adults placed *La vidjiamé* (see section 3) in first position (16 citations) while the pupils put the final movement *Souchänishka* first (45 citations), far ahead of *La vidjiamé* (17 citations). *Souchänishka*, only cited by one adult, is a rather fast and dynamic movement based on an asymmetrical rhythmic figure.¹⁰ The articulation of the Slavic-sounding consonant clusters over this less familiar rhythm proved particularly challenging for the choir.

Finally, regarding the last question, 44% of the adults and 31 % of the pupils believed that Dogorian might help in learning a foreign language, especially in regards to pronunciation.

3. The interplay of language and music in *Soutrinka* and *La vidjiamé*

Soutrinka is a slow¹¹ movement in 4/4 meter, in the key of F minor, and marked *legato doloroso*. According to the program notes, *Soutrinka* is dedicated to those Dogorians who, like many nomads, were victims of intolerance and massacres. The lyrics include a number of words that evoked words in known Romance languages (e.g., *tristou*, *festo*, *mira*). The beginning of the movement, which is analyzed here, has a repeated 12-bar AAB structure, followed by a 5-bar C section or coda. The lyrics, shown below, can be analyzed as four couplets, where each line (except the last) corresponds to two bars:

A (4) Soutrinka nové no tcha tou kania
Kiéshta si festo coménia

A (4) Soutrinka ni vonia soul ni tshiota
Kiéshta si festo moustinia

B (4) Tristou qual mira tiniatcha
Tristou qual donia véspecha
(repeat AAB)

C (5) Vonia shtôpinia soutarni
Vonia sourti tcha novia.

The clear musical-poetic structure is reinforced by end-of-line assonance, while the repeated words or sequences (e.g., *soutrinka*, *kiéshta si festo*) suggest a possible emerging syntax and underlying indeterminate meanings open to individual interpretation. At the same time, the minor key and slow tempo convey sadness, at least for listeners brought up in the Western musical cultures. Recent studies suggest that the association between slow tempo and

¹⁰ Consisting of a series of eight 8th notes with accents on the first, fourth and seventh notes, creating a 3 + 3 + 2 pattern).

¹¹ The tempo marking is 56 beats per minute.

sadness may be valid cross-culturally.¹² Likewise, psychologists Hella Oelman and Bruno Loeng have conducted experiments indicating that there may be universal associations between particular emotions and particular musical intervals.¹³ In addition to these musical factors, the word *tristou* is associated with sadness. At the beginning of the B section, just as the chord changes to a Bb minor, the first syllable of *tristou* is sung on a Db thereby forming a minor third in relation to the root of the chord. While the chord progression clearly references Eastern European musical traditions, the use of this note over the IV chord in measure 5 also recalls a minor blues (although this is not a standard blues progression). The lyrics display linguistic hybridity, where the frequent palatalization and consonant clusters (e.g., *shtôpinia*) evoke Slavic soundscapes and the Romance lexical bases allow listeners to retrieve fragments of meaning. Listeners of *Soutrinka* therefore benefit from multiple cues evoking the tragic plight of an imaginary Eastern European nomadic people.

Although it is also in a minor key (Em), *La Vidjiamé* is quite different in spirit; beginning slowly at 52 beats per minute, it gradually accelerates and ends *prestissimo*. Both adults and pupils found this movement particularly effective in wedding lyrics and music. The 16-bar structure is divided into four four-bar segments labelled AAB₁B₂:

A Tashkibikou
 Tashkibikou midjia
 Doskamo
 Shkamitros
 (repeat A)

B₁ La Vidjiamé
 Da kavi méniros
 Dianoura,
 Dianou, dianoura

B₂ La Vidjiamé
 Da kavi méniros kié.

The sound patterning, symmetrical structure and simple repetitive melody recall children's oral tradition (Arleo 2006). In addition to the Slavic soundshapes (e.g., *shkamitros*), there are basic widespread phonetic contrasts. *Tashkibikou*, for example, contains the three nearly universal vowels that emerge early in first language acquisition. The three plosives /t k b/ in the syllable onsets are sequenced /t k b k/ so the coronal consonants (/t/ and /b/) alternate with the velar /k/, providing dynamic articulatory contrast.¹⁴

¹² Discussed by Patel (2008, 314) and Levitin (2006, 58).

¹³ Cited by Mithen 2006, 91).

¹⁴ Scat singing appears to exploit similar contrasts (Arleo 1999).

Conclusion

Although Dogorian uses speech sounds to evoke general meanings for the listener, it cannot be considered as an invented language in the fullest sense. Unlike Esperanto, for example, it lacks a productive grammar and a rich set of well-defined lexical and propositional meanings. To categorize invented languages the concept of a gradient or continuum is particularly useful.¹⁵ On a scale of intelligibility, Dogorian, like glossolalia, children's nonsense and experimental writing (e.g. *Finnegan's Wake* and Futurist poetry), is far lower than Esperanto, designed for universal communication. The use of only one scale is, however, inadequate in order to compare invented languages among themselves, and with natural languages. Other dimensions are needed, such as learnability and artificiality. Although Dogorian is also low in learnability, it is, like Esperanto, relatively high in artificiality when compared to natural languages. For typological purposes, a multi-dimensional model of this type is considerably richer than simplistic binary oppositions.¹⁶

In addition to describing Dogorian, this paper has examined the perception of this "extinct" imaginary language. Despite the initial claim of some adults that Dogorian is meaningless, most respondents *did* construct their own subjective and occasionally idiosyncratic meanings, and there was often agreement on overall themes (e.g., fraternity). Some comments displayed remarkable identification with this imaginary oppressed nomadic people, with one pupil even humorously claiming to be a Dogorian! This study therefore supports the idea that it is virtually impossible to construct a meaningless invented language using the building blocks of speech sounds, just as it is hard to construct a random string of digits. Humans are pattern-spotting organisms and from patterns meanings are built. Speech sound patterns inevitably carry with them associations linked to previous linguistic experience. Furthermore, the composer shaped the Dogorian soundscape to fit his aesthetic and musical agenda. Songwriting usually involves considerable tinkering and numerous trade-offs between two semiotic systems, language and music. Not being tied to the multiple constraints of a natural language, E. Perruchon was far freer to soundpaint the Dogorians by using Slavic-like consonant clusters and widespread palatalization. Harnessing Dogorian to music deepened emotion and reinforced associations with Eastern European oral traditions, although some of the melodies might also evoke other musical cultures. At the same time, the vowel system and certain words (e.g., *tristou*) referenced the Romance languages, providing

¹⁵ I wish to thank Jean-Jacques Lecercle for drawing my attention to the usefulness of gradients in classifying invented languages and for suggesting similarities between Dogorian and glossolalia.

¹⁶ It is difficult to visualize space in more than three dimensions, but statistical methods, such as Multidimensional Scaling (MDS), can analyze data in N-dimensional space.

lexical landmarks for the listener.

To these internal factors, determined by the score, we must add several external factors that contributed to the array of meanings cited by the respondents: the program notes, a well-attended oral presentation by Etienne Perruchon, interviews and articles published in the local press, the interactions between composer and performers during the rehearsals, and the context in which the work was performed. The story of the Dogorians, an oppressed people struggling against hardship, but united through fraternal values, resonated for young and old. Among the adults there may have been nostalgia for a society based on sharing and solidarity. The local historical context may have also contributed to the enthusiastic reception of the Dogorian fraternal message. Although its sociological make-up has diversified considerably in recent decades, Saint-Nazaire has a rich working-class history, linked to the shipbuilding industry, trade unionism, anarcho-syndicalism and socialism; today, the town has a broad network of non-profit associations. Furthermore, the architecture of the town, 80% of which was destroyed during World War II, is a tangible reminder of the horror of war, and memories of the suffering during this period have been passed on to the younger generations.¹⁷ The universal message of the piece, performed with young people from other cultures, appeared to appeal to the idealism of different generations: *Dogora* and Dogorian evoked old and new dreams of world peace and harmony, and of universal understanding despite cultural and linguistic differences.

¹⁷ Etienne Perruchon has pointed out that performances of *Dogora* in other French towns whose social context is very different from that of Saint-Nazaire inspire similar sensations and feelings (e-mail, April 13, 2009).

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Appendix 1: Questionnaire and quantitative results for closed questions (1, 2, 3, 4, 6, 7, 9)

NB: Percentages are shown between parentheses. NA indicates either no answer or another answer.

1. Chanter dans une langue « imaginaire » :

- a. m'a plutôt attiré(e)
- b. m'a plutôt dérangé(e)
- c. m'a laissé indifférent(e)

	ATC	CN	Tot. Adultes	Total CHAM	Total
A. Attiré(e)	20	22	42 (60.0)	92 (91.1)	134 (78.4)
B. Dérangé(e)	10	6	16 (22.9)	0 (0)	16 (9.4)
C. Indiff.	4	4	8 (11.4)	9 (8.9)	17 (9.9)
NA	1	3	4 (5.7)	0 (0)	4 (2.3)

2. Pour moi, le dogorien :

- a. évoque des images
Lesquelles :
- b. n'évoque pas d'image particulière
- c. m'a laissé indifférent(e)

	ATC	CN	Tot. Adultes	Total CHAM	Total
A. Oui	26	30	56 (80.0)	71 (70.3)	127 (74.3)
B. Non	6	3	9 (12.9)	28 (27.7)	37 (21.6)
NA	3	2	5 (7.1)	2 (2.0)	7 (4.1)

3. Pour moi, le dogorien :

- a. évoque des émotions
Lesquelles :
- b. n'évoque pas d'émotion particulière

	ATC	CN	Tot. adultes	CHAM	Total
a. Oui	26	29	55 (78.6)	87 (86.1)	142 (83.0)
b. Non	6	3	9 (12.9)	11 (10.9)	20 (11.9)
NA	3	3	6 (8.6)	3 (3.0)	9 (5.3)

4. Pour moi, le dogorien :

- a. évoque des langues existantes
Lesquelles ?
- b. n'évoque pas de langue particulière

	ATC	CN	Tot. adultes	CHAM	Total
a. Oui	33	35	68 (97.1)	66 (65.3)	134 (78.4)
b. Non	2	0	2 (2.9)	34 (33.7)	36 (21.1)
NA	0	0	0	1 (1.0)	1 (0.6)

5. Pourriez-vous citer un ou plusieurs mots dogoriens qui évoquent pour vous des mots dans des langues existantes ?

6. Cette œuvre a-t-elle une signification pour vous ?

- a. Oui
Laquelle ?
- b. Non

	ATC	CN	Tot. adultes	CHAM	Total
a. Oui	21	29	50 (71.4)	68 (67.3)	118 (69.0)
b. Non	9	5	14 (20.0)	28 (27.7)	42 (24.6)
NA	5	1	6 (8.6)	5 (5.0)	11 (6.4)

7. Je dirais qu'en général :

a. le dogorien et la musique vont bien ensemble

b. le dogorien et la musique ne vont pas particulièrement bien ensemble

	ATC	CN	Tot. adultes	CHAM	Total
a. Oui	33	35	68 (97.1)	100 (99.0)	168 (98.2)
b. Non	0	0	0	0	0
NA	2	0	0 (2.9)	1 (1.0)	3 (1.8)

8. Pourriez-vous citer un passage où le dogorien et la musique vont bien ensemble (préciser le mouvement et si possible les mesures) ?

9. Pour moi, chanter en dogorien peut aider à apprendre des langues étrangères :

a. Oui

Comment ?

b. le dogorien et la musique ne vont pas particulièrement bien ensemble

	ATC	CN	Tot. adultes	CHAM	Total
a. Oui	13	18	31 (44.3)	31 (30.7)	62 (36.3)
b. Non	18	9	27 (38.6)	67 (66.3)	94 (55.0)
NA	4	8	12 (17.1)	3 (3.0)	15 (8.8)