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*What do Singers Say About the Effects of Choral Singing on Physical Health?
Findings from a Survey of Choristers in Australia, England and Germany*

Stephen M. Clift, Grenville Hancox, Ian Morrison, Bärbel Hess,
Gunter Kreutz & Don Stewart

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AIRS Song Book

30-35

How Can I Keep From Singing? Pete Seeger

One Voice, The Wailin' Jennys

Vindum, Vindum, Vefjum Band, Trans. Helga Gudmundsdottir

Kvöldá tekur sest er sól, Icelandic Round

We Are One, Carolyn McDade

Sing, Sing, Serena Ryder

AIRS 1st Annual Meeting
Preliminary Schedule (subject to change)
June 27 – 30, 2009

SATURDAY, JUNE 27

- 2:30 – 4:30 Executive Meeting – **Lower Level of the Robertson Library** – CMTC Research Facility
Theme Team Leaders, and Digital Library, Student, Partner, Geographic, Stakeholder Representatives
- 7:00 – 9:30 Plenary Opening reception -**McDougall Hall**
Official Welcomes, Performance, Project overview from Project Leader, and Theme leaders – Introduction of AIRS Researchers, Partners and representative Stakeholders

SUNDAY, JUNE 28 McDougall Hall Market Square

- 9:00 – 9:30 Opening remarks and song exchange in the spirit of the project
- 9:30 – 10:30 Plenary discussion of central issues of Theme 1 Team Leaders
- 10:30 – 10:45 Refreshment break
- 10:45 – 12:30 Plenary discussion of central issues of Theme 2 and 3. Team Leaders
- 12:30 – 1:45 Lunch (**Main Building Faculty Lounge**)
- 1:15 **Andrew Hankinson**
McGill University, Canada
Drupal: Websites for the rest of us
- 1:45 – 2:25 Digital library and the Virtual Research Environment – Brief Plenary Tutorials in **Robertson Library** building (Mark Leggott and UPEI Technical Staff Digital Library Team)

2:30 – 5:30: Oral Presentations and Posters – McDougall Hall

Theme 1 Oral Presentations

- 2:30 **Laurel Trainor, Rayna Friendly & Steven Brown**
McMaster University, Canada
Development of singing: The current state of our knowledge and an outline of critical questions
- 2:45 **Stefanie Stadler Elmer**

University of Zuerich, Switzerland
A key issue of theorizing on singing development: Analyses of the child's strategies in making a new song

- 3:00 **Simone Falk & Tamara Rathcke**
Ludwig-Maximilians-Universität, Germany & University of Glasgow, UK
The speech-to-song illusion: Experimental evidence
- 3:10 **Simone Dalla Bella & Magdalena Berkowska**
University of Finance and Management in Warsaw, Poland
Tone deafness disrupts pitch production in music, not in speech: A case study
- 3:20 **Lauren Stewart, Susan Anderson, Karen Wise & Graham Welch**
Goldsmiths University of London; Keele University; University of London, UK
An Intervention Study in Congenital Amusia
- 3:30 **Psyche Loui & Gottfried Schlaug**
Beth Israel Deaconess Medical Centre, Harvard University, USA
Neural control of vocal pitch production

Theme 1 Posters

- 3:40 **Marju Raju, Eva Liina Asu & Jaan Ross**
Estonian Academy of Music and Theatre; University of Tartu and Institute of Estonian and General Linguistics
Comparison of rhythm in musical scores and performances as measured with the pairwise variability index
- 3:43 **Stefanie Stadler Elmer**
University of Zurich, Switzerland
Microgenetic analysis of children's singing
- 3:46 **Nathalie Henrich Lucie Bailly, Xavier Pelorson & Bernard Lortat-Jacob**
Speech and Cognition, GIPSA-lab, France
Physiological and physical understanding of singing voice practices: the Sardinian Bassu case
- 3:50 **Sean Hutchins**, Université de Montréal, *Pitch Matching in Amusia*
- 3:56 **Annabel J. Cohen, Marsha Lannan, Jenna D. Coady & Emily Gallant**
University of Prince Edward Island, Canada
Developing a test battery of singing abilities with lifespan application

4:00 – 4:30: Refreshments and Poster Viewing –McDougall Street

Theme 1 Oral Presentations (continued)

4:30 **Nathalie Henrich**, Bernard Roubeau, Michele Castellengo & Bernard Roubeau
Centre national de la recherche scientifique CNRS (Département des sciences l'homme et de la société); Service d'ORL et de Chirurgie Cervico-faciale, Hopital Tenon; LAM-IJLRA, France
How to identify the laryngeal mechanism of a singing voice production

4:50 **Mayumi Adachi** & Taichi Ando
Hokkaido University, Japan
A Japanese infant's vocal features in daily contexts of infant-directed speech and song: A case study

5:00 **Simone Falk**
Ludwid-Maximilians-Universitat, Germany
From song to speech? Infant-directed singing in the first year of life

5:10 **Frank A. Russo** & Lisa Chan
Ryerson University, Canada
The use of facial electromyography in singing research

6:30 - 8:00 Dinner together: **Andrews Hall** – UPEI Campus

8:00 Public Concert AIRS in **Steel Auditorium**: Variations on a Theme of Singing featuring AIRS Team members
Organized by June Countryman and Sung-Ha Shin-Bouey, UPEI Department of Music for performance to

9:30 **Main Building Faculty Lounge** for Refreshments and Cash Bar

MONDAY, JUNE 29

9:00 – 10:15 Break into 3 theme, digital library, student & partner/stakeholder group
Discuss implementation of goals/videoconference as needed
(Room TBA)

10:15 – 10:30 Refreshment Break

10:30 – 1:00: Oral Presentations and Posters

Theme 2 Oral Presentations

10:30 **Andrea Emberly**
University of Washington, USA
The role of media on song acquisition in South African Children

- 10:45 **Allan Vurma & Jaan Ross**
Estonian Academy of Music and Theater & University of Tartu, Estonia
Observing a chameleon: How to bridge a gap between the voice training and its scientific description
- 11: 05 **Nathalie Henrich**, Sandra Cornaz, Nathalie Vallée, Sandra Cornaz and Nathalie Vallée
Dept. Speech and Cognition, GIPSA-lab, France
Singing voice as a tool for improving the teaching/learning of a foreign language. The case of Italian speakers learning French.
- 11:20 **Martin Gardiner**
Center for the Study of Human Development, Brown University, USA
WORLearning singing skills: Effects on broader skill learning

Theme 3 Oral Presentations

- 11:35 **Lawrence P. O'Farrell**
Queen's University, Canada
Networking and Publication Outlets for AIRS
- 11:50 **Lily Chen-Hafteck**
Kean University, USA
Effects of an Interdisciplinary Chinese Music Program on Children's Cultural Understanding
- 12:05 **Stephen M. Clift**, Grenville Hancox, Ann Skingley, Ian Morrison & Hilary Bungay
Canterbury Christ Church University, UK
Community Singing for Wellbeing and Health: Report on a Progressive Research Programme within the Sidney De Haan Research Centre for Arts and Health, UK

Theme 2 and 3 Posters

- 12: 25 **Jennifer Sullivan**
St Francis Xavier University, Canada
Learning and Singing: Song Intervention to Enhance Preschool Vocabulary
- 12:28 **Godfrey Baldacchino**
University of Prince Edward Island, Canada
Launching an Island Song Research Network
- 12:31 **Rachel Heydon**
University of Western Ontario, Canada
Enhancing communicative learning opportunities through intergenerational art curricula: A multi-phase qualitative study leading to the AIRS research in intergenerational understanding

- 12:34 **Stephen M. Clift**, Grenville Hancox, Ian Morrison, Bärbel Hess, Gunter Kreutz & **Don Stewart**
 Sydney de Haan Centre, University of Canterbury, UK
What do Singers Say About the Effects of Choral Singing on Physical Health? Findings from a Survey of Choristers in Australia, England and Germany
- 12:37 Gisèle A. Lalonde & **Jennifer Nicol**
 University of Saskatchewan, Canada
Three Francophone Adolescent Girls' Stories of Singing: Singing for Identity, Relationship and Wellbeing
- 12:40 **Jennifer Nicol** & Gisèle A. Lalonde
 University of Saskatchewan, Canada
A Grounded Theory Inquiry of Solitary Music Listening as a Social Process
- 12:43 **Jennifer Nicol**
 University of Saskatchewan, Canada
Exploring Alternate Ways to Represent Findings and Disseminate Knowledge
- 12:48 **Stuart Brown** DVD
Sing for Your Life, Kent, United Kingdom

1:00 – 2:15: *Lunch and Poster Viewing*

2:15 – 3:45 Break further into subgroups of each theme 1a, 1b,1c, 2a 2b,2c, 3a, 3b, 3c, Digital Lib

3:45 - 4:15 Within theme groups report back to each other: all Theme 1, 2, and 3

5:15 – 6:45 Reception/concert at the **home of the Lieutenant Governor of Prince Edward Island , the Honorable**

7:00 – 9:00 Dinner (**Confederation Centre of the Arts**)

TUESDAY, JUNE 30 McDougall Hall

9:00 – 12:00 Plenary: Reports from the Theme Subgroups (video conference as needed)

12:00 – 1:00 Box Lunch

1:30 – 4:30 Team Leaders - Wrap –up
Robertson Library, CMTC Lower Level Laboratory

WEDNESDAY, JULY 30 Canada Day (<http://www.tourismpei.com/index.php3>)

Presentation and Poster Abstracts

In Order of Theme and Subtheme

Andrew Hankinson: Presentation
Schulich School of Music, McGill University, Quebec, Canada
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Drupal: Websites for the rest of us

The days of the webmaster, the perennial gatekeeper of an organization's website, are quickly coming to an end. Content Management Systems (CMS) allow a more decentralized approach to website content development, providing easy-to-use tools for creating, publishing and maintaining a website's content. Drupal is a popular CMS, open source, freely available and backed by an active community of developers and users. It is in use by organizations big and small, from NASA to public libraries. This talk will start with a brief introduction to web content management and then move to a more specific discussion of how Drupal can be used in digital libraries and collaborative research environments.

THEME 1 - DEVELOPMENT

Laurel Trainor, Rayna Friendly & Steven Brown: Presentation - 1.1
Psychology Department, McMaster University, Ontario, Canada
LJT@mcmaster.ca

Development of singing: The current state of our knowledge and an outline of critical questions

Singing, like speech, is a universal human behavior. Yet, we know little about its development. In this paper, we review literature about singing development and begin to define a direction for future research. The first question we consider is the developmental trajectory of singing in terms of how accuracy and precision improve with age. The second question concerns the factors that influence the development of singing ability, such as sex, musical experience in the home environment, and formal instruction at school. The third question concerns the relationship between perception and production, exploring, for example, whether singing accuracy in children is constrained by perceptual skills, vocal factors, or sensorimotor interactions. The fourth question concerns the relative trajectories of speech and song development, in terms of both the progression of their developmental stages and the ages at which milestones are achieved. The fifth question deals with how best to measure singing ability and generate a classification of singer types among developing singers. Finally, the sixth question concerns the extent to which inaccurate singing can be ameliorated through training, and whether there exists a sensitive period for singing development.

Mayumi Adachi & Taichi Ando: Presentation - 1.1
Department of Psychology, Hokkaido University, Japan
adachi@psych.let.hokudai.ac.jp

A Japanese infant's vocal features in daily contexts of infant-directed speech and song: A case study

The purpose of this study was to explore whether our notion of musical babblings to be produced more in musical interactions than in other daily contexts would be a physically observable phenomenon or a result of someone's interpretation of the infant's vocal quality. In Experiment 1, we analyzed acoustical features of 50 vocal samples taken from a 19-month-old boy's vocalizations recorded weekly during a period of 3 weeks, and categorically evaluated tonal contents. In Experiment 2, we presented these vocal samples to 22 Japanese mothers and 22 college female students, asking them to rate whether each sample sounded more like speaking or singing. Even though there were no differences between contexts in any of the infant's vocal features, both mothers and college female students clearly differentiated the infant's "song-like" babblings from "speech-like" babblings while the former occurred more in the context of infant-directed speech, and vice versa. Replications of the study (in Japan and elsewhere) are needed to generalize the findings.

Simone Falk & Tamara Rathcke: Lightning Talk Presentation - 1.1
Ludwig-Maximilians-Universität, Germany & University of Glasgow, United Kingdom
simone.falk@germanistik.uni-muenchen.de

The speech-to-song illusion: experimental evidence

We are exploring the boundaries of speech and song in an acoustic-perceptive perspective. We investigate a musical illusion first described by Diana Deutsch (1995, Deutsch et al. 2008). In this "speech-to-song illusion" a phrase read by Diana Deutsch shifts to be heard as sung without changing any acoustic characteristics of the signal. This illusion is achieved by simply repeating the phrase several times in exactly the same way. As far as we know, the effect was found only with this single phrase as piece of evidence. We assume that some acoustic characteristics of this read phrase supported the perceptive shifting from speech to song in a specific way. Our assumption is that the shifting will occur earlier, i.e. after fewer repetitions, when specific acoustic characteristics are present in a sound signal. We have set up a reaction time experiment using the speech-to-song illusion as a method to test several hypotheses about the nature of the acoustic characteristics that will support the perceptive drift. Our hypotheses are as follows: We suggest that the drift will occur earlier if (i) pitch accents occur isochronically (ii) if intervocalic intervals are equalized in duration resembling note durations, (iii) the targets of pitch accents are level-like (as opposed to contour-like targets as in natural speech) and (iv) if scalar tonal relations are suggested by the melody especially at the phrase boundary. In the experiment, we manipulate these factors individually and cumulatively to assess their relative importance for the perceptual shift. This study is still in progress. It will give useful evidence for modeling the acoustic basis of speech and song perception and will reveal shared resources.

Simone Dalla Bella & Magdalena Berkowska: Lightning Talk Presentation - 1.1
Department of Cognitive Psychology & University of Finance and Management in Warsaw,
Poland
sdallabella@vizja.pl

Tone deafness disrupts pitch production in music, not in speech: A case study

Inaccurate adult singers (i.e., 10-15% of the general population) typically perform out of tune and sometimes they sing out of time. This condition (often referred to as “tone deafness”) has been observed both in presence and in absence of deficient pitch perception. It is still unknown whether this deficit in pitch production is specific to music or rather extends also to speech intonation. This possibility has been tested in AZ, a tone-deaf woman with mild pitch perception deficits. AZ and a group of matched controls read sentences as statements or questions, and in another task imitated short spoken and sung fragments (with lyrics) having the same pitch content. AZ was very inaccurate in producing and imitating pitch in a musical context; however her performance was in the range of controls when pitch was produced in a linguistic context.

Lauren Stewart, Susan Anderson, Karen Wise & Graham Welch: Lightning Talk Presentation
Psychology Department, Goldsmiths University of London; Keele University; Institute of
Education, University of London, United Kingdom
l.stewart@gold.ac.uk

Congenital Amusia: An Intervention Study

Individuals with congenital amusia (CA) lack basic abilities associated with the perception and production of music, despite normal exposure to music during development, normal education levels and IQ, and no known neurological or peripheral auditory impairments. CA individuals have difficulty recognizing tunes that would be familiar to other members of their culture, or telling simple tunes apart (Peretz et al., 2003). They should be distinguished from individuals who believe (rightly or wrongly) they cannot sing in tune, yet have no perceptual deficits (Cuddy et al., 2005; Pfordrescher and Brown, 2008; Wise and Sloboda, 2008). The present study will seek to determine whether pitch perception and/or production can be improved in amusia. A group of CA individuals will receive 10 singing lessons from a professional singing teacher, incorporating the use of visual feedback techniques via ‘Sing and See’ software, as well as 6 technology sessions, where individuals will have the chance to ‘play’ with sound using music educational software. Pre- and post-intervention measures will include testing of pitch perception (Montreal Battery for the Evaluation of Amusia (MBEA), computerized pitch matching task and psychophysical tests of pitch detection and discrimination tests) and pitch production (singing of familiar tune; measures of pitch range; vocal imitation of single pitches). Comparison of pre-/post-performance in the taught group versus a matched group of CA individuals who do not receive training will reveal the extent to which pitch perception and production deficits are amenable to intervention in this group.

Sean Hutchins: Poster – 1.1
Université de Montréal, Canada
sean.hutchins@gmail.com

Pitch Matching in Amusia

One interesting place to study the relationship between pitch perception is vocal pitch matching. This is an important basic skill for any type of singing. We assessed pitch matching abilities in congenital amusics to help to understand the relationship between perception and production in music. Congenital amusia is a neurogenetic disorder characterized by the inability to consciously perceive pitch differences. Amusics and controls attempted to match pitches vocally under normal, guided, and masked feedback conditions. We analyzed the fundamental frequency of their vocal productions, and found that amusics were significantly less accurate in matching a target pitch than controls. However, five of the six amusics showed a significant correlation between their produced pitches and the target pitch. Feedback condition had no effect on pitch matching accuracy. These results confirm that amusics are indeed worse at vocal pitch matching than controls, but shows evidence that some of them do adjust their productions in response to changing target in a systematic way.

Simone Falk: Lightning Talk Presentation - 1.1
Ludwig-Maximilians-Universität, Germany
simone.falk@germanistik.uni-muenchen.de

From song to speech? Infant-directed singing in the first year of life

In this paper, I will demonstrate how rich and variable in form and situational context sung speech to infants (infant-directed singing) is during the first year of life. It will be shown how it is used as a communicative tool between parents and infants in daily child-care activities and how the linguistic side of the song interacts with musical structure. This might be of special interest for those AIRS researchers working on the boundaries of singing and speaking or developmental aspects of singing. Examples will be given from a wide corpus of recordings (600 items) of French, German and Russian parents (50) singing with their children. Regarding the AIRS database, some problems of categorization or parametrization of infant-directed singing will be addressed and discussed with the audience.

Marju Raju, Eva Liina Asu & **Jaan Ross**: Poster - 1.1

Estonian Academy of Music and Theatre; Institute of Estonian and General Linguistics; Institute of Arts and Cultural Studies, University of Tartu, Estonia

jaan.ross@ut.ee

Comparison of rhythm in musical scores and performances as measured with the pairwise variability index

This paper tests two hypotheses: (1) that the nPVI values computed on the basis of recorded performances may be higher than the nPVI values computed for the same works as musical scores, and (2) that the musical nPVI values for different composers may vary substantially within one culture even within a short time-span. In Experiment 1, samples from the works of two Estonian composers, Mart Saar (1882-1963) and Eduard Tubin (1905-1982), were used for calculation of nPVI on the basis of both scores and performances. nPVI values for performed music were systematically higher than those for scores but the differences were not statistically significant. In Experiment 2, larger corpora of scores by Saar, Tubin, and Veljo Tormis (born 1930) were analyzed. Solo parts in songs by Tormis had significantly lower nPVI values than those in songs by Saar and Tubin. Our results show that calculation of nPVI values in music may rely either on a score or on a performance, the results being not significantly different from each other. The results also show that there may be significant differences in rhythmic contrast between the works of composers from one culture created only a few decades apart, and that nPVI values may not only increase but also decrease for compositions created later in time.

Stefanie Stadler Elmer: Presentation – 1.2

University of Zürich, Switzerland

stefanie.stadler@access.uzh.ch

A key issue of theorizing on singing development: analyses of the child's strategies in making a new song (long presentation)

Among previous developmental theories we find the idea that musical behaviour follows an invariable and age-related sequence of mastering more and more intervals or 'contour schemes' of the occidental music system. Often, we find a hidden ethnocentricity, since, tacitly, occidental musical rules are considered to be universal. Or, it is assumed that musical development is a matter of biology and innate talent. Alternatively, when trying to find early roots that can be considered to be precursors of musical behaviour, music cannot be viewed as a physical object, but rather as a socio-cultural one.

The newly proposed theory, inspired by Piaget's thinking, shares the idea with J. Huizinga and with E. Cassirer, that music is rooted in play and in human symbolizing. Music is a symbol system created by humans for the sake of emotional functions such as enhancing social belonging, influencing moods, regulating emotions of others and of the own ones.

The voice starts to organise at birth, and gradually adapts to the cultural surrounding and its conventions concerning language, music, and social rules. Vocal and musical behaviour are highly

adaptive and constructive, and concern two symbolic systems: music and language. The child develops the voice by playing and imitating. The development proceeds from sensorimotor activities towards more and more conscious actions and thoughts. In order to study children's singing, computer aided programs were devised to analyse and represent pitch, timing, pitch qualities, and syllables. This method yields complex configurations of these parameters describing children's song singing. Detailed descriptions allow to reconstruct the strategies children apply to invent or learn new songs. Empirical results from children at various ages demonstrate that the focus on the analysis of the organisation of the vocal expression is a promising research strategy. It is not a single sung song or some selected features that indicate a development stage. Rather, the way a child creates or learns a new song reveals his or her understanding of how such a complex event is organised.

Frank A. Russo & Lisa Chan: Lightning Talk – 1.2
Department of Psychology, Ryerson University, Toronto, Canada
russo@ryerson.ca

The use of facial electromyography in singing research

A recent pilot study conducted in our lab suggests that facial mimicry may be involved in perception of sung emotion. Participants were asked to observe and then reproduce songs that were emotionally expressive. The songs were presented audio-visually and the onset of reproductions was cued so as to occur one full bar after the coda. Using facial electromyography (f-emg), muscle activity was observed over four epochs: perception (presentation of target), planning (pre-imitation), production (imitation), and post-production (after imitation). Evidence of mimicry was found across all epochs, including perception. The mimicry observed in the perception epoch is somewhat surprising and may be the manifestation of a facial-feedback network that serves emotional communication. The presentation will focus on possibilities for involving f-EMG in future research related to the AIRS project including studies investigating perception of sung and spoken emotion as well as studies of dyadic communication behavior.

Nathalie Henrich, Bernard Roubeau, Michele Castellengo, Bernard Roubeau & Michèle Castellengo: Poster - 1.2
Centre national de la recherche scientifique CNRS (Département des sciences l'homme et de la société), France; Service d'ORL et de Chirurgie Cervico-faciale, Hopital Tenon; LAM-IJLRA, France
Nathalie.Henrich@gipsa-lab.inpg.fr

How to identify the laryngeal mechanism of a singing voice production

Human phonation is characterized by the use of four distinct laryngeal mechanisms, which are common to male and female speakers and singers. The understanding of a given singing-voice production requires the assessing of its laryngeal nature. The singing-voice register (or middle register) is a good example of a phonation where the laryngeal properties remain misunderstood. We will focus here on the two main laryngeal mechanisms used in singing. These two laryngeal

mechanisms differ with respect to the vocalis-muscle participation to the vibrating mass in action. Electroglottography, a non-invasive technique which measures vocal-fold contact area, seems an interesting tool to identify the laryngeal nature of a given singing sound. The technique will be presented and its applicability to the identification of the laryngeal mechanisms will be discussed. It has successfully been applied to the understanding of the laryngeal nature of singing-voice productions in conducted with 5 professional singers of both sexes has demonstrated that, on contrary to the general opinion register is not produced in an intermediate laryngeal mechanism, but in one of the two main laryngeal mechanisms.

Stephanie Stadler Elmer & Franz-Josef Elmer: Poster – 1.2
University of Zuerich & University of Basel, Switzerland
stefanie.stadler@access.uzh.ch

A computer based method for analyzing singing

The analysis of singing has been an intricate and serious obstacle in psychology and ethnomusicology. Singing is a transient and mostly unstable patterning of vocal sounds that is organised by applying more or less linguistic and musical rules. Traditionally, a sung performance has been analysed by mere listening and by using the western musical notation for representing its structure. Since this method neglects any in-between categories with respect to pitch and time, it proves to be culturally biased. However, acoustic measures as used in speech analysis have had limited application and were primarily used to quantify isolated parameters of sung performances. Praat, a computer tool for phonetic analysis by Boersma & Weenink (2009, <http://www.fon.hum.uva.nl/praat/>), is very powerful and provides musically relevant information. In order to have a specific computer program for the analysis of singing, we devised a computer-aided method in combination with a new symbolic notation. Our specific focus concerns the analysis and representation of the organisation of pitch in relation to the syllables of the lyrics, and its temporal structure. The computer program provides detailed acoustic measures on pitch and time. We reduce the redundancy of the detailed information by a notation system that shows pitch and time each on a continuous scale, including glissandi, breathing, joint singing, and instructional help. The two programs (pitch analyzer, notation viewer) and detailed instructions are freely available at <http://mmatools.sourceforge.net/>. By combining acoustic with auditory analyses, this method allows to describe reliably sung performance's structures with respect to the organisation of pitches, together with syllables, and their timing. The resulting configuration of data includes qualitative aspects such as stable and unstable pitches. Such microanalytic descriptions are very useful for studying the nature of sung performances, their structures, and processes of change due to learning and development.

Nathalie Henrich, Lucie Bailly, Xavier Pelorson & Bernard Lortat-Jacob: Poster - 1.2
Centre national de la recherche scientifique CNRS (Département des sciences l'homme et de la société), France
Nathalie.Henrich@gipsa-lab.inpg.fr

Physiological and physical understanding of singing voice practices: the Sardinian Bassu case

The scientific approach applied to the understanding of a singing-voice practice will be illustrated in the case of Sardinian traditional singing. From an ethnomusicological point of view, the singing-voice technique used by *Bassu* singer is puzzling, as this singer produces very low-pitch bass-type sounds. A combined physiological and physical investigation has been conducted, which will be described. The laryngeal vibratory characteristics are analyzed on a professional singer by means of acoustical, electroglottographic signals and synchronized glottal images obtained by high-speed cinematography. In this singing-voice practice, both vocal folds and ventricular folds are vibrating, similarly to the Mongolian throat singing. Using the detected glottal and ventricular areas, the aerodynamic behavior of the laryngeal system is simulated using a simplified aerodynamic modeling previously validated on replica of vocal and ventricular folds. This study points out the impact of a ventricular constriction on the vocal-folds vibrations.

Psyche Loui & Gottfried Schlaug: Lightning Talk Presentation - 1.3
Beth Israel Deaconess Medical Centre, Harvard University, Massachusetts, United States
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Neural control of vocal pitch production

Singing is a ubiquitous human behavior, yet how it is accomplished by the human brain is unknown. To produce accurate pitches using the voice, the human brain must learn to plan the accurate target, to execute the selected motor plan, and to perceive auditory feedback from vocal output so as to fine-tune the motor plan online. Using behavioral and neuroimaging studies with normal and tone-deaf subjects, I will show that the neural network controlling this feedforward-feedback system involves bilateral frontotemporal networks. The frontotemporal networks include superior and middle temporal lobes and inferior frontal lobes, classic language areas that are disrupted in communication disorders and can be explored using MR and diffusion tensor imaging. Results shed light on how the human brain may have capacity to listen and to rapidly learn new music, and have implications on educating the developing human brain.

Annabel J. Cohen, Marsha Lannan, Jenna D. Coady & Emily Gallant: Poster - 1.3
AIRS and Department of Psychology, University of Prince Edward Island, PE, Canada
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Developing a test battery of singing abilities with lifespan application

A short battery of tests of singing skills was developed for the purpose of conducting longitudinal and lifespan cross-sectional and cross-cultural studies that would provide data that would separate the individual, cultural, and innate influences on the development of singing. In consultation with Simone Dalla Bella and Stefanie Stadler Elmer, a test battery was developed having 11 components. Components 1 and 11 engaged conversation to assess language unobtrusively. The remain components assess (2) pitch range (3) minor third call-back (4) musical interval, triad, and scale (5) singing the familiar melody “Are you sleeping” in segments (6) singing a favorite song (7) improvising the ending to an unknown song (8) composing a song to a picture prompt (9) repeating an unknown song, and (10) singing from memory “Are you sleeping”. Experiment 1 tested 20 participants --two females and two males of ages 3, 5, and 7 years and young adults having no or considerable voice training-- at five monthly intervals resulting in approximately 100 examples of each component. Analysis was directed to memory of “Are you sleeping” (10) and free composition (8). Renditions of “Are you sleeping” were analyzed with Stadler Elmer’s (2001) pitch extraction technique. For free composition, the structure and content of the transcribed prose was analyzed. In Experiment 2, a refined protocol was administered to 4 older adults and 6 persons with probable Alzheimer’s disease. The feasibility of use of the battery with all tested populations was observed and a wealth of information was obtained, some of which was submitted to quantitative and qualitative analysis. The results encourage longitudinal studies over a longer course. The willingness of participants of all ages on successive sessions is encouraging of further refinement of the battery. The battery may assist in defining natural singing skills, help in the teaching of singing and the maintenance of musical creativity, help in defining preserved musical ability in Alzheimers Disease, help define retention of singing skills with normal aging, and may also benefit crosscultural studies and comparisons of music and language skills and interactions.

THEME 2 – EDUCATION

Andrea Emberly: Lightning Talk Presentation – 2.1
Ethnomusicology Department, University of Washington, Washington, USA

The role of media on song acquisition in South African Children

Allan Vurma & **Jaan Ross:** Presentation - 2.2
Estonian Academy of Music and Theater & Institute of Arts and Cultural Studies, University of Tartu, Estonia
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Observing a chameleon: How to bridge a gap between the voice training and its scientific description

An overview of the authors' research on perception and production of singing voice as well as on the methods of voice training is presented. In the first study, a correlation was found for a group of voice students between the duration of training and the strength of the singer's formant, while the tone quality estimates were not significantly higher for students with longer practice years. In the second study we investigated possible acoustical correlates of the 'forward'/'backward' placing of a voice. A 'forward' placed voice may have higher F1, F2 and/or the singer's formant frequencies as well as a higher level of the singer's formant. In the third study we investigated the intonation accuracy in a cappella performance. There are considerable interindividual differences between performers as to their adjustment of pitch level. The stability of intonation varies significantly both within a single rendition of the vocal exercise as well as between its consecutive renditions. There is a positive correlation between the deviation of a melodic interval from its equally tempered standard value and the number of out-of-tune judgments by the listeners. The dispersion of out-of-tune judgments is considerable, which suggests that listeners might have adopted different criteria for intonation accuracy.

Martin F. Gardiner: Presentation - 2.3
Center for the Study of Human Development, Brown University, Rhode Island, United States
Martin_Gardiner@brown.edu

WORLearning singing skills: Effects on broader skill learning

This talk will discuss our data published in the journal *Nature* (Gardiner et al, 1996), and also data from more recent studies. We are finding superior performance in math and, in upper elementary grades, also in language arts in elementary grade students who learn singing skills by Kodaly method, as compared to peers without this singing training. We study this win-win evidence that skill training, which opens up the benefits of music can at the same time help the student develop skill learning more broadly as well. These cross-relationships between musical and other skill learning, I propose, can most readily be explained as reflecting impact of the singing and other musical skill training on development of brain capabilities for "mental engagement" (Gardiner,

2008). Mental engagement concerns how the brain is used in support of skill. Such cross-relationships between musical and other skill learning are not only of practical interest to educators, supporting the importance of musical skill training, and in particular singing training, within the school curriculum, but also can help us to better understand brain functions related to musical skill and how brain engagement called upon by music is related to brain engagement supporting skills of other kinds.

Nathalie Henrich, Sandra Cornaz, Nathalie Valle'e, Sandra Cornaz & Nathalie Vallée: Lightning Talk Presentation - 2.3

Centre national de la recherche scientifique CNRS (Département des sciences l'homme et de la société), France

Nathalie.Henrich@gipsa-lab.inpg.fr

Singing voice as a tool for improving the teaching/learning of a foreign language. The case of Italian speakers learning French.

Studies from various research fields have shown that music could have a favorable impact on learning processes. In particular, a recent study has demonstrated that the segmentation of words in a foreign language was facilitated by language learning based on sung sequences as compared to speech sequences. In the present study, we aim at investigating whether exercises in singing could help to improve the learning of French phonemes. The oral vowels of the Italian standard phonologic system were chosen, as they differ from those of French by the lack of two rounded anterior /y/ and /ø/. An experiment was conducted on two groups of Italian-speaking students learning French. The first group was given a common phonetic teaching with a reference method traditionally used for teaching/learning French as a foreign language. Within the same teaching duration, the second group was given a similar phonetic teaching including additional singing-voice exercises. The learned ability to produce the two target phonemes (/y/ et /ø/) was evaluated using either read or repeated carrier sentences. Recordings were made prior, during and after the learning phases. The data were semi-manually processed using Praat software. The results show that the subjects who were taught with additional singing-voice exercises learned to produced the anterior phonemes /y/ et /ø/ in the acoustical regions expected for these vowels in French, and to markedly reduce the confusion (overlap of scattering regions) between them and with close phonemes (in particular /i/ et /u/).

Jennifer F. Sullivan: Poster - 2.3
St. Francis Xavier University, Nova Scotia, Canada
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Learning and Singing: Song Intervention to Enhance Preschool Vocabulary

This research will explore the value of singing for teaching non-musical content, specifically, vocabulary. Previous research has found that young school-aged children vary substantially in the number of words they can comprehend (e.g., see Anglin, 1993). Those children with smaller vocabulary comprehension are usually found to have more academic difficulty throughout their school years (Stanovich, 1986). Several researchers have implemented various strategies to enhance vocabulary knowledge in pre-school (Senechal & Cornell, 1993), primarily (Biemiller & Boote, 2006), and older elementary school-aged children (Beck & McKeown, 2007). Very little research has been conducted investigating the use of song to enhance vocabulary comprehension. In this study, preschool children, who are 3- and 4- years old, will participate in a singing intervention program in their daycare setting. The children will learn to sing short nursery songs that contain advanced vocabulary words. This group will be compared to a storybook reading group. General vocabulary measures, as well as measures of target vocabulary comprehension, will be taken both before and after the interventions. We anticipate that this study will help show the value of singing for enlarging vocabulary.

THEME 3 – WELL-BEING

Lawrence P. O'Farrell: Presentation - 3.1
Queen's University, Ontario, Canada
ofarrel@educ.queesu.ca

Networking and Publication Outlets for AIRS

The UNESCO Chair in Arts and Learning at Queen's University offers AIRS researchers a channel for networking and publication. This presentation will outline the goals and activities of the UNESCO Chair in Arts and Learning, the Canadian Network for Arts and Learning, the World Alliance for Arts Education, the UNESCO World Conference on Arts Education (Seoul, 2010) and the UNESCO Observatory on Multi-Disciplinary Research in the Arts which will publish and on-line journal dedicated to 'Singing: Interdisciplinary perspectives on a natural human expressive outlet'.

Lily Chen-Hafteck: Presentation - 3.1
Kean University, New Jersey, United States
lhafteck@kean.edu

Effects of an Interdisciplinary Chinese Music Program on Children's Cultural Understanding

If music is an expression of culture, then to what extent can learning the songs of an unfamiliar culture enhance understanding of the culture and its people? I have conducted a research study in which introduce 250 children in New York City to a ten-week interdisciplinary program on Chinese music and culture. As a result of this program, the elementary children showed evidence of an increase in cultural and musical knowledge; higher motivation; a more positive attitude toward people from other cultures; and greater self-confidence for students from the minority cultures. As follow-up, I expanded the study to New Jersey, introducing the music and culture of Cuba in addition to those of China. In this talk, I will report on these research projects and discuss their implications on my proposed plan for AIRS project - a new study in the area of 'Well-being: Crosscultural Understanding'.

Godfrey Baldacchino: Poster - 3.1

Institute of Island Studies and Department of Sociology and Anthropology, University of Prince Edward Island, PE, Canada
gbaldacchino@upei.ca

Launching an Island Song Research Network

AIRS colleagues in the sub-theme of Well-Being (Cross-Cultural Understanding) will develop a template that examines islands as platforms where song and singing are socially constructed 'in place', and the extent to which songs and singing on islands captures more clearly the complex cultural dynamics that pervade the global-local. A broad and globally distributed interdisciplinary group of both researchers and practitioners will investigate how singing is involved as people on islands navigate 'roots' (locality, identity, lineage, genealogy, self-sufficiency, xenophobia, nationalism) and 'routes' (mobility, hybridity, diaspora, cosmopolitanism, transnationalism).

Gordon Adnams: Poster - 3.1

University of Alberta, Canada
gadnams@telusplanet.net

The Experience of congregational singing: An ethno-phenomenological approach

Congregational singing in many Canadian evangelical churches has undergone a significant shift. Organs have been replaced by guitars and drums; hymnals are left in the rack in favour of text on a screen; hymns are out and compact pop-style worship songs are in. These changes have been welcomed by some worshippers but have caused consternation in others as local congregations have struggled with musical preferences and worship styles – a process that has often resulted in a "worship war." Some congregations have remained musically traditional; some wholly embrace

the new Praise and Worship songs, while others offer separate services for each musical taste. As well, some churches have opted to use both traditional and contemporary songs in one service. This dissertation asks, "What is the experience of congregational singers as they sing both traditional and contemporary worship songs in a stylistically blended worship service?" Using hermeneutic phenomenology, modes of being-in-song-in-singing are explored, together with a musical ethnography that examines the context of the singing - a Canadian congregation whose blended worship services have choruses accompanied by a guitar-based ensemble and hymns sung with an organ and piano. The phenomenological and ethnographic insights are subsequently discussed, using the paradigm of authenticity as articulated by philosopher Charles Taylor. The dissertation concludes that blended musical worship is a phenomenon that challenges individuals to examine their notions of authenticity in worship. If blended worship is to be sustained, the self-centered authenticity prevalent in popular culture and most clearly seen in the experience of those who prefer the contemporary style of worship singing, needs to shift to a more inclusive authenticity that encompasses what Taylor calls a "horizon of significance" outside the self. When singers accept the challenge to grow beyond expressive individualism, they may be able to value and embrace a diverse church community with its differences in musical preference.

Rachel Heydon: Poster – 3.2

School of Education, University of Western Ontario, Canada
rheydon@uwo.ca

Enhancing communicative learning opportunities through intergenerational art curricula: A multi-phase qualitative study leading to the AIRS research in intergenerational understanding

Part one of this five year qualitative multiple case study investigated the learning and intergenerational interactional opportunities of co-located intergenerational art program. Using a hybrid theoretical framework drawing on multimodal literacy and Bakhtinian dialogism, the study found that the intergenerational context and the structuring of the curriculum to address the major semiotic decisions (i.e., what is to be signified; what is the apt signifier; how is the sign made most suitable on the occasion of its communication) resulted in numerous communicative learning opportunities. These findings were then used to build an intergenerational art program that was field tested over three years in a co-located facility. The results will become the basis of an attempt to build intergenerational singing curricula that can be implemented cross-culturally.

Stephen M. Clift, Grenville Hancox, Ann Skingley, Ian Morrison & Hilary Bungay: Presentation
– 3.3

Canterbury Christ Church University, Kent, United Kingdom
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*Community Singing for Wellbeing and Health: Report on a Progressive Research Programme
within the Sidney De Haan Research Centre for Arts and Health, UK*

The Sidney De Haan Research Centre for Arts and Health is halfway through an eight-year research program exploring the potential benefits for health and wellbeing of community singing. To date a systematic mapping and review of published research on singing and health has been completed, together with a cross-national survey of choral singers in England, Germany and Australia. A formative evaluation of the 'Silver Song Clubs' project, an innovative model of community singing groups for elderly people, including many participants affected by dementia, has also been undertaken. These studies have provided the basis for developing a theoretical framework for understanding the potential value of singing, which identifies the principal physical, cognitive, emotional and social benefits of group singing, and the generative mechanisms which link singing with wellbeing and health. Building on this work, the Centre is currently engaged in developing and implementing three new community-based studies on singing and health. The first is a cluster randomized controlled trial of the 'Silver Song Club' project in which five new song clubs for elderly people will be established with outcomes for participants in weekly singing groups compared over a three-month period with non-participant controls. The second project involves establishing and evaluating a network of six singing groups for mental health service users, which will meet weekly over a period of six months. The third project involves a randomized controlled trial of weekly community group singing activity, over six months, for patients with chronic obstructive pulmonary disease. Each of these projects is concerned with exploring the health benefits of singing following a holistic and positive model of health, but with a particular emphasis on aspects of physical, mental or social wellbeing relevant to the participant groups. This presentation will highlight some of the major findings from the studies so far completed, and outline aims, design and methods for the studies currently underway.

Stuart Brown: DVD and Power Point - 3.3

Sing for Your Life, Kent, United Kingdom
makmusse@aol.com

I propose to show a DVD which lasts approximately 10 minutes and which demonstrates how *Sing For Your Life* delivers programs of participatory singing to older people affected by age related mental health conditions and social isolation in a variety of settings. I will also bring a full power point presentation, which I would be willing to present to those interested in this area of work if there is the opportunity. This would last 45 minutes. *Sing For Your Life* is intending to start a network of Silver Song Clubs in Canada. *Sing For Your Life* operates nearly 50 Clubs in Southern England offering 2000 places per month and has been commissioned by the Department of Health to develop a model to allow the network to be extended throughout UK.

Gisèle A. Lalonde & **Jennifer Nicol**: Poster – 3.3

Department of Education Psychology and Special Education (Counselling Psychology), University of Saskatchewan, Canada

Jaj.nicol@usask.ca

Three Francophone Adolescent Girls' Stories of Singing: Singing for Identity, Relationship and Wellbeing

This study investigated three francophone adolescent girls' experiences with singing. A qualitative, narrative research approach (Bogdan & Biklen, 2003; Murray, 2003) was used to increase understanding about the benefits of singing, with a particular interest in exploring singing as a potentially positive means for adolescent minority-culture girls to successfully negotiate multiple aspects of identity, that is, adolescence, gender, and culture. Semi-structured interviews provided an opportunity for the participants to share their experiences, and describe what it is like for them to sing. Data were analyzed in terms of The Listening Guide (Gilligan, Spencer, Weinberg, & Bertsch, 2003), a relational analysis responsive to the voices of participants, and used to generate "I" poems and identify descriptive categories. Three ways of singing were identified – private, public informal, public formal – as well as three themes, evoked with the metaphors of: *Rhythm* (singing and experiences of identity), *Harmony* (singing and relationships), and *Melody* (singing, wellbeing and strength). Findings confirm and extend current research literature and have implications for those working.

Jennifer Nicol & Gisèle A. Lalonde: Poster – 3.3

Department of Education Psychology and Special Education (Counselling Psychology), University of Saskatchewan, Canada

Jaj.nicol@usask.ca

A Grounded Theory Inquiry of Solitary Music Listening as a Social Process

Grounded Theory (Charmaz, 2006) is a research method in the tradition of emergent qualitative design. It focuses on identifying constructs and building theory through repeated cycles of data collection and analysis, and using inductive rather than deductive analysis (Strauss & Corbin, 1990). The "discovered" or "generated" theory is "grounded in data" and emerges through simultaneous data collection, theoretical sampling, and data analysis. The resulting mid-range theory describes plausible relationships amongst concepts and set of concepts. The study presented in this poster illustrates the use of grounded theory to inductively generate a mid-range theory of solitary music listening as a social process for women coping with chronic illness. Grounded theory offers a new approach to investigating the benefits associated with singing, and will be used in the AIRS project to develop an explanatory model of choir membership as a health-promoting activity.

Jennifer Nicol: Poster – 3.3

Department of Education Psychology and Special Education (Counselling Psychology), University of Saskatchewan, Canada

Jaj.nicol@usask.ca

Exploring Alternate Ways to Represent Findings and Disseminate Knowledge

Health researchers are increasingly using new and creative ways to represent findings and disseminate knowledge to broader audiences. Such strategies may be appropriate for the AIRS project. Rationales are presented and illustrated with the following examples: “I” poems (Lalonde & Nicol, 2009); data poems (Wiebe & Nicol, 2007); fiction (Siemens & Nicol, under review), vocative texts/metaphor (Nicol, 2008), and song (Vander Kooj, 2009).

Stephen M. Clift, Grenville Hancox, Ian Morrison, Bärbel Hess, Gunter Kreutz & Don Stewart:

Poster – 3.3

Canterbury Christ Church University, Kent, United Kingdom

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*What do Singers Say About the Effects of Choral Singing on Physical Health?
Findings from a Survey of Choristers in Australia, England and Germany*

This paper presents evidence on choral singers’ perceptions of the physical health benefits of choral singing. It is based on a thematic analysis of answers given to a single open question included in a questionnaire survey of over 1,000 choral singers in Australia, England and Germany: ‘What effects, if any, does singing in a choir have on your physical health?’ The question was carefully worded to be as open as possible, to allow respondents to say that singing has no effects or to identify both positive and negative effects on health. Four findings stand out from this study. Firstly, many respondents did not answer this question or expressed a belief that singing does not have effects on physical health. Secondly, there was a clear spectrum of confidence in the substantive answers respondents gave when identifying effects – usually benefits. Some answers were given very tentatively, whereas others were given with a great deal of confidence. Thirdly, with respect to the positive benefits identified by choristers, four areas stand out most clearly: effects on breathing and lung function; posture and body control; relaxation and stress relief, and physical activity and energy. And finally, the analysis of choristers’ answers has helped to suggest some of the hypothetical mechanisms at work which link the activity of singing to aspects of physical health. The limitations of this study are considered and recommendations made for future research.

Song Book

How Can I Keep From Singing? (Pete Seeger)

My life flows on in endless song
Above earth's lamentation.
I hear the real, thought far off hymn
That hails the new creation
Above the tumult and the strife,
I hear the music ringing;
It sounds an echo in my soul
How can I keep from singing?

What through the tempest loudly roars,
I hear the truth, it liveth.
What through the darkness round me close,
Songs in the night it giveth.
No storm can shake my inmost calm
While to that rock I'm clinging.
Since love is lord of Heaven and earth
How can I keep from singing?

When tyrants tremble, sick with fear,
And hear their death-knell ringing,
When friends rejoice both far and near,
How can I keep from singing?
In prison cell and dungeon vile
Our thoughts to them are winging.
When friends by shame are undefiled,
How can I keep from singing?

<http://www.lyricsdownload.com/pete-seeger-how-can-i-keep-from-singing-lyrics.html>

One Voice (Ruth Moody, The Wailin' Jennys)

This is the sound of one voice
One spirit, one voice
The sound of one who makes a choice
This is the sound of one voice
This is the sound of one voice

This is the sound of voices two
The sound of me singing with you
Helping each other to make it through
This is the sound of voices two
This is the sound of voices two

This is the sound of voices three
Singing together in harmony
Surrendering to the mystery
This is the sound of voices three
This is the sound of voices three

This is the sound of all of us
Singing with love and the will to trust
Leave the rest behind it will turn to dust
This is the sound of all of us
This is the sound of all of us

This is the sound of one voice
One people, one voice
A song for every one of us
This is the sound of one voice
This is the sound of one voice

<http://www.metrolyrics.com/one-voice-lyrics-wailin-jennys.html>

TRANSL.: HELGA GUÐMUNDSDÓTTIR

VINDUM, VINDUM, VEFTUM BAND

ICELANDIC ROUND

6

WINDING, WINDING, WEAVING YARN LET'S MAKE CLOTHING IN THE BARN. MAKE A BOW FOR MY FRIEND
VINDUM, VINDUM, VEFTUM BAND VEFTUM FALLEGT HÚFU BAND FYRIR. (-) HÓFUÐ

(-) SEND YOUR KNEES FOR MY FRIEND (-) THEN SHALL (-) TURN AROUND.
HNEYGJA FYRIR (-) HNE SIN BEYGJA SVO SKAL (-) SNÚ - A SÉR.

Kvölda tekur sest er sól

Icelandic lulla

9

Kvöl da te - kur se - st er sól. Síg - ur þok' - á dal - inn.
Kvoel - da te - kur - se - st er soul. Seegh - ur tho - kau dal - inn.

Kom - ið er heim á kví - a ból, kýr - nar, féð, og sma - linn.
Kom - ith - er haym - aou kvee - ja - boul, keer - dnar, fyeth, ogh sma - linn.

We Are One

melody

Eb Bb cm Ab Eb G

We are one~ one hu-man fam - i - ly~ one Earth com-

We are one~ one hu-man fam - i - ly~ one Earth com-

7 cm Ab Eb Bb Bb7 Eb ***

- mun - i - ty, a com-mon des - ti - ny for all. A com-mon

- mun - i - ty, a com-mon des - ti - ny for all. A com-mon

14 Bb Ab gm Ab gm fm Eb

des - ti - ny, a com-mon des - ti - ny,

des - ti - ny, a com-mon des - ti - ny,

21 fm cm Bb Ab Eb

a com-mon des - ti - ny for all.


a com-mon des - ti - ny for all.

10


Music © 2004 by Carolyn McDade | Text excerpted from/based on **The Earth Charter**

Sing Sing


Serena Ryder 2008
by permission SOCAN




1 You got-ta sing sing sing sing sing out loud don't mat-ter if you stay on track




5 You got ta sing sing sing sing sing out loud oh don't you dare hold noth in back



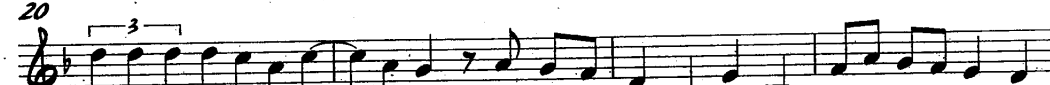
9 I've been a-round for long e-nough to know that ev-ry-bo-dy needs to sing



13 No mat ter if you're all a-lone or sur- roun-ded by a thou-sand




16 peo ple with a thou-sand things Who's got-ta sing sing sing sing



20 sing You got-ta sing sing sing sing sing out loud oh



24 don't you dare hold noth-in back Do - on't you dare hold noth - ing don't



27 you dare hold noth - ing don't you dare hold noth - ing back

Viva la musica

The image displays a musical score for the piece "Viva la musica". It consists of two systems of music. The first system is labeled "Piano" and the second is labeled "Pno". Both systems are written in 4/4 time and use a grand staff with a treble and bass clef. The lyrics are written below the notes. The first system contains the lyrics "Vi va la mu si ca" and "Vi va la". The second system contains the lyrics "mu si ca", "Vi va la mu si", and "ca". The music features a simple melody with chords in the piano part and a more active bass line in the pno part.

Piano

Vi va la mu si ca Vi va la

Pno

mu si ca Vi va la mu si ca