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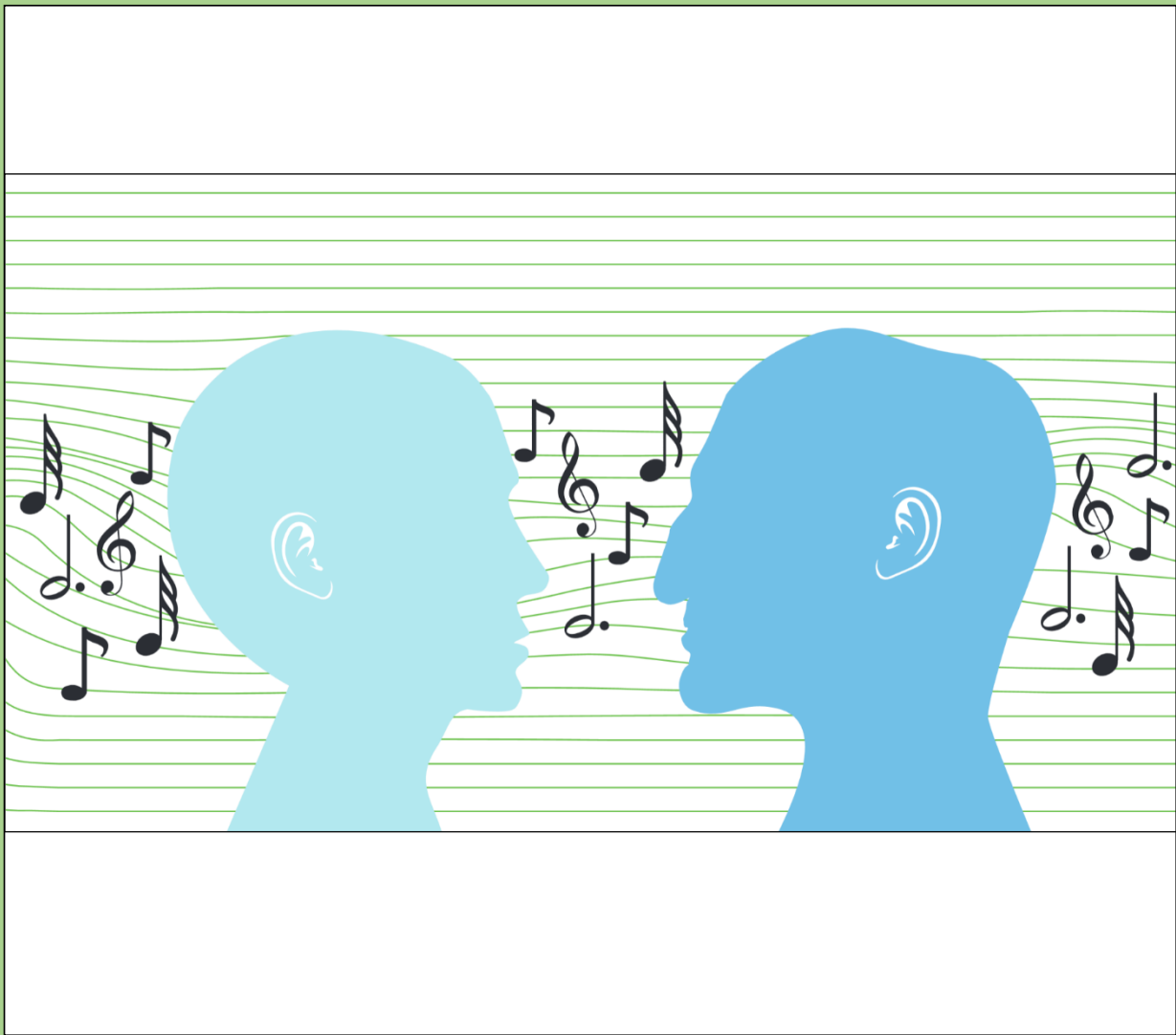
María Inés Burcet y Favio Shifres y Alejandro Pereira Ghiena, Favio Shifres y María Victoria Assinnato.

Cita:

Dirección estable: https://www.aacademica.org/favio.shifres/210

ARK: https://n2t.net/ark:/13683/puga/p63

Global Arts and Psychology Student Conference (GAPS2017)

28-29 April 2017

Boston, Graz, La Plata, Sheffield, Sydney

Global Program and Abstracts

Graz: Mozartgasse 3, EG: 23.02, 23.03, 23.01, Studio

Table of contents:

1. Introduction

GAPS is about the arts and the people who create and appreciate them, from a psychological perspective. The arts include auditory arts (music, sound design), visual arts (painting, architecture), literature, drama, opera, digital arts, and so on. We will focus on music. There will be about 8 research presentations at each hub. There will also be 3 keynotes, which will be viewed by all hubs.

To our knowledge, GAPS will be the world's first semi-virtual academic conference. GAPS will strike a new balance between face-to-face and virtual communication, and between activities on different continents, to create a truly global conference. Every talk will be both live and virtual — presented to a live local audience and viewed elsewhere, either in real time or with a time delay. Live and virtual presentations will run in parallel at every hub. In July 2018, the new format will be scaled up for the international music psychology conference ICMPC15/ESCOM10.

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2. Participating hubs and organization

Graz:

Centre for Systematic Musicology

University of Graz

Austria

Conference Manager: Maximilian Burkard
Vice-Manager: Julia Ebner
Technical Manager: Nils Meyer-Kahlen
Programming Manager: Theresa Schallmoser
Promotion Manager: Hanna Pell
Refreshments Manager: Magdalena Ramsey
Room manager: Michael Schlott
Senior organizer: Richard Parncutt

Sydney:

School of the Arts and Media

University of South Wales

Australia

Conference Manager: Riza Veloso
Technical Manager: Anthony Chmiel
Programming Manager: Marco Susino
Promotion Manager: Thomas Dickson
Senior organizer: Emery Schubert

Sheffield:

Department of Music

Sheffield University

UK

Conference Manager: Shen Li
Technical Manager: Caroline Curwen
Programming Manager: Tim Metcalfe
Promotion Manager: Ioanna Filippidi
Conference Assistant: Nicola Pennil
Senior organizer: Renee Timmers

La Plata:

Laboratorio para el Estudio de la Experiencia Musical

Universidad Nacional de La Plata

Argentina

Conference Managers: Alejandro Pereira Ghiena and Joaquín Pérez
Technical Manager: Sebastián Castro
Programming Manager: Camila Beltramone
Promotion Manager: Matías Tanco
Refreshments Manager: Demián Alimenti Bel
Room manager: Alejandro Ordás
Language Manager: Nicolás Alessandroni
Senior Organizer: Isabel Martinez

Boston:

Friedman School of Nutrition Science and Policy

Tufts University

USA

Conference manager: Victoria Chase and Parke Wilde
Rooms manager: Mehreen Ismael
Program manager: Inbar Vanek, Andrea Norton, Ola Ozernov-Palchik
Refreshment manager: Victoria Chase
Senior academic organizer: Parke Wilde, Friedman School of Nutrition Science and Policy, Tufts University,
    Boston USA, assisted by Ani Patel (Dept. of Psychology, Tufts University), Morwaread M. Farbood
    (Dept. of Music and Performing Arts Professions, New York University), and Andrea Norton (Beth Israel
    Deaconess Medical Center, Boston)

3. Global timetable

Halfday 1

Local time		Boston	La Plata	Sheffield Room HS 23.01	Graz Room HS 23.02	Sydney Room HS 23.03
Halfday 1						
09:00	**Warmup**	-	-	Warmup		
09:30	**Opening Session**	-	-	Opening		
10:00	**Keynote**	-	-	Live stream	**Andrea Schiavio**: Mind The Body: Musical sense-making and the power of action	Live stream
11:00	**Break**	-	-	Break		
11:30	**1st Talk**	-	-	**Persefoni Tzanaki**: Empathy and social rhythmic entrainment in children's musical interaction: cognitive and motor-emotional approaches	**Julia Ebner**: Neurostructure, creativity and personality of singers and nonmusicians	**Solange Glasser**: A comparative study of idiopathic synaesthesia and absolute pitch, and their impact on musical abilities
12:00	**2nd Talk**	-	-	**Nicola Pennill**: Ways of working in chamber ensembles: a survey study	**Theresa Schallmoser**: Estimation of time in music: Effects of tempo and familiarity on the subjective duration of music	**Yanan Sun**: Pitch discrimination associated with phonological awareness: Evidence from congenital amusia
12:30	**3rd Talk**	-	-	**Julian Cespedes-Guevara**: Elements for a constructionist theory of music-induced emotions	**Helena Dukic**: The effect of perceived interval size on imagery during Guided Imagery and Music (GIM) therapy	**Anthea Cottee**: Adaptation of the mindfulness-acceptance-commitment approach for groups of adolescent musicians: an assessment of music performance anxiety, performance boost, and flow
13:00	**4th Talk**	-	-	**Ioanna Filippidi**: Conditioning the mind in music: involuntary musical imagery and everyday life music listening.	**Richard Parncutt**: The psychohistory of consonance and dissonance and the harmonic vocabulary of major-minor tonality	**Marco Susino**: Beyond psychophysical cues - emotion stereotyping in music
13:30	**Lunch**	Lunch				

Halfday 2

Local time		Boston Room: Studio	La Plata Room: HS 23.03	Sheffield Room: HS 23.01	Graz Room: HS 23.02	Sydney
Halfday 2						
15:00	**Local Warmup**	Warmup				-
15:30	**Opening Session**	Opening				-
16:00	**Keynote**	**Emily Morgan**: Modeling melodic expectation	Live stream	Live stream		-
17:00	**Workshop**	Live stream	**Gisela Magri**: Vocalities lab: Voices and corporalities in South American popular music	Live stream		-
17:30	**Break**	Break				-
18:00	**1st Talk**	**Anna Kasdan**: Please don't stop the music: Song completion in patients with aphasia	**Veronika Diaz Abrahan**: Efect of musical improvisation in visual emotional memory	**Claire Castle**: Investigating the everyday musical experiences of visually impaired adults and adolescents	**Magdalena Krinner**: Development of professional self-concepts of students in the field of instrumental and vocal pedagogy. A PhD project at the Institute of Music Education	-
18:30	**2nd Talk**	**Jillian Hogan**: Ensemble habits of mind: preliminary results on teaching thinking in the high school music ensemble	**Juliette Epele**: Expressive body motion in solo piano performance. The trajectory of the hand on the vertical axis: a case study.	**Henrique Meissner**: Facilitating young musicians' expressiveness in music performance: An action research study	**Sabrina Sattmann**: The Chill Phenomenon: Emotions and associations at the interface between contrasting musical passages	-
19:00	**3rd Talk**	**Alexandra Rieger**: Learning from lullabies: A cognitive-behavioral rxploration of the Role of lullabies in infant and adult well-being	**Iván Anzil**: Tactile and audiotactile sensations in music: the case of electronic/dance music.	**Shen Li**: The exploration of pianists' embodied concepts of piano timbre: an interview study	**Ella Prem**: The Ideal Jazz Voice Sound: A qualitative interview study	-
19:30	**4th Talk**	To be announced	**Matias Tanco**: Tonal center in music performance: searching for embodied cues in the temporal unfolding of the musician's performance	To be announced		-
20:00	**End**	End				-

Halfday 3 – not in Graz (online at the Moodle platform)

Local time		Boston	La Plata	Sheffield	Graz	Sydney
Halfday 3						
22:30	Warmup	Warmup		-	-	-
23:00	1st Talk	Live stream	**Maria Ines Burcet**: The conceptualizations that children of 8 years old do about the minimum units of musical segmentation.	-	-	-
23:30	2nd Talk		**Nicolás Alessandroni**: The development of perceptual and conceptual abilities in vocal performance: vocal warm-up and sound quality	-	-	-
00:00	3rd Talk		**Demian Alimenti Bel**: Between sound and movement in embodied tango performance: Implications for the study of the performative style in tango.	-	-	-
00:30	4th Talk		**Manuel Alejandro Ordás**: Choral performance interaction: Relating movement variation and tuning variability.	-	-	-
01:00	Break/Warmup	Break		-	-	Warmup
01:30	Keynote	live stream		-	-	**Sandra Garrido**: The Sad Music Paradox: Adaptive functions and maladaptive processes
02:30	Discussion	Discussion		-	-	Discussion
03:00	Break/Cooldown	Cooldown		-	-	Break
03:30	1st Talk	End		-	-	**Anthony Chmiel**: Beyond similarity: Applying collative variables and the inverted-U to music recommendation systems
04:00	2nd Talk	-	-	-	-	**Anita Paas**: The effect of agency ambiguity on error-related ERP components in musical ensemble performance
04:30	3rd Talk	-	-	-	-	**Gareth Hearne**: Goodness-of-fit and stability ratings in randomised pitch sequences
05:00	4th Talk	-	-	-	-	**Amanda Krause**: Older people's motivations for participating in community singing
05:30	End					End

4. Keynotes

Graz:

Mind the Body: Musical Sense-Making and the Power of Action

Recent work in cognitive neuroscience, psychology, and philosophy of mind, has showed that our body is involved in activities that we previously assumed were done mainly by the brain. In speech research, for example, it has been demonstrated that gesticulating while speaking reduces ongoing cognitive load in the brain. This talk will discuss original empirical findings that apply similar principles to the musical domain, contributing a new perspective to our understanding of learning and performing music. In particular, the role of body and pre-reflective experience will be explored in the early recognition of audiovisual synchronicity, in learning tonally ambiguous melodies, and in joint music-making. Finally, predictions for future research and theory will be offered.

Dr **Andrea Schiavio** is Senior Scientist at the University of Music and Performing Arts Graz (Austria) where he teaches "Embodied music cognition" and "Psychology of music education". He is also Honorary Research Fellow at the University of Sheffield (UK), where he obtained his PhD in 2014. Between 2015 and 2017 he was Postdoctoral Researcher at the Cognitive and Systematic Musicology Lab of the Ohio State University (USA) and at the Department of Psychology of Bogazici University Istanbul (Turkey). His work has been published in Music Perception, PLoS ONE, Frontiers in Neurology, Musicae Scientiae, Phenomenology and the Cognitive Science, Psychology of Music, and Psychomusicology: Music, Mind and Brain, among others.

Sydney:

The Sad Music Paradox: Adaptive Functions and Maladaptive Processes

Sad music has been valued by human societies throughout history and today. The experiences that listeners report when listening to sad music tend to defy traditional models of emotion, since such experiences can be both pleasant and can involve high arousal levels. This talk will cover research that demonstrates the adaptive functions that listening to sad music can serve and how those processes break down in cases of depression. A model of the impact of sad music on mood will be presented.

Sandra Garrido is an NHMRC-ARC Dementia Research Development Fellow at the MARCS Institute for Brain, Behaviour and Development at the Western Sydney University. With a background in both music and psychology, her research interests are on the influence of music on mental health both historically and in the modern day, with a particular focus on depression and dementia. Sandra is also a violinist and pianist and has published over 40 peer reviewed papers and book chapters including a text co-authored with Prof. Jane Davidson entitled My Life As A Playlist (2014), and a monograph entitled Why Are We Attracted to Sad Music? (2017)

Boston:

Modeling Melodic Expectation

A foundational idea in the study of music cognition is that emotional meaning in music is inherently linked to listeners' ability to form expectations about upcoming musical material. Here we ask what types of knowledge are brought to bear in forming these expectations. Specifically, we focus on two questions about melodic expectation: First, to what extent are expectations due to innate Gestalt-like principles (e.g. expecting stepwise motion or proximate pitches), versus to statistical knowledge of likely pitch sequences gained from one's previous musical experience? And second, to what extent are expectations due to the local note-to-note context (e.g. transition probabilities or n-grams) versus the global context (in particular, hierarchical harmonic structure)? I will present a novel method for testing these questions, developed in collaboration with Aniruddh Patel and Allison Fogel. We collect production data to probe listeners' expectations using a "musical cloze" task in which participants hear fragments of melodies and sing the note they think should come next. Using multinomial regression modeling, we can use this production data to test existing computational models of melodic expectation that embody principles described above, e.g. Temperley's (2008) Probabilistic Model of Melody (an innate-principles model) and Pearce's (2005) IDyOM model (a statistical n-gram model). We find that the IDyOM model outperforms the Temperley model in predicting listener expectations, but that both models crucially fail to capture important facets of harmonic structure (e.g. expectations for authentic cadences). We conclude that there is good evidence for the use of statistical knowledge in forming melodic expectations, but that this knowledge must be supplemented by hierarchical knowledge of harmonic structure.

Emily Morgan is a Postdoctoral Researcher in the Psychology Department at Tufts University. She received her PhD in Linguistics and Cognitive Science from UC San Diego in 2016. Her work combines behavioral and electrophysiological experimentation with computational modeling to investigate both music and language processing.

5. Workshop

Vocalities lab: Voices and corporalities in South American popular music

The Vocalities Laboratory device (vocalités, according to P. Zumthor, 1989) involves generating a context of embodied voice experimentation. It also means creating a space and a time to intervene in the vocal biography of others from the perspective of orality, performance and movement, using musical resources and other transdisciplinary tools (i.e. body awareness exercises, drawing, dancing, and anthropology). From this approach, the pedagogy of singing enables a kind of listening that includes the pedagogical and affective connection that is constructed with participants. This approach favors thinking processes and conceptual interpretations. The proposal makes visible the singing action as a practice of embodied artistic freedom that can challenge the prevailing modern-Western idea of singing: one subject = one voice = one timbre identity = one cultural attitude.

Why a vocalities lab? Singing can be at the same time a hermeneutical practice, an aesthetic experience, and a form of knowledge production. The split between technique and interpretation inevitably comes into tension with the inherent richness emerging from the popular music materials in Latin America.

To think vocalities is to affirm the possible power of embodied voicing. It is to take charge of babbling, of the first utterances, of the tensions, of the silences, of the moaning, of the mass and the earth. Also of the chanting and singing head, of affirming that in popular music (particularly tango, folklore, samba, flamenco and also in popular experimental music) a multiplicity of placements, timbre thicknesses, and resonances are possible and desirable. And that in the artistic production, as in the scientific one, it is possible to use resources that include tension and contradiction as nutritional variables. Since we understand that in the processes of experimentation / research / teaching - learning, there are emotional elaboration of beliefs processes, there are as well experiences of the emotional dimensions as the rational outcome of theorizing.

Gisela Magri is musician, singer and anthropologist. She is dedicated to musical practice, teaching and researching voice practices in Latin American music, including tango, samba, and Argentinian folklore. As of her expertise and diversified formation in Music, Dances and Anthropology, she participated in the creation of the music of the contemporary dance work "Fierro" (2011). In 2012 she released her first soloist CD, with music from Argentina and Brasil, called "Glicina oscura, tango y samba enredados" (Acqua Records, 2012). In 2016 she released her second CD, MADEJA (Cuchá! Discos, 2017) available in digital format in Spotify. She has a degree in Anthropology (National University of La Plata, UNLP) and has received two PhD scholarships from UNLP (2011/2014) and from the National Scientific and Technical Research Council (CONICET) (2014/2016). She is an advanced student of the Arts PhD Program (Facultad de Bellas Artes, UNLP). In addition to her artistic career, she develops an important theoretical-practical research labor about voice and singing as a corporal, sociocultural and artistic practice, within the Grupo de Estudio sobre Cuerpo (CICES/IdIHCS-CONICET-FaHCE/UNLP). Since 2008, she works as a teacher of popular singing in various academic and private institutions from La Plata and Villa Elisa, regularly offering the workshops "Singing from the body" and "Vocalities Lab".

6. Abstracts (alphabetical)

Alessandroni, Nicolás and Beltramone, Camila María   **La Plata**

The development of perceptual and conceptual abilities in vocal performance: vocal warm-up and sound quality

Background

Vocal warm-up enjoys a high degree of prestige in the singing community because it is considered a fundamental moment for an optimal performance (that is, a eutonic and flexible one). However, the study of the processes of perceptive assessment and conceptual characterization linked to the practice of vocal warm-up is an area of vacancy in the field of Vocal Technique. In a previous study, Moorcroft and Kenny (2012) explored, with a structured questionnaire, the assessments that twelve female singers made of two performances of their own, one prior, and one after vocal warm-up. In a second instance, they also studied the evaluation that six expert listeners made on the recordings of these performances. The present study deepens the aforementioned study by adjusting/creating experimental conditions and exploring new strategies for obtaining and analyzing data. These modifications sought to provide more meaningful and ecological conclusions.

Aim

The study aims to provide evidence about the characteristics of perceptive judgments and conceptual characterizations that singers make about vocal warm-up and their vocal sound quality in two conditions: (i) before vocal warm-up, and (ii) after vocal warm-up.

Method

Seven female singers were asked to learn the song "Aria (Cantilena)" belonging to the "Bachianas Brasileiras" No.5 by Heitos Villa-Lobos, with the aim of recording some versions of it in a later meeting. The mean age of the singers was 25 years (SD = 2,646), while the average number of years of study was 6.43 years (SD = 2.76). They were called up to a recording studio, an appointment for which they were expressly advised to attend without having previously done a vocal warm-up. The recording of the different performances was carried out using a Zoom H4N recorder linked to an In-Line Microphone Preamplifier RodeD-PowerPlug, with an omnidirectional orientation. The participants recorded the song three or four times, after which they were asked to warm-up as they used to do in their daily lives. Finally, the singers were asked to record the song again. Following the double-blind method (Novikov and Novikov, 2013), the singers randomly listened to fragments of their recordings. They were asked to rate their performance from 1 to 10 based on a group of ad hoc categories created by the researchers. After the rating task, an interview was conducted with each singer.

Results

The data obtained from the experimental instance show that vocal warm-up effectiveness makes up a complex problem. It is unclear whether singers share the criteria for assessing their vocal production, making it difficult to systematize and compare global averages. Numerical evaluations on perceptual evaluation scales could follow different gradations for each subject, thereby invalidating purely quantitative conclusions.

Conclusions

The use of direct testimonies, obtained in qualitative explorations, enable a more ecological characterization of the set of experiences that surround the vocal warm-up process. This strategy has the potential to circumscribe new variables for designing upcoming studies.

Alimenti Bel, Demian   **La Plata**

Between sound and movement in embodied tango performance. Implications for the study of the performative style in tango.

Background

In a previous study Alimenti Bel & Martínez (2015) identified differences that characterize the compositional and the sound performative styles in the music of Aníbal Troilo's and Osvaldo Pugliese's tango orchestras. The relationships between phenomenal accents and grouping units of the sonic melodic-rhythmic patterns were analysed in both the annotated and the performed pieces, to find potential identity features in both styles. In the present work, we continue the stylistic analysis focusing on the expressiveness of the tango performer's body movements. So far, the study of movement has been applied more to academic music than to popular music. For example, it was described the way structural features (changes of tempo and chronometric density) shape expressive movement during piano performance (Davidson (2007). After analyzing the quality of body movements and effector gestures (Laban, 1971; Leman and Godoy, 2010) in the performance of rhythmic-melodic patterns by two tango bandoneonists, we liaise them with our previous sonic outcomes, in order to describe the identity features of the sound-kinetic complex that characterizes each performative style.

Aims

To observe and describe expressive gestures in the movements of two bandoneón performers, interpreting a same tango according to Troilo and Pugliese styles.
To liaise movement and sound as to derive a description of the sound-kinethic complex involved in tango performance.
To identify the multimodal cues that shape the stylistic identity in both tango styles.

Method

Two video recordings of historical performances of the tango "Chiqué" were analysed. The movement analysis focused in the bandoneón solo, performed by Troilo himself, and by Roberto Álvarez (Pugliese's orchestra). The analytical procedure included: (1) observation and annotation of the corporal-intentional movement using Laban categories; (2) observation and annotation of the sound producing gestures of each bandoneon performer. Video observation and movement annotation were run using the software Elan. Finally (3) an analytical interpretation, based on the connections between (1), (2), and the sonic outcomes of the same rhythmic-melodic-expressive patterns previously analysed, was elaborated.

Results

As to Troilo, it was observed that the movement of head and torso (impulsiveness and jerkiness Laban categories), matches the intentional action of sound organization of phenomenal accents within musical phrases. This accentual and gestural conjunction is generally coincident with the metric scheme, and also with the grouping units. As to Pugliese (by Álvarez) there is a multimodal redundancy (corporal and instrumental) strongly linked to the organization of phenomenal accents and the deployment of expressive sound patterns. However, those patterns are not performed in phase with the metric structure: the temporal distribution occurs at different levels of the metric hierarchy in the same phrase.

Conclusions

The body movement and the sonic form combine to shape a multimodal-stylistic communicative complex in tango performance. In Troilo, the in-phase metrical accents are used to elaborate the durational rhythm and the melodic variation at the local phrase level. In Pugliese, on the other hand, discursivity is elaborated based on out-of-phase expressive accents, resolved at the global level of the grouping units.

Keywords: Vocal Warm-Up, Vocal Technique, Sound Quality, Perceptual abilities, Conceptual, evelopment, Vocal production

Topics: Cognition, memory and language, Education, Psychoacoustic, pitch and timbre

Anzil, Iván   **La Plata**

Tactile and audiotactile(*) sensations in music: the case of electronic/dance music.

Background

In certain circumstances sound and music provide not only an audible stimulus but also a tactile one. In such cases, auditory arts become audiotactile.
Electronic/dance music can be considered as the acoustical-aesthetical-social-technological frame where most of tactile sensations references are found, taking into account the paradigmatic characteristics needed to generate such tactile and audiotactile perceptions.

Aims

This study explores the possible links and relations that can be established between the properties of the electro-acoustically-reinforced sound/musical signals with those of the tactile and audiotactile sensations, also aiming to determine the acoustic and physiological conditions that are necessary for the effective occurrence and conscious detection of such sensations.
Other goals of this study are to determine which of the sound/musical signal characteristics and human body dimensions became relevant in the generation and perception of tactile and audiotactile sensations.

Method

The present study has been conceived following the lines of thought of complexity studies, therefore a variety of research methods where employed. Research tools include theoretical and philosophical thinking, acoustic and musical analysis, in-field sound/musical recording/sound pressure measurements and electronic/dance music fans surveys.

Results

General conditions needed for the generation/perception of tactile and audiotactile sensations were established.
Several variables of the tactile and audiotactile sensations (with their possible values) were established.
Certain human-body resonant systems and subsystems were characterized as relevant in the generation and perception of tactile and audiotactile sensations.
Some musical configurations present only in electronic/dance music species were found to be relevant in the generation and maximization of tactile and audiotactile sensations.
Some intertwined relations were established between the properties of the acoustic (musical) signal, the human-body systems and subsystems, and the tactile and audiotactile sensations.

Conclusions

Human haptic system (tactile sense) is sensible enough to perceive tactile variations in vibrations originated in sound/musical signals. Thus, tactile and audiotactile sensations interfere with audible ones and become (i.e.: should be considered) a sound/musical dimension.
Tactile and audiotactile sensations configure a tested perspective and tool for musical analysis, creation and interpretation. All sonic and sub-sonic vibrations configuring the sound/musical stimulus influence the perceived tactile and audiotactile sensations. This scientific fact allows a unified perspective of analysis (i.e.: audiotactile) regarding many musical properties (i.e.: frequency, rhythm, timbre and secondary timbre components, texture elements, etc.), each of one is essentially considered an independent elements by traditional musicology.
Tactile and audiotactile sensations can be used to drive aesthetical work in sound/musical production. In fact, this sensations are already being used -although subconsciously- by electronic/dance music producers.

(*) Audiotactile is a neologism to indicate that audio and tactile sensations are inseparable as one unified complex perception.

Keywords: Audiotactile music, Tactile sensation, Audiotactile sensation, Audiotactile perspective

Topics: Aesthetics, meaning and philosophy, Cognition, memory and language, Composition and improvisation, Education, Neuroscience, Performance and timing, Psychoacoustic, pitch and timbre, Rhythm and movement, Sociology, Structure, tonality and metre

Burcet, Maria Ines and Shifres, Favio   **La Plata**

The conceptualizations that children of 8 years old do about the minimum units of musical segmentation

Background

Learning to read and write using Western musical notation implies the need to link sound with writing. The teaching of traditional musical writing has focused on strategies aimed at "learning to listen" to notes, intervals, chords or rhythms. The assumption underlying these strategies is that these units of notation are in music and making them conscious is an indispensable requirement for later recognizing them in writing or projecting them into a transcript. These assumptions imply the conception of music notation as a transparent instrument, where it is assumed that writing reflects the categories by which we think in music.

Many studies have focussed on children´s attempts to notate musical stimuli. Bamberger (1982, 1988 y 1991) and Davidson and Scripp (1988) analyze graphical representations made by children. These studies have suggested developmental trajectories, in which children representations tend to capture an increasing number of melody components like: tones, rhythmic groups, contour, metric relationships. These investigations reinforced the idea of spontaneous use of units and relationships that the musical notation captures.

The musicians who develop vocal or instrumental performance skills from reading produce correspondences between the written units and tones, even coming to naturalize those relationships. Studies in children and adults (Burcet 2010, 2013, 2014) showed that it is the acquisition of musical notation that makes it possible to identify the note as a constituent unit of a musical fragment. In this sense, those musicians who develop musical or vocal performance skills while imitation or playing "by ear" do not establish such correspondences.

The following question motivate this research: What are the minimum units in which subjects can segment music spontaneously? We present here a preliminary analysis of the interviews made to children without formal musical training in the tasks of writing and describing the constitutive units of a musical fragment.

Aim

To Know the minimum units that children use when segmenting a musical fragment.

Method

We interviewed 32 children of 8 years old without formal musical training. We select children because, according to Piaget (1961, 1971), they propose creative alternatives to solve problems. Moreover, at the age of 8 they have a knowledge of writing (in language). Finally, we addressed subjects without specific musical knowledge, because musical knowledge could condition the segmentation process in minimal units.

As an initial activity, it was requested to listen to a musical fragment, to count the number of sounds that compose the fragment and to represent it with stick marks. The word "sound" was used to avoid the specific connotations that the word "tone" or "note" implies with music notation. During the interviews, an attempt was made to investigate the segmentation criteria used by the children.

Results

Interviews were transcript and responses were classified according to the following categories: a) without correspondence between graphic elements and sound segments; b) with correspondence between graphical elements and unstable sound segments; c) with correspondence between graphical elements and stable sound segments: i) at the grouping level; (ii) at the grouping level and without internal differentiation; iii) at the grouping level and with differentiation of unstable minimum units and iv) at the grouping level and with a differentiation of stable minimum units.

Conclusions

The note is the minimum unit in the musical notation, but it is not a unit of spontaneous access. Children spontaneously tend to describe minimal units that, in most cases, have a larger or smaller dimension to the note. These units are usually hierarchically organized according to the traits they estimate and the criteria they assume.

At the same time, during the development of the interviews it was observed that the estimated units, can contain relative and variable degrees of stability, possibly according to a developmental trajectory that is still to be studied.

Keywords: tone, musical notation, minimum units, musical note

Topics: Cognition, memory and language, Development, Education

Castle, Claire   **Sheffield**

Investigating the everyday musical experiences of visually impaired adults and adolescents

Background

In recent decades, research investigating everyday musical experiences has expanded greatly. Music has been found to fulfil a variety of daily psychological functions. Despite increasing recognition of the role of music in everyday life and well-being, literature exploring the musical experiences of vulnerable and minority populations is limited. For individuals with visual impairments (VI), this investigation is overdue for several reasons. Firstly, associations have long been made between VI and music, throughout history and the media. Yet, explorations of musical experience for VI individuals have primarily focused on musical processing. Secondly, literature suggests that music may hold a particularly important place in the lives of VI individuals (Park, Chong & Kim, 2015), yet little research has considered the impact of VIs on musical life in adulthood. Finally, VI has been found to impact negatively on psychological and psychosocial functioning. It appears vital to explore the potential role of music in maintaining psychological well-being for this group, and to consider the musical lives of these individuals from an everyday perspective.

Aims

1.   To expand current understandings of everyday musical experiences
2.   To explore the role of music in the lives of visually impaired individuals
3.   To assess the accessibility of musical experience for this group
4.   To identify if and how access to music and musical experiences might be improved

Method

Stage one: Focus groups with VI participants providing initial exploration of the topic. Thematic analysis of data.
Stage two: Semi-structured interviews in the homes of participants. In-depth exploration of musical engagement, musical experiences, and the impact of VIs on these experiences. IPA data analysis.
Stage three: UK-wide survey. Quantitative analysis exploring commonalities and associations across a broad sample of participants.

Results of Study 1

Analysis of focus group data identified a number of key findings:

•   The functions identified reflected those common to the literature. However, the subtheme "Occupation" suggested some deviation from functions typically cited. This theme derived from participants' vocational use of music and their perception of the availability of musical job opportunities for VI individuals. For this group, music may be viewed as a particularly important due to beliefs regarding employment and career development in musical domains.
•   Some participants suggested that having a VI may alter the way that sound and music is perceived. There was no consensus as to whether this was an unconscious response, or a deliberate adjustment to how they chose to respond to their sensory world. These beliefs provide additional perspectives on associations made between VI and musicality in historical, societal and empirical contexts.
•   Music may provide individuals with a VI with a pastime which is preferable to other activities (e.g. sport) due to its perceived accessibility and safety.
•   A number of barriers regarding accessing and purchasing music, engaging with written information (e.g. song lists,), and attending live events (e.g. surtitles) were evident.
•   Age, additional disability, and type of VI (e.g. congenital, late-onset, severity) appears to alter the impact that a VI has on musical engagement.

Conclusions

Focus groups offered a useful means of exploring participants' musical lives. In general, participants were highly musically engaged. However, it is apparent that a VI may impact on an individual's ability to access musical experiences, particularly for elderly individuals whose motor skills may also reduce levels of accessibility. Future fieldwork will further explore technological preferences and accessibility, as well as the positive and negative aspects of the live music experience. Additionally, VI individuals' beliefs regarding VI and musicality will be explored in greater depth.

Keywords: Musical experiences, engagement, everyday life, visual impairment, blind, functions of music.

Topics: The role of music in everyday life; The impact of visual impairments on musical engagement; Music, disability and accessibility

Cespedes-Guevara, Julian   **Sheffield**

Elements for a Constructionist Theory of Music-Induced Emotions

Background

The study of music-induced emotions has flourished during the last years, thanks to the contribution of Juslin and colleagues' BRECVEMAC theory and Scherer and colleagues' Multifactorial Process Model (MPM). Although both theories acknowledge that musical emotions emerge from the interaction of factors in the music, the listening situation and the individual, they lack detail about how this interaction occurs, or how it leads to different emotional experiences with music. Ultimately, both of these theories assume a psychological reductionist approach, focused on intra-individual mechanisms underlying the processing of music as an acoustic stimulus. This is more evident in the case of the BRECVEMAC theory, which predicts that individual mechanisms can, on their own, lead to the induction of full-blown emotions, without any details about how the context influences this process. Moreover, the BRECVEMAC theory in particular, provides no details about how the mechanisms influence each other.

Aims

Drawing from contemporary constructionist theories of emotion such as Russell's and Barrett's, this talk will present the essential elements of a theory based on that can overcome the limitations of the BRECVEMAC and the Multifactorial Process Model.

Details

Barrett's constructionist theory of emotion proposes that emotions emerge when physical sensations in the self (bodily sensations and changes in arousal and valence) are meaningfully linked to situations during a conceptual act: a cognitive and process that creates emotional experiences. This theory attempts to adapt this model to the case of emotional experiences with music. Thus, from this perspective, music-induced emotions emerge from the interaction of the following processes:

a)   Effects of music on the listener's bodily and core affect processes (which tend to produce automatic fluctuations of muscular tension, physiological entrainment, activation, and to some extent of valence);
b)   Music's ability to represent culturally-shared symbolic knowledge, which primes semantic knowledge in the listener's mind (e.g. associations between musical genres and cultural uses of music);
c)   Music's ability to prime episodic personal associations (memories associated with past emotional events), and to present narratives (e.g., lyrics, program notes, visual narratives, etc.); and
d)   Situated appraisals about the music and the goals of the present situation (e.g. the aesthetic quality of the music, the cultural significance of the present context, and the extent to which it fits with the demands of the situation).
e)   Listener's attention modality, which can range from detached and world-focused, to engaged and self-focused, and which lead to different types of emotional responses.

Conclusions

The proposed theory regards emotions as emergent process that result from a situated process of meaning making. It provides details about how different levels, types of mechanisms and types of factors interact, ranging from automatic mechanisms, to cognitively sophisticated mechanisms that encode the music's meaning in the listening context.

Implications

This theory is better equipped than the BRECVEMAC and the Multifactorial Process Model to account for the variety of affective responses that listeners experience with music. The talk will present several empirical hypotheses derived from this theory, and some of its methodological implications.

Keywords: Music, Emotion, Induction of emotions by music, Constructionism

Topics: Emotion

Chmiel, Antony and Schubert, Emery   **Sydney**

Beyond similarity: Applying collative variables and the inverted-U to music recommendation systems

Background

Predicting music preference is a challenging task faced by automated music response systems. These systems typically use similarity as a central component through which song recommendations are constructed. Similarity calculations are made for elements of the music, such as content, related metadata, and context, with most systems continuously reproducing similar material for a listener. However, such an approach does not account for a number of well-established models of music preference within the field of music psychology. One such model is the inverted-U model of preference, which outlines that preference is related to collative variables, such as complexity and familiarity, and that a moderate amount of these variables is preferred.

Aim

The intentions of this paper are (1) to propose a new hypothetical direction for the improvement of music recommendation systems, through application of the inverted-U model for common collative variables, and (2) to note a potential exception to the inverted-U model, specifically in regards to highly complex and/or unusual music. In this case, we wanted to explore whether preference for extreme music tends to remain at a minimum, 'floor-effect' rather than following the inverted-U trajectory, as suggested by the results of several prior studies. As the reliability of recommendation systems would require the identification of such exceptions to the model, we perform an empirical investigation in an effort to test floor-effect responses for unusual and complex music.

Method

Five music stimuli were used, covering a range of styles and levels of complexity and unusualness. Sixty-seven non-musicians received ten exposures to each stimulus over a four-week period. Participants recorded self-reported ratings for preference, complexity, familiarity, and unusualness on 11-point scales.

Results

In line with our hypothesis, the two stimuli that received the highest ratings for the variables complexity and unusualness were also the most susceptible to floor-effects of preference. One stimulus received 12 (17.9%) instances of a floor-effect, and the second stimulus received 6 (9%). In contrast, two of the remaining stimuli each received only one instance of a floor-effect (1.5%), and the remaining stimulus received two instances (3%).

Conclusions

Automated music recommendation systems may be improved by incorporating data related to collative variables, and applying the inverted-U model for these variables. Furthermore, we propose a new hypothesis that extreme music may be less likely to follow the inverted-U, and rather follow a floor-effect of preference. Our reported data fit this hypothesis, and more sophisticated recommendation systems may seek to include this level of sophistication in their calculation. However, further study is recommended for music of this 'extreme' nature.

Keywords: Music preference, inverted-U, recommendation systems, extreme music, unusual music, Daniel Berlyne

Topics: Music Preference, Music Perception, Music Information Retrieval

Cottee, Anthea   **Sydney**

Adaptation of the Mindfulness-Acceptance-Commitment Approach for Groups of Adolescent Musicians: An Assessment of Music Performance Anxiety, Performance Boost, and Flow.

Background

Music performance can be an exhilarating process, however many musicians experience Music Performance Anxiety (MPA; Kenny, 2011). MPA often develops through early performance experiences, peaks in adolescence (Osborne & Kenny, 2005) and may continue into professional life (Kenny, Driscoll, & Ackermann, 2014). While adrenaline in performance can have a negative impact, it may also have a positive effect, described by Simoens, Puttonen, and Tervaniemi (2015) as performance boost. Strategies to assist obtaining a state of engagement and focus, known as a state of flow (Csikszentmihalyi, 2000), have also been suggested as a potential pathway to improving performance and reducing MPA (Lamont, 2012).

This study adapts a sports psychology intervention, the Mindfulness, Acceptance and Commitment (MAC) Approach (Gardner & Moore, 2004), to the domain of music performance. The MAC approach develops strategies for preparation, practice and performance designed to both reduce anxiety and improve performance.

Aims

Exploration of the relationships between MPA, performance boost, and flow aims to enhance the understanding of the psychological processes involved in performance. The aim of the MAC intervention is to develop skills to manage anxiety and improve focus and commitment in preparation and performance. An early intervention approach was adopted for adolescent groups.

Method

Participants (aged 13-22) took part in either seven sessions of the MAC approach (N = 18), or the no-intervention control (N = 18). Questionnaires (pre and post-intervention) consisted of demographics, and self-report measures of MPA, performance boost, and flow. Further analysis explored factors of MPA in order to better understand the mechanism of effect. An anonymous feedback survey was offered to the intervention group after the final session for qualitative analysis.

Results

Relationships: MPA scores demonstrated a significant inverse relationship with both performance boost, r = -.554, p < .001, and flow, r = -.476, p = .003. The relationship between boost and flow was positive and significant, r = .485, p = .003.
Effects of MAC Intervention: The intervention group had a non-significant reduction compared to the control in MPA (F(1,34) = 2.91, p = .097, η2p = .08), and a significant reduction in the Performance Context factor of MPA (F(1,34) = 4.21, p = .048, η2p = .11). No significant changes were found for measures of performance boost or flow. Qualitative feedback was found to be 71% positive over four different areas, with suggestions for improvement accounting for 29%.

Conclusion

This exploration of the relationships between MPA, performance boost, and flow presents an important addition to the current literature. Development of the MAC approach for adolescent musicians, aims to address the need for early intervention for MPA. While the reduction in overall MPA did not reach significance, the results are noteworthy for such a small population. Reduction in the Performance Context factor of MPA, and analysis of the qualitative feedback provide an indication of the mechanism of effect. Given the current lack of early intervention treatment options, this study makes a valuable contribution that may assist to address a common and potentially debilitating problem faced by many musicians.

Keywords: performance anxiety, flow, performance boost, mindfulness, acceptance

Diaz Abrahan, Veronika; Shifres, Favio and Justel, Nadia **La Plata**

Effect of musical improvisation in visual emotional memory

Background

Creativity is a high-level cognitive process characterized by contextually significant generation of new ideas. Music improvisation is part of the set of complex creative behaviours. It requires sudden elaboration of music components such as melody, harmony or rhythm. Music improvisation, from a music therapy perspective, is a technique that is widely used with different populations understanding that any person could perform such a creative act. In that sense, music improvisation is a real time ability that all people own. Despite its wide use in music therapy little is known about the direct incidence of musical improvisation in the modulation of general cognitive processes such as affective memory, among others. However, research in music-therapeutic improvisation, particularly from the neuropsychological point of view, is relatively incipient.

Aim

This study aims to investigate the effect of musical improvisation, as a music-therapeutic technique, on visual emotional memory of young adults with or without musical training.

Method

One hundred and thirty seven people (59% female; 55% musicians participants), between the ages of 18 and 40, participated in this study, from different educational institutions and musical bands, randomly assigned to three different conditions (improvisation, Imitation and silence), with an inter-subject design. Thirty-six images were selected from the IAPS (International Affective Pictures System), 24 emotionally activating (12 with positive and 12 with negative valence) and 12 with neutral. Firstly, participants had to observe the images and to rated (11 point scale) how emotional the images were for them. Then, they were exposed to a three-minute experimental treatment (musical improvisation) or the control conditions (no sound stimuli or imitation condition). Free recall and recognition was then evaluated, both immediate and deferred (after a week).

Results

Subjects in Improvisation condition achieved the significant highest scores both in deferred free recall task and in immediate and deferred recognition tasks, while subjects in Imitation condition obtained the lowest significant scores in immediate free recall and deferred recognition tasks in emotional pictures.
Although none of the post-treatment tests yielded significant differences between musicians and non-musicians, musicians considered the images in the previous observation significantly more arousing than non-musicians.

Conclusions

These results reinforce previous evidence showing that playing music would be more effective in improving certain cognitive functions than merely listening to it. However, the data here emphasize that it is not the same to perform in an improvised way that to adjust the performance to a model. Because music improvisation modulates emotional memory, music treatment may provide a simple, safe and effective method of preventing the potentially harmful physiological concomitants of memory impairment.

Keywords: Music, Improvisation, Emotion, Memory, Creativity, Therapy.

Topics: Cognition, Neuroscience, Music Therapy

Dukic, Helena and Parncutt, Richard **Graz**

The effect of perceived interval size on imagery during Guided Imagery and Music (GIM) therapy

Background and Aims

We are developing a new approach to musical narrativity in which we compare musical structure with stories told spontaneously by music therapy clients. In GIM, clients experience imagery (social and physical situations) that appears to be evoked by music and has a narrative structure related to music's temporal structure (Bonny, 1995).

Method

Firstly, we hypothesized that musical movement triggers movement in the imagery: The more a musical piece is perceived to move, the more the imagery will move. To test this, the first author conducted standard GIM sessions with 23 clients using Bonny's "Nurturing" programme (7 compositions, 30min). Everything the clients said while the music was playing was transcribed in MAXQDA. Each sentence was then mapped onto one 3 imagery types: scenery (client observes), action (client acts), and presence (characters appear). Most clients experienced the same imagery types in the same music passages.
In Britten's piece the ratio (scenery:action:presence) was 63:25:12; Walton's piece 100:0:0; Berlioz's first piece 51:25:24; Berlioz's second piece 43:12:45; Puccini's piece 61:20:19; Massenet's piece 58:23:19; Canteloube's piece 54:18:28.
We then asked 11 professional musicians to listen to the 7 compositions in the same order as the clients did. Their task was to rate each composition on a continuous scale from 'smooth' (value 0) to 'jumpy' (value 1) using a slider in Psychopy.

Results

The pieces that musicians judged as most smooth were also the pieces that evoked the most 'scenery' imagery, confirming our hypothesis. A Pearson correlation was used to determine the correlation between 'jumpiness' value and each imagery type; 'scenery' (R=-0.86), 'action' (R=0.67), 'presence' (R=0.69).

Conclusion

Music that contains larger interval size as perceiver by the listeners, is more likely to trigger 'action' imagery in a standard GIM therapy session.

Keywords: musical narrativity, interval size, guided imagery and music, music therapy

Topics: Aesthetics, meaning and philosophy, Health and therapy, Origin of music

Ebner, Julia **Graz**

Neurostructure, creativity and personality of singers and nonmusicians

Background

Neuroscientific research revealed a positive relationship between gray matter volume and creativity. Musicians show higher gray matter volume in certain brain regions than non-musicians; in addition, musical training supports cognitive abilities which are closely associated with creativity.

Aims

The present study examined the assumption that musicians are more creative than non-musicians and investigated whether both groups differ with respect to gray matter volume.

Method

Specifically, in this study potential differences in gray matter volume and psychometrically determined creativity between (semi-)professional singers (n = 21) and a nonmusical control group, matched in age and gender (n = 21), were investigated.
Gray matter volume, used by voxel-based morphometry and creativity (figural, verbal) were examined, also personality (NEO-FFI, EPQ).

Results

Singers showed higher gray matter volume than non-musicians in one cluster, in the left temporal lobe, particularly in the parahippocampal- and the fusiform gyrus. This cluster was positively associated with verbal creativity. Surprisingly, no significant differences in creativity between the groups were found, only a trend towards higher verbal creativity in singers in comparison to non-musicians. Interestingly, for singers the identified cluster was positively associated with verbal creativity and the weekly amount of hours of practicing singing.

Conclusions

Overall, these results suggest that vocal training is accompanied by structural changes in the brain, which subserve generating verbal-creative ideas.

Keywords: Gray matter, voxel-based morphometry, creativity, plasticity, divergent thinking, music training

Topics: Cognition, memory and language, Neuroscience, Personality

Epele, Juliette **La Plata**

Expressive body movement in solo piano performance. The path of the hand on the vertical axis: a case study

Background

The observation of body movement and the way in which it acquires meaning in the performance constitutes an important research focus, contributing keys not included in the traditional analyzes on musical execution. It has been seen that oscillatory movements are an integral part of the biomechanics and morphology of body movements used to account for temporal and dynamic aspects in expressive musical performance (Naveda and Leman 2010, Naveda et al., 2016). On the other hand, the analysis of the velocity patterns allowed to verify that the performers like the listeners share a sensitivity to intonate corporal with sonic-kinetic forms emerging from the instrumental performance (Leman et al., 2009). Finally, it was found that the ideomotor imagination (Reybrouck 2001b) and the dynamic profiles experienced by interpreters and listeners allow to agree with verbal descriptors of musical expressivity (Martínez and Pereira Ghiena, 2013; Epele, 2017; Epele and Martínez, 2011). The objective is to explore how the effector (Cadoz, 1988) and non-effector movements are used by the interpreter in order to obtain information about sound-kinetic keys implicit in the intentional meaning of the movement.

Aim

To use new technologies for the analysis of kinetic keys which emerg from the morphology of the movements used by the performer in communicating expressive aspects and to identify possible correspondences between forms of movement and the musical feature to be communicated.

Method

A microanalysis of the path of the right hand movement on the vertical axis was elaborated from 7 video cuts on different expressive moments of Franz Liszt´s "Après une Lecture du Dante" piano performance by Daniel Barenboim. The study was carried out with the application of the programs Kinovea 0.8.15, Mathematica 9.0 and Matplotlib.

Results

It was found that the ascending and descending hand movements are not always associated with the standard technical requirements of piano performance (displacements, tempo, duration, direction, articulation or dynamic). However, they are closely related to phrasing, musical accentuation - written or expressive - and the need to highlight a voice in the context of a polyphonic texture. Also, the measurements allow to discriminate different curves of the hand elevation depending on the type of attack and the sustained tempo in "rubato" passages.

Conclusion

The purpose of the present work was to study the morphology of body movement in the piano performance through the application of new technologies in order to analyze, on the basis of quantitative data, the kinetic keys of the communication of expressive aspects. The results show that the behavior of the hand on the vertical axis is disconnected from the specific requirements of execution. This indicates that the height of the hand elevation is an element at the service of musical expression rather than a consequence of the technical requirement. In this sense, the evidence is in favor of the idea that body movement provides visual information for the recognition and interpretation of the performer's expressive intentions.

Keywords: Pianistic performance, Expressive body movement, Gestural intention

Topics: Cognition, memory and language, Performance and timing

Filippidi, Ioanna and Timmers, Renee   **Sheffield**

Conditioning the mind in music: involuntary musical imagery and everyday life music listening.

Background

The focus of this project is on involuntary musical imagery (InMI) and particularly on the concept that InMI is the product of an unconscious conditioning that results from everyday music listening. In more detail, people have very specific and personal ways they use music, by using certain music (as a formed musical taste) in certain circumstances (see more on uses of music in everyday life Gabrielsson, 2011; Sloboda,2001). These combinations become systematic over the years, and this process may resemble a form of conditioning.

Aims

In the experiment presented here, we are exploring the prevalence of InMI as the product of associative learning/ conditioning between music and everyday activities. We attempted to create that systematic pairing of music and certain activities through a series of repetitive exposure to music whilst performing a certain –everyday- activity, in order to investigate the prevalence of InMI. The hypothesis is that InMI of the paired music, will result when performing the previously associated activity.

Method

The method was designed with aim to investigate the association between music and activities and if that would be reflected through InMI. Therefore, participants were required to attend three training sessions, divided into two consecutive days. The training sessions were comprised of performing three different activities, all paired with different auditory information. The final testable condition included performing each activity without their usual pairing. The testable condition was the activity systematically paired with music. The data was gathered through questionnaires in the end of each activity. As control conditions we used different activities paired with either podcast or silence. After each training session they are asked to complete a questionnaire, which besides the questions of InMI, includes questions about mood and the combination of the activities, in order to mask the purpose of this study to minimise as possible the introspective bias. Furthermore, after each completion of the questionnaire, the participants were asked to take a few minutes' break, to separate the activities. Background information was gathered prior to the experiment, including demographic questions, and questions regarding music listening, musical engagement, and InMI. A total of 30 participants completed the study.

Results

Results from the study showed no significant effect of the training, meaning that participants did not have InMI during the activity that was previously paired with music. However, the responses indicate an effect in the predicted direction suggesting that evidence in favour of the hypothesis might be found with increases of statistical power of the experiment. The reports of InMI related to the session were more on the testable music condition (activity performed without music) with 33.3%, N=30, compared to 16,7% for the podcast condition, and 20% for the silent. Furthermore, the reports for internal podcast were very low (10% in the testable condition).

Conclusions

The results are not significant but the direction of the results is promising. It is suspected that the training might not have been long enough to produce an effect. Therefore, the follow-up of this experiment includes further training time and a larger number of participants to increase the statistical power.

Keywords: Involuntary musical imagery (InMI), earworms, conditioning, associative learning, music in everyday life

Topics: Cognition, memory and language

Glasser, Solange **Sydney**

A comparative study of idiopathic synaesthesia and absolute pitch, and their impact on musical abilities

Background

Idiopathic synaesthesia is a neurological condition that gained research prominence in the late 1980's, and has since been the object of numerous studies undertaken from various scientific standpoints. Yet aside from general reports of synaesthesia and creativity, there have been no studies to date that have specifically looked at the influence of synaesthesia on musical abilities. Furthermore, while the relationship between certain types of sound-related synaesthesia and absolute pitch (AP) has been frequently noted, the exact nature of this relationship remains highly speculative and lacking any empirical foundation.

Aims

Within the environment of a large tertiary music institution, this study explores how synaesthesia and AP impact on students' and academic staff members' musical abilities, and on participants' decisions to undertake higher education training in music. This study also examines the complex relationship that exists between synaesthesia and AP in participants with both conditions, and the modalities of their potential interaction.

Method

The participants recruited for this study (n=35) comprise a self-identified sample across music students and staff of the Melbourne Conservatorium of Music, University of Melbourne. Three forms of data collection were used for this study:

1. An online questionnaire aimed at collecting background information about each participant, such as their musical history, family history, and medical history in relation to these conditions and related conditions.
2. Semi-structured interviews aimed at identifying personal and environmental catalysts which shape their synaesthesia and/or AP, and which covered questions relating to participant's childhood and family, health and wellbeing, drug consumption and medication, and creativity and musicianship.
3. Synaesthesia battery tests from an online platform to measure and categorise participant's specific types of synaesthesia, and/or an AP test administered by the researcher.

Results

Results demonstrate that the awareness of their condition can have a profound motivational effect on both synesthetes and AP possessors. Furthermore, while the relationship between sound-colour synaesthesia and AP has been observed within this The Inaugural Global Arts and Psychology Seminar (GAPS2017): 28-29 April 2017 Solange Glasser study, this relationship is not symbiotic; synesthetic percepts have, however, been noted to be used as a mnemonic aid in pitch perception tasks. Results also show that both synaesthesia and AP can directly influence musical preferences and memorisation. Results extend findings in other areas of synaesthesia research by demonstrating a positive link between synaesthesia and memory, data organisation, and creative inspiration, while additionally expanding this link to include AP.

Conclusions

The findings have implications for broader understandings of the nature and scope of musical abilities, with reference to specific features of synaesthesia and AP that are theorised to impact on cognitive and affective processing of music more generally. In this way, the study has the potential to expand conceptions of musical abilities in ways that encompass other forms of processing, such as the aural-visual processing found in certain forms of synaesthesia. This work is significant for updating and redefining musical potential and ability, with subsequent implications on how musicianship skills are acquired by students who possess synaesthesia and/or AP.

Keywords: Synaesthesia, absolute pitch, musical abilities, memorisation, motivation, perception

Topics: Cognition, memory and language, Emotion, Psychoacoustic, pitch and timbre

Hearne, Gareth   **Sydney**

Goodness-of-fit and stability ratings in randomised pitch sequences

Background

Since 1979, probe tone experiments have procured insight into the cognition of tonality in music. Participants are first played context setting stimuli, after which a probe tone is sounded and participants are asked to rate how well it "fits" the context. Many contrasting models for the exemplar data from Krumhansl and Kessler (1982) (hereafter 'K&K') with a diatonic context have been proposed. In 2015, Milne, Laney and Sharp proposed a model predicting the goodness-of-fit of probe tones and of probe triads given their spectral similarity to the spectral content of the context stimulus.

Aims

Considering a lack of empirical data on the goodness-of-fit of probe tones and triads given a context of Western non-diatonic scales, an experiment testing the goodness-of-fit of tones and of common triads given the context of notes from diatonic, harmonic minor and jazz minor scales is devised. Furthermore, K&K interpret their goodness-of-fit ratings to account for tonal stability; this study directly tests this assumption by obtaining independent ratings for stability as well as goodness-of-fit.

Method

Six musicians and six non-musicians participated in a pilot experiment. Within each group, half the participants rated goodness-of-fit and the other half rated stability. For each participant, each of the twelve equally tempered pitch classes and each inversion of each diatonic tertian triad was probed twice for each context scale. Ratings of fit and of stability used a Likert scale (values 1–7 in order of increasing goodness-of-fit or stability); participants were advised that 'a musical sound is stable if it does not need to move (resolve) to another music sound'. Unlike previous studies, the order of notes in the context was randomised; each note in the context played three times in a trial.

Results

Goodness-of-fit ratings for tones resemble those obtained in K&K, but for a tend towards the predictions of Milne's (2015) spectral similarity model for the different contexts. Stability ratings for each unique stimulus differ insignificantly from goodness-of-fit ratings apart from in the case of the leading tone of the jazz minor scale, which received a lower stability rating from musicians. Non-scale tones were rated significantly lower for the diatonic scale context than for the harmonic and jazz minor scales. Ratings for probe triads averaged across group and condition largely align with Milne's predictions. After the harmonic minor scale context the triad on the leading tone received significantly lower stability than fit ratings. Augmented and diminished triads were rated significantly lower than major and minor triads.

Conclusions

Though ratings of stability seem to correspond largely to ratings of goodness-of-fit, some important differences suggest that one cannot substitute for the other: The lower stability than fit of the leading tone and of the triad on the leading tone suggests that stability may encompass higher order effects such as expectations in the cognition of tonality. The experiment also provides a modus operandi for further work testing novel microtonal scales to explore possible bottom-up explanations for tonality.

Keywords: Tonality, probe tone, probe triad, stability, goodness-of-fit, leading tone.

Topics: Music cognition, cognition of tonality, melody and harmony perception.

Hogan, Jillian   **Boston**

Ensemble Habits of Mind: Preliminary Findings of Teaching Thinking in the High School Music Ensemble

Background

According to a report by the National Center for Educational Statistics, 91% of public high schools in the United States offered music instruction during the 2008-2009 school year (Parsad & Siegelmen, 2012). Despite frequent media claims that music education is a disappearing phenomenon (Richerme, 2011), this statistic counters that music education is present in some form in most United States public high schools, usually in the form of large ensemble like band, orchestra, or choir.

Aims

What is actually being taught in these high school ensemble-classrooms? My focus is not on the skills of playing an instrument and reading notation, but rather on potential broad habits of mind that may be part of the "hidden curriculum." The study reported here is an intensive mixed method investigation of the habits of mind being taught in high school ensemble-classrooms. By habit of mind, I refer to broad ways of thinking and working that are potentially useful outside of the music domain. The model that we follow is based on a similar study of visual arts teaching in which eight habits of mind were identified as being taught in high school studio art classes (Hetland, Winner, Sheridan, Veenema, 2007/2013).

Method

Six high school ensemble (band, choir, or orchestra) teachers were observed and videotaped four times over one school year which totaled more than 900 minutes of active rehearsal. Teachers' spoken words were coded with a coding manual that emerged from the data using a combination of deductive and inductive approaches. Twenty-five percent of the total data was coded by two independent coders, yielding a pooled Cohen's kappa of greater than .8, which is considered good to excellent agreement (Fleiss, 1971).

Results

Five habits of mind appeared to be consistently taught (coded an average of at least 20 times over each 60 minute rehearsal): engage & persist, evaluate, imagine, listen, and preparedness. Three habits were taught with moderate frequency: community awareness, express, and notice. Two that were almost never observed were: recognize problems with more than one correct answer, and use creativity (Hogan & Winner, in press; Hogan & Winner, 2015). The lack of these two important habits of mind is, I argue, a wake-up call to high school music educators. Here I report the final analysis of the full data set to reveal which habits of mind are most often taught in high school music ensemble classrooms.

Conclusions

This study is the first systematic investigation to identify broad habits of mind taught in ensemble-classrooms. While other lists of what is taught in the arts exist (Davis, 2008; Eisner, 2003), these have been created from theory rather from the ground up, based on systematic observation and coding. This study lays the groundwork for important future steps: assessing the extent to which these habits of mind have been learned; and assessing the extent to which these habits of mind, once learned in the parent domain of music, transfer to other domains of school curriculum.

Keywords: music education, habits of mind, thinking disposition, music ensemble

Topics: Education

Kasdan, Anna and Kiran, Swathi **Boston**

Please Don't Stop the Music: Song Completion in Patients with Aphasia

Background

Aphasia, an acquired language disorder resulting from brain damage, affects over one million individuals in the United States alone. Many persons with aphasia (PWA), particularly those with non-fluent aphasia, have been observed to be able to sing the lyrics of songs more easily than they can speak the same words. The observation that not only singing, but even humming a melody, can facilitate speech output in PWA provided the foundation for Melodic Intonation Therapy.

Aim

The current study examined PWA's ability to complete phrases from songs by either singing, speaking, or intoning them in an experimental stem-completion format.

Method

Twenty PWA of varying severity, all but one of whom had aphasia as a result of stroke, and 20 age-matched healthy controls participated in the task. The task consisted of three conditions (sung, spoken, and melodic) each consisting of 20 well-known songs. Participants heard the first half of a phrase that was either sung in its original format (sung condition), spoken (spoken condition), or intoned on the syllable "bum," (melodic condition) and were asked to complete the phrase according to the format in which the stimulus was presented. Participants were scored on their ability to complete both the melody and lyrics together in the sung condition, only the lyrics in the spoken condition, and only the melody in the melodic condition.

Results

PWA scored highest in the sung condition, followed by the spoken and then melodic conditions, while controls scored comparably in the sung and spoken condition and much lower in the melodic condition. Both groups were better able to access the melody of songs in the sung condition than in the melodic only condition, while there was no difference in accuracy for lyric production between the sung and spoken conditions. These results may be attributed to the integration hypothesis, which postulates that the text and tune of a song are integrated in memory such that there exists a stronger salience of the text of songs over the tune of songs in memory. Interestingly, the most severe PWA scored higher in the melodic condition relative to the spoken condition, while the opposite trend was found for less severe PWA and for controls.

Conclusions

Singing may be beneficial to PWA, particularly those who are more severe, when trying to access the lyrics of songs. This indicates that access to melody is preserved in PWA even while they exhibit profound and diverse language impairments. Findings may have implications for using music as a more widely implemented tool in speech therapy for PWA.

Keywords: aphasia, music, melody, lyrics, language, song completion

Topics: Cognition, memory and language, Neuroscience

Krause, Amanda   **Sydney**

Older people's motivations for participating in community singing

Background

A challenge facing researchers concerns understanding the relationship between music participation and well-being impact. While previous research highlights the potential well-being benefits associated with group singing, it is important to understand the motivation to participate in such activities. In particular, what motivates older individuals to participate in community singing groups? Because many older adults often withdraw from social activities, it is important to consider their motivations to attend singing groups, over and above other potential social opportunities that may be offered to them in order to understand how music participation can promote well-being; however, relatively little attention has been paid to the well-being potential of music in the lives of older people.

Aims

Therefore, the aim of this research was to investigate the motivations of older people who regularly attend community singing groups in Australia. The driving research question asked 'what motivates older adults to attend and then continue singing in community groups?' and was considered from the perspective of positive psychology.

Method

Four focus group interviews were conducted with 64 participants, who belonged to three community singing groups in Australia. All three groups had been running for at least eight years prior to the investigation, and had been established as a part of a grant initiative focused on creating singing groups with the goal of offering musical and social opportunity to vulnerable older people (that is, those living alone in the community, those living with dementia, and those in a care facility).

Results

Through inductive thematic analysis, a total of eight motivating factors were identified, including the importance of singing in my life; enormous pleasure of singing with little pressure; challenge and achievement; spiritual and uplifting emotions; strength in overcoming my age, disease and hardship; good leadership; fellowship with others; and purpose and meaning of group singing. Additionally, the findings suggest that the older participants seemed to experience different motivations at different stages of their community group engagement. Once individuals engaged with the community singing, enormous pleasure from the singing and sharing these feelings with others led to feelings of social inclusion. Long-term participants in community singing groups were afforded strength to overcome their age and disease and find a meaningful way to contribute to their local community. Most of all, participating with peers of their own age seemed to intensify their experience. Further, the themes are considered from the perspective of positive psychology's PERMA well-being model, which asserts that there are five core elements (positive emotion, engagement, relationships, meaning, accomplishment) to psychological well-being.

Conclusions

Through their motivations, the participants offered a solid rationale for how their group singing had positive benefits to their personal well-being. The identified motivating factors align with all five of the PERMA well-being model elements, confirming the usefulness of the PERMA framework in understanding music participation and well-being. Importantly, the present results further our knowledge concerning how community singing opportunities can promote well-being in the third- and fourth-age, which is useful as solutions for positive- and active-ageing are needed four our ageing society.

Keywords: community, singing, well-being, motivation, positive psychology, PERMA well-being model

Topics: health/well-being, culture, emotion

Krinner, Magdalena   **Graz**

Development of professional self-concepts of students in the field of instrumental and vocal pedagogy. A PhD Project at the Institute of Music Education.

Background

The occupational field of instrumental and vocal pedagogy is increasingly changing and the competence requirements of instrumental and vocal teachers are becoming very complex. Instrumental and vocal pedagogues are confronted with heterogeneous assignments and different professional roles as e. g. artist, organizer, networker and teacher. Most of the careers are portfolio careers and this state of the system needs teachers with abilities to cope with change and are able to give innovative contributions to the future development. The establishment of a pedagogical entrance examination seems to be very relevant in order to raise the probability that the truly interested and eligible students start and successfully finish the studies, as well as being satisfied and efficient in the profession. But in respect thereof is a gap of research in instrumental and vocal pedagogy. The question if and how an entrance examination in higher music education is possible or rather necessary needs previous research. According to this, it seems to be relevant to focus on the development of the professional self-concept of students in the field of instrumental and vocal pedagogy because socio-demographic and psychological theories of career development see the emphasis on the importance of the development of the professional self-concept.

Aim

The main aims of this study are to find out how the professional self-concept of instrumental and vocal pedagogy students is composed and if or rather how it changes during the study.

Method

This PhD project is a qualitative case study. The episodic interviews are organized with students at different stages of study and different instrument groups. The criteria for the manual are based on socio-demographic and psychological theories of career development. Questions refer to attitudes, motivation, different identities, professional roles, biography, strategies for the future and expectation of self-efficacy.

Results

The first results from the pilot interviews confirm the supposed categories from the career development theories. Specialized for the instrumental and vocal pedagogy field, students with a positive attitude accept their self-concept as a composition about being an artist and teacher and they see this as a mutual enrichment. Influences for this positive self-concept are their musical biography, significant others positive role models and a high level of self-reflection.

Conclusion

This research study contributes primarily as theoretical bases for further research. Knowledge about the career development, especially development of the professional self-concept of students in the field of instrumental and vocal pedagogy, is important for the professionalization in the field and gives a lot of information for higher education. Further steps would include to verify the results in a quantitative way.

Keywords: self-concept, instrumental pedagogy, vocal pedagogy, career development, professional, identity, portfolio career

Topics: Development, Education, Other

The Exploration of Pianists' Embodied Concepts of Piano Timbre: An Interview Study

Background

Several acousticians hold the view that piano timbre cannot be varied independently of other musical attributes (Ortmann, 1938; Turner, 1939); This perspective was doubted by pianists who experience strong timbral intentions in the piano performance. This debate has been recently investigated with linguistic studies (Bellemare & Traube, 2005), indicating pianists' extensive utilization of timbre descriptors. Precise keyboard movements (e.g. acceleration of key/hammer, attach depth/duration) have also been measured in the production of particular timbres (Bernays & Traube, 2013). However, these studies pay less attention on the influence of bodily movements in pianists' understanding of piano timbre; the relationship between the sound, the body, and the mind is still unclear.

Aims

The study aims to explore the role of pianists' gestural control and the interaction with the instrument in the conceptualization of piano timbre. It also examines the extent to which piano timbre perception may be influenced by perceptions from other sensory modalities (visual, tactile, motor) as well as other musical components.

Method

9 pianists took part in a semi-structured interview study. The interview process consisted of two parts: firstly, pianists were asked several questions around their understanding of timbre concepts, and secondly to play a self-selected piece of music and demonstrate timbral differences on the piano provided; they were specifically asked to explain the methods they employed to produce certain types of sound. The interview questions were concerned with finding out what the concept of timbre meant to these pianists and how they related that concept to their performance.

Results

The qualitative data were analyzed by using thematic coding. The results identified several factors that influenced pianists' subjective experience of piano timbre: (1) various qualities of touch applied to the keyboard (attack speed/depth, finger percussiveness, and finger shapes); (2) the involvement of other bodily parts, including the body scope, weight, relaxation/tension, and direction; (3) and the simultaneous perception from other musical attributes (pitch, dynamics, articulation etc.). The results also showed that pianists relate the piano timbre concepts closely with the musical interpretation and affected by the composer's intention, pianist's expressive intention, and the musical title/style.

Conclusions

This research indicated that the conceptualization of piano timbre largely depends on the movement pattern with which pianists produce piano tone(s) and interact with the piano. More specifically, pianists' verbal description of timbre concepts shows a strong association with corporeal feelings (relaxation/tension, weight, and physical size) and is mixed with perceptions from other sensory modalities and musical elements. Pianists' concepts of piano timbre is an embodied and cross-modal experience.

Keywords: Piano performance; Embodied cognition; Timbre concepts

Topics: Cognition, memory and language, Psychoacoustic, pitch and timbre

Meissner, Henrique and Timmers, Renee   **Sheffield**

Facilitating young musicians' expressiveness in music performance

Background

Some studies have suggested that expression in performance is hardly taught in the early stages of music learning and that instruction tends to focus on technique and reading from notation (e.g. Karlsson & Juslin, 2008). Irrespective of whether expressive performance is taught explicitly or not, little is known about effective approaches for developing and improving young musician's expression in performance. Broomhead (2005) suggested that providing students with problem solving opportunities can facilitate the development of expressive performance in secondary school choir rehearsals. Furthermore, instrumental tutors in an exploratory study used various instructional strategies for teaching children expressive performance, including teacher's enquiry, discussion, aural modelling and gestures & movements (Meissner, 2016). Results of this study suggested that especially teacher's enquiry and discussion might be helpful for improving pupils' expressiveness. This teaching strategy has been confirmed to be effective in a experimental lesson, comparing the outcome of an experimental lesson using dialogic teaching of expressive performance with a control lesson focusing on accuracy and technique. For a longer-term approach the question arises: Would a dialogic teaching approach be sufficient or do learners need supplementary methods to support this teaching of expressive music performance?

Aim

A longitudinal study was organized to explore the development of young musicians' expressive performance through weekly individual instrumental lessons with teachers employing various instructional strategies within a dialogic teaching pedagogy. Part of the study was to investigate the instrumental teachers' experiences and views on teaching expressive performance during the project: What did they see as an effective method for teaching expression? Did the project influence their teaching practice?

Method

To answer these questions an action research project (ARP) was organised with five instrumental tutors and eleven pupils (aged 8-14) during one school term. The teachers explored how various instructional strategies can support dialogic teaching of expressive performance. Pupils' performances at the start, middle and end of the project were video-recorded, and evaluated by the tutors and three independent adjudicators. Questionnaires, teacher diaries and video-recall stimulated interviews were used to gather information about participants' views and experiences. Qualitative data were coded in NVIVO and analysed with thematic analysis.

Results

The ARP influenced participating teachers' practice as it facilitated their reflection on teaching and learning of expressive music performance. Initial findings suggest that the participating teachers thought that playing with students and aural modeling was effective for improving pupils' accuracy as well as their expressiveness. Several teachers found that a dialogic teaching approach, asking open questions about the musical character and how to convey this, was effective and they appreciated the interactive character of this approach.

Conclusions

Preliminary findings from this study support the idea that it is possible to facilitate young musicians' learning of expressive performance. Modelling and playing with pupils can support a dialogic teaching approach. The development of expressive playing is a long-term process requiring patience from teachers and students. More research is required into this important aspect of instrumental music learning. Findings of this study will contribute to the development of a systematic pedagogy for facilitating young musicians' learning of expressive performance.

Keywords: Action research; Dialogic teaching; Expression; Instrumental teaching & learning; Performance pedagogy; Young musicians

Topics: Music Education; Music Performance; Performance Pedagogy

Ordás, Alejandro **La Plata**

Choral performance interaction: Relating movement variation and tuning variability.

Background

Choir performance is a form of social musical practice where both individuals and ensemble join actions to build a musical piece. In traditional choral theory, the performative role of the conductor is overestimated with respect to the choristers'. However, this biased view forgets that conductor and choristers are both performers, losing track of the interactive process that takes place in choral practice. In this study, we analyse the multimodal interaction that is generated inside the choir. Applying micro-analytical observation techniques, we look for multimodal cues (vocal tuning, conductor and choristers body movements) to describe meaning construction in the choir. We predict that the vocal homogeneity -usually conceived as the outcome generated by the conductor´s actions- is indeed the result of a multiple-way performative process that hides internal sound-kinetic variability.

Aims

To identify -through multimodal analysis- sound-kinetic features of the conductor-choir performance that can be cues to describe the variability that characterizes the practice of an amateur choir.

Method

Fifteen choristers of an amateur choir were video-and-sound recorded using separate audio tracks and individual microphones to register each participant's voice during rehearsal of a choral performance. To analyse the vocal signal, the pitch profile for each note -as detected in the onset analysis- was considered. The mean pitch for that note was taken as a normal average of 70% of an arbitrary perceptual window (0.1s). The resulting mean height was compared to the correct heights adjusted to A-440 frequency; deviations were calculated in cents. A pattern of deflection of each singer's tuning was obtained. The capture and analysis of movement data -taken from the video recording- were carried out using Tracker. The movement descriptor was the distance traveled by each body part from one point to another within-betwen frames; it was calculated as the Euclidean distance between subsequent 2D coordinates. The quantity of pixels' movement for each note sang by participants was calculated using the time annotation score of the choir performance. Each choir participant's tuning pattern was overlapped with both the choir and conductor's movement profiles.

Results

Taking an interactive perspective we observed that, in general, movements that conform the conducting gestures are loaded with visual cues (and with multimodal redundancy at times) providing information that facilitates and-or enables local and/or global vocal tuning. On the other hand, we identified singers' movements that seem to respond -through embodied attuning- to that cues. Also, when a group sings a musical segment that should be vocally emphasized in musical interpretation, it emerges a gestural sound-and-movement communion between choristers and conductor, and between the choristers themselves.

Conclusions

The synchrony of what is being sung, and the interaction with what is conducting, are embodied attuning forms. Interactions between all participants are understood from a perspective of attuning. Being together in time is not a one-way linear relationship where the conductor performs an action and the choir answers. We discuss variability in terms of features of differentiation-undifferentiation within the individual and the group rooted in the conception of the social practice in the choir.

Keywords: Choral practice, Choral Conducting, Intersubjectivity, Vocal tuning, Movement, Multimodal cues

Topics: Methods and epistemology, Psychoacoustic, pitch and timbre, Rhythm and movement

Paas, Anita; Novembre, Giacomo; Lappe; Claudia; Keller, Peter and Stevens, Catherine   **Sydney**

The Effect of Agency Ambiguity on Error-Related ERP Components in Musical Ensemble Performance

Background and Aims

In skilled action, including music performance, errors are rare but important events that have consequences and require adaptation. When acting together, as in musical ensembles, these consequences are shared amongst partners. However, when performing the same action simultaneously with the same expected goal, it can be difficult to tell who is responsible for the outcome; agency of the action becomes ambiguous. Electroencephalography (EEG) studies have revealed specific patterns of neural activity for own errors. However, whether and how agency ambiguity might affect these patterns is unknown.

Method

To address this question, we recorded behavioural and neural responses while paired pianists played piano exercises in unison and octave parts. We examined inter-keystroke-interval, velocity, and neural activity evoked by correct and erroneous keystrokes, and compared those across agency ambiguity conditions (high/unison vs low/octaves).

Results

Behavioural results showed no significant difference between agency conditions. However, once the data was split by error type (wrong note vs extra note), it revealed that extra note errors were played significantly faster and with less velocity than wrong note errors.
EEG results indicated that producing an error evoked a positive potential with a fronto-central topography peaking around 170 ms after the error. The amplitude of this component was larger in the error-unison condition (high ambiguity) than in the error-octaves condition (low ambiguity).

Conclusion

These findings suggest that the degree to which the effects of own and other's actions are integrated affects the operation of an internal modelling process that controls joint performance.

Keywords: error processing, music performance, joint action, agency, EEG

Topics: Cognition, memory and language, Neuroscience, Performance and timing

Parncutt, Richard   **Graz**

The psychohistory of consonance and dissonance and the harmonic vocabulary of major-minor tonality

How can we explain the melodic and harmonic structure of music in major and minor keys? Where do those patterns come from originally? The superficial naïveté of these questions contrasts with the complexity and diversity of research. We must consider both humanities and sciences, challenging assumptions on both sides and distinguishing what contemporary musicians consciously did (history of theory/ideas, relativist) from what modern investigations suggest "actually happened" (psychological, computer-based, positivist). In history of theory, major-minor tonality emerged as a concept in the 19th century, but composers started to create it in the 16th and 17th centuries. I will regard "aural tradition" (oral tradition, with emphasis on perception) as primary. All aspects of musical knowledge and experience may be part of it, including all pitch-time patterns and their contexts, and even musical intervals themselves (contra Pythagoras). Within this idea, I will consider psychological aspects of consonance, the frequency of occurrence of individual tones in chant, the psychological origin of the leading tone, the role of missing fundamentals in musical chords, the predominance of falling fifths and thirds between successive chord roots, and the idea that a passage in a major or minor key is a prolongation of its tonic triad.

Penill, Nicola   **Sheffield**

Ways of working in chamber ensembles: a survey study

Background

Ensembles often spend considerable time rehearsing before a public performance, or even without the goal of a performance. Previous case and observational research suggests that rehearsal methods are adapted to the context, and subject to variation according to a wide range of factors, including familiarity, expertise, roles, leadership and communication modes. However, is not well understood how groups collectively decide which activities or combinations of tasks to adopt to meet their goals, or whether there are differences in rehearsal practices between different types of chamber ensembles.

Aim

This study took a comparative view of rehearsal activities and organisation in Western chamber ensembles of different sizes, types and experience levels to address the following research questions:
•   What activities are included for what purposes?
•   How are they managed and organised?

Method

An online survey was conducted of chamber musicians engaged in Western classical music in the UK, including professional, student and amateur groups of up to 15 members. A range of ensemble types were represented including wind (33%), string (32%), mixed (24%) and voice (9%). The main variables investigated were rehearsal task (timing and importance), organisation (leadership, roles, planning) and collaboration (talk, nonverbal communication, conflict and goals). The survey also captured background data relating to age, gender and experience, ensemble type, length of time in existence, size, and purpose. Free text comments from respondents were also captured.

Results

Results from 129 members of UK-based chamber ensembles were analysed in relation to existing frameworks. Statistical methods were used to compare practices between ensembles of different types, sizes and expertise; and rehearsal activities were found to relate to ensemble, problem solving, warm-ups, and reflection tasks. Results reported for rehearsal task inclusion, ranking and order. Rehearsal structure was decided either collectively at the start of rehearsals (33.3%) or 'it just evolved' during the rehearsal period (32.6%). Rehearsal routines had 'no set pattern' (48.1%), although for a large number that was dependent on proximity to performance (39.5%). Rehearsal talk varied widely (mean 35.0 % of total rehearsal time, SD=17.90), and analysis of variance showed a significant difference in amount of 'social' talk between ensemble types ($F=5.31(3)$, $p<.05$). String groups exhibit some distinctive characteristics when compared with other group types.

Conclusions

These results offer some new insights into the comparative nature of rehearsal in ensembles, and suggest some distinctive practices by ensemble type. Whilst there is a high degree of consistency of rehearsal tasks and structure across ensembles (what groups do), the ways that groups collaborate (how they do it) shows much greater variability. Decisions on the nature and order of actions appear to be implicitly agreed rather than explicitly discussed, suggesting that such decisions may be made tacitly based on common practice. By contrast, there was wide variability of collaboration methods, suggestive of a rich, complex mixture of context and practices. There were some differences (e.g. amount and nature of rehearsal talk) in relation to ensemble type, familiarity and expertise, especially relating to string groups. The reasons for these differences were not clear, although they may be partly explained by membership of distinct communities of practice, or by different instrumental affordances. Future research will explore these differences, and how rehearsal practices vary with stage of performance.

Keywords: Rehearsal, Collaboration, Chamber ensemble, Leadership, Roles, Organisation

Topics: Other, Performance and timing, Sociology

Prem,Ella; Parncutt,Richard; Giesriegl, Annette and Stigler, Hubert Johannes   **Graz**

The Ideal Jazz Voice Sound: A qualitative interview study

Background

The vocabulary of words and phrases used by musicians to describe instrumental and vocal timbre has been explored by Bellemare and Traube (2006), Garnier et al. (2007), and Prem and Parncutt (2007). The timbre of the ideal classical singing voice is linked to the need to project over loud accompaniments (e.g. singer's formant, formant tuning; Schutte and Miller, 2000). The ideal jazz voice takes advantage of microphones enabling greater expressive variation. Implicit concepts of ideal or authentic sound influence teaching in conservatories and music academies but have been the subject of little empirical investigation.

Aims

Documenting the way jazz singers describe their favorite commercial jazz recordings, we aim to investigate their intrinsic knowledge concerning ideals in jazz voice sound. Extracting categories and defining the core vocabulary of sound descriptions makes implicit concepts on authenticity and gender in the jazz voice sound more transparent.

Method

Twenty jazz singers (not necessarily german native speakers) are being interviewed. All are or used to be students of jazz singing at postsecondary level. In an open interview, each participant brings ten examples of jazz singing on CD or MP3 and describes that singer's sound. Using qualitative content analysis on the interview transcription (Mayring, 2003), categories for jazz voice sound descriptions are being defined. In addition the qualitative data are represented in an XML database. XSLT stylesheets are used to create tag clouds where the size of a word reflects its number of occurances.

Preliminary Results

Frequent terms (words that are used by more than 60% of the participants) for preferred singers are deep (tief), jazzy (jazzig), beautiful (schön), spoken (gesprochen), soft (weich), powerful (kraftvoll), instrumental (instrumental), airy (luftig), diverse (facettenreich), dark (dunkel), nasal (nasal), headvoice (kopfig) and manly (männlich). To describe the jazz voice sound, participants refer to voice production, individual sensations and association and technical terms. Other categories extracted by Prem are African American, sexy, male/female and ideal jazz voice sound. The vocalists with the most listening examples are Ella Fitzgerald and Nat King Cole. Ideal female jazz voices sound forceful, clear and instrumental, whereas ideal male jazz voices sound warm, dark and relaxed.

Conclusions

We explored the "ideal" sound without asking for it directly. Participants additionally showed remarkable motivation to listen to and experiment with different sounds to cultivate their individuality as jazz singers, raising questions about the tension between uniformity ("ideal" prototypes or exemplars) and individuality. Gender differences in the ideal jazz voice sound are being found, which need to be investigated further. Our project is raising awareness for the importance of sound and timbre in jazz singing, improvising/composing and teaching.

Keywords: Jazz Singers, Music Performance, Musical Timbre, Vocal Pedagogy, Gender, Ideals, Authenticity, Qualitative Content Analysis, Vocabulary, Sound Descriptors

Topics: Aesthetics, meaning and philosophy, Education, Performance and timing

Rieger, Alexandra and Kleinberger, Rébecca **Boston**

Learning from Lullabies: A Cognitive-Behavioral Exploration of the Role of Lullabies in Infant and Adult Well-Being

Background

It is known that lullabies have soothed generations of our ancestors. According to Hellberg's 2015 paper "Rhythm, Evolution, Neuroscience in Lullabies and Poetry" lullabies are traced to 2000BC, the first documented case etched upon a Babylonian clay tablet by a mother over 4000 years ago. Despite longstanding practices of lullabies, there is much to understand regarding their use and potentially beneficial applications in adult cognition and wellbeing.
In 2013, UCLA-ethnomusicologist Pettit published a study revealing "live lullabies slowed infant heart rate, improved sucking behaviors...critical for feeding, increased periods of "quiet alertness" and helped the babies sleep." Those with child-rearing experiences are aware of how babies are comforted by the slow, sing-song vocal tones and oft unsettling lyrics. Despite recorded benefits, few take these drowsy, mournful songs beyond the nursery. In Neurologist Tim Griffiths' research, he explores how the limbic system's emotional response to lullabies decreases arousal levels thereby spurring pain attenuation.

Aims

Our research begins by exploring current music therapies and moves to examine functional applications of reintroducing the lullaby to positively affect hormonal, stress and cognitive levels. Furthermore, we examine how the act of singing a lullaby is beneficial to both singer and listener. The slow tempo encourages reduction of rapid heartbeat aiding in stress reduction. Moreover, as Pettit (2013) and Loewy (2013) hypothesize, the frightening stories in lullabies often reflect a parent's worst fears, ones curbed by the catharsis of verbalization. According to Abou-Saleh, Et Al. (1998) lower prolactin levels were associated with postpartum depression in new mothers; levels that could be treated by lullabies. Studies by Huron (2011)/ Sachs (2015) reveal melancholy music triggers the endocrine neurons in the hypothalamus which tricks the brain into a compensatory release of the hormone prolactin, key in grief attenuation and self-comfort.

Method

We then propose an intervention that encourages subjects to sing variances of lullabies to themselves directly following a stressful activity, while monitoring signs of stress through tracking 1) the autonomic nervous system using wristbands capable of detecting: sympathetic and parasympathetic activation and changes in heart rate. 2) EEG stress tracking in prefrontal regions (Fp1, Fp2 and Fpz). Control groups participate in similar activities such as controlled breathing and listening to recorded lullabies (which lacks live participation and cathartic verbalization).

Conclusion

Finally we raise associated challenges in examining specific sonic and verbal features responsible for stress reduction while accounting for aspects of cognitive individuality and neurodiversity. Our work asks: why do we stop singing and listening to lullabies once we get beyond the nursery? It is proposed that through our societal lens, we feel we do not need lullabies as we are older despite the fact that life tends to increase in difficulty past the cradle. We argue that lullabies are a rare example of a shared global phenomenon that is under-explored. We propose what happens if were to continue singing/listening to lullabies, how we might create and develop new lullaby-inspired vocal practices in form of a therapeutic cognitive-behavioral intervention in human adults.

Keywords: Lullaby, Music-Cognition, Well-being, Intervention, Sleep, Stress-Reduction, EEG, Human Connection, Music-Therapy-Intervention

Topics: Cognition, memory and language, Health and therapy, Performance and timing, Psychoacoustic, pitch and timbre

Sattmann, Sabrina   **Graz**

The Chill Phenomenon: Emotions and associations at the interface between contrasting musical passages

Background and Aims

Which structural features in music evoke chills, and how are chills related to emotion?
The aim of this study was to investigate felt emotions, associations, memories, and musical structure associated with chills (positively experienced goose bumps or shivers down the spine) while listening to music. While previous studies focused on classical music and primarily on (professional) musicians (e.g., Sloboda, 1991), this study considered the perception of mainly popular music by amateur and non-musicians. So far, research explored emotions linked to chill-eliciting music merely by basic dimensions of valence and arousal or a very limited number of single emotions selected by the authors (e.g., Benedek & Kaernbach, 2011). This study investigates felt emotions associated with musical chills more systematically.

Method

Individual interviews were conducted with 20 participants (11 female, 11 musicians, mean age 29.9 years). Each of them was asked to bring three chill-eliciting pieces of their own choice. During the interviews, the pieces were played and participants indicated the chill-inducing passages verbally, explained why they liked the pieces, freely described the emotions they felt, and talked about any memories and associations connected to the pieces. At home, participants evaluated the intensity of felt emotions in their chill-inducing passages using the Geneva Emotional Music Scale (GEMS-25; Zentner et al., 2008), complemented by items derived from the interviews.

Results

On average, each participant indicated 5.9 chill-inducing sections, making a total of 118 passages. On factor level, the emotions most strongly associated with chills were wonder and power, whereas lowest ratings were found for sadness and tension. On item level, highest ratings for fascinated, strong, liberated, happy, and allured were found, while emotions like tense, sad, or soothed, received very low ratings. Musicians (M = 2.84) rated the intensity of felt emotions significantly higher than non-musicians (M = 2.49). Analysis of the 118 passages showed that chills often occur after a relatively monotonous section, characterized by a repetition of harmony, rhythm and melody, a delay of progression, a reduced number of instruments or even short silence. The chill-inducing passage itself featured a sudden increase in loudness, an entry or change of instrument(s), a melodic peak or a rhythmical/harmonical change.

Conclusions

As observed by Grewe et al. (2007), chills were often evoked by sudden changes; in addition, we found that the preceding passage was characterized by a noticeable lack of change or activity, suggesting that the chill was evoked by the contrast between the two passages. The result that chill-eliciting music is linked to power and wonder contradicts Panksepp (1995), who suggested that musical chills are associated with the emotions sad and melancholy. Furthermore, this finding could be useful for therapeutic interventions and motivational purposes (e.g., sports).

Keywords: chills, thrills, frissons, emotion, musical structure, associations

Topics: Emotion, Structure, tonality and metre

Schallmoser, Theresa and Moazzami Vahid, Siavash   **Graz**

Estimation of Time in Music: Effects of Tempo and Familiarity on the Subjective Duration of Music

Background

Our perception of time is open to manipulation in many different ways. Two similar events with the same duration would be judged to have different lengths based on their properties. According to Ornstein (1969) and Boltz (1991) this difference comes from different factors such as the complexity of the events or our familiarity with them.

Aims

The current study is an attempt to investigate the manipulation of perceived duration of musical pieces through their tempo and furthermore to see if the familiarity of the music and the musical expertise of the listeners have any considerable role in the matter.

Method

10 non-musicians and 10 musicians rated the duration of musical pieces of different categories of familiarity and tempo. We chose short passages of various styles of music and divided into slow, medium and fast but also into familiar and non-familiar musical stimuli by ourselves.
Post-studies will be considered to determine the validity of our choices on the categories and to increase the sample size.

Results

Statistical analysis showed a strong effect of the different tempo categories, namely that faster music is perceived as longer than slower music ($p < .001$). In general, both groups of participants tended to underestimate the length of the stimuli.
Another effect showed up at the interaction of all independent variables (tempo, familiarity and grouping), which is yet to be interpreted.

Conclusions

The amount of information perceived in a certain period of time seems to have an influence on time perception also in music, while an effect of musical expertise is not appearing in our results. A possible effect of familiarity cannot be ruled out yet, but will be considered in further investigation.

Keywords: Music perception, time perception, estimation of duration, information processing, tempo, familiarity

Topics: Cognition, memory and language

Sun, Yanan; Lu, Xuejing; Ho, Hao Tam and Thompson, Bill   **Sydney**

Pitch discrimination associated with phonological awareness: Evidence from congenital amusia

Background

Music and language share many characteristics. Both involve a set of rules or principles through which constituents (tones in music and phonemes in language) are organized into complex, structured sequences (Koelsch, 2012; Patel, 2003; Tillmann, 2012). Such similarities have led many to propose that music and language engage common cognitive resources (Koelsch, 2011; Slevc, 2012). This view is supported by evidence that skills specific to music correlate with phonological processing (Lamb, & Gregory, 1993; Loui, et al., 2011; Anvari, et al., 2002; Grube, Cooper, & Griffiths, 2013).

Aim

If music skills and phonological ability were associated, it would be reasonable to hypothesize that individuals with poor musical abilities have parallel phonological deficits. To test this hypothesis, we examined whether phonological impairments are evident in individuals with poor music abilities.

Method

We tested 20 participants who exhibit significantly impaired musical abilities (i.e., congenital amusia; which is comparable to tune-deafness, but diagnosed differently), and their matched controls on several measures of phonological ability, including phonological awareness, phonological short-term memory and rapid naming. Four subtests of the Comprehensive Test of Phonological Processing (CTOPP-2) were selected because they are considered to be valid and reliable measures of phonological processing ability. A pure-tone pitch discrimination task and a rhythm discrimination task were administered in order to explore the relationship between these skills and phonological ability.

Results

Amusic participants showed deficits in discriminating pitch and discriminating rhythmic patterns that involve a regular beat. At a group level, these individuals performed similarly to controls on all phonological tests. However, eight amusics with severe pitch impairment, as identified by the pitch discrimination task, exhibited significantly worse performance than all other participants in phonological awareness. This cannot be explained by deficits in IQ, reading or short-term memory, as these eight amusics performed similarly to control participants and amusics with normal pitch discrimination thresholds on the IQ, reading and short-term memory tests. A hierarchical regression analysis indicated that pitch discrimination thresholds predicted phonological awareness beyond that predicted by phonological short- term memory and rhythm discrimination. In contrast, our rhythm discrimination task did not predict phonological awareness beyond that predicted by pitch discrimination thresholds.

Conclusion

These findings suggest that accurate pitch discrimination is critical for phonological processing. We propose that deficits in early-stage pitch discrimination may be associated with impaired phonological awareness and pitch discrimination plays a shared role in processing music and speech.

Keywords: Pitch, Rhythm, Phonological awareness, congenital amusia

Topics: Cognition, memory and language, Psychoacoustic, pitch and timbre

Susino, Marco and Schubert, Emmery **Sydney**

Beyond Psychoacoustic Features: Emotion Stereotyping of Music

Background: Does stereotyping affect our emotional associations with music? The stereotype theory of emotion in music – STEM, proposes that listeners filter the emotion they perceive from music based on stereotypical associations held by the listener about the encoding culture. One such association that could trigger a stereotype is a previously held stereotype of the culture with which the music may be associated. Consequently, some music genres may be spontaneously paired with a small set of emotions directly influenced by a previously held stereotype.

Aims

This study aimed to establish if the responses of listeners with varied degrees of familiarity to eight music genres yielded spontaneous, stereotypical emotions.

Method

A two-part study was conducted. First, participants listened to samples from eight distinct music genres: Samba, Son, Heavy Metal, Hip Hop, Gagaku, Pop, Fado and Western Classical. They then described their spontaneous association with the music. They were next asked to report their spontaneous associations to the target cultures. In this condition, the target cultures were assumed to be associated with the music genre: Brazilian, Cuban, Heavy Metal, Hip Hop, Japanese, Pop, Portuguese and Western.

Results

Results indicated that a small number of specific emotions reported for the music genre condition were consistently associated with stereotypes of the associated culture. These include peace and calm for Gagaku music and Japanese culture, and anger and aggression for Heavy Metal music and culture.

Conclusions

We explain these results by adopting the novel stereotype theory of emotion in music: If a genre evokes an emotion, it may be because this genre is associated with a culture from which the music is thought to emanate. For example, if a listener holds an emotion-related, subconscious stereotype about the associated culture, such as, 'the Japanese culture is anger-reticent', Japanese music may not be automatically categorised as angry. The theory predicts that emotion in music will be perceived if the decoding culture has no stereotype associated with the culture the music is believed to be from, leaving the music free to be interpreted through psychophysical or culture-specific cues.
From a cognitive perspective, emotional stereotyping provides a simple way of processing music and may, under some circumstances, affect the association of the genre regardless of the individual character of the music exemplar.

Keywords: Emotion, stereotype, music genre, cross-cultural, STEM

Topics: Cross-cultural, Emotion, Other

Tanco, Matias and Damesón, Javier   **La Plata**

Tonal center in music performance: searching for embodied cues in the temporal unfolding of the musician's performance

Background

In tonal music, the "center" is the most resilient metaphor for the tonic note. Both in music theory and in the music notation systems, there were developed visual representations and schematic models to explain the relations between tones in a musical piece. To provide a definition of the tonal center, with the tonic as the highest hierarchical event of the tonal system, it is necessary to involve a complexity of meanings brought about by different concepts like pitch, intervals, harmony, and scales, among others. In this paper, we assume that the tonal center is understood and structured through metaphorical mappings from a small set of fundamental experiential concepts, in the way of Lakoff & Johnson's Conceptual Metaphor Theory. Previous experimental work in music cognition showed that dynamic, imaginative representations of image-schemas serve cross-domain mapping processes that are used to produce metaphorical interpretations of musical sound in the cognition of prolongational structures.

Aim

The aim of this work is to study the performer's movement linked to the experience of tonal center. After defining the relations between the tonal unfolding of a musical piece and the analogical/metaphorical representations of musical tones in space, we discuss the tonal center as an embodied concept in music cognition.

Method

An observational study was run on the performance of Mozart's K. 333, 1. First, we analyzed its tonal structure using a Schenkerian approach. Second, we performed an annotated movement observation of Lang Lang's professional broadcast, using ANVIL, aimed at describing the spatial orientation of head and torso's movements. Third, we registered -using a Motion Capture System- the Mozart's performance by a professional pianist (+20 of experience). Movement analysis generated a temporal trajectory of the head's markers related to the hip's marker (body's center of gravity) taken from an upper view of the performer's movements.

Results

It was predicted that the spatial trajectories might be related to cross-domain mapping processes involving image-schemas instantiated in performance. Results show movements oriented towards spatial locations that appear to function like centers of attraction at different structural moments: (i) movements around the balance position's center were found throughout the initial tonic prolongation; (ii) an increasing tendency to move away from the body center onto peripheral space accompanied music direction onto the structural dominant of the phrase; (iii) return to the initial body center position after the first theme's cadence; and (iv) modulation process redirected movement's tendency around a different center position before the second theme.

Conclusions

Musician's body trajectories in performance were interpreted as terms of center/periphery image-schemas, formed in different locations of the performance's space. They are understood as embodied cues that support a metaphorical cognition of the tonal center as it unfolds dynamically in time. Future research will inquire the meanings of movement performance in the spectators' experience of tonal center. Direct correspondences between movement and sound production can also be studied in relation to conventional meanings of gestures in social cognition about tonality and performance, and how these are involved in metaphorical music cognition.

Keywords: embodied music cognition, performance, tonality, center, metaphor

Topics: Cognition, memory and language, Performance and timing, Structure, tonality and metre

Tzanaki, Persefoni **Sheffield**

Empathy & Rhythmic Entrainment during Children's Musical Interaction: Cognitive & Motor-emotional approaches

Background

Social rhythmic entrainment which is considered the temporal coordination of children's music-making and their affective connection during their musical interaction is a demanding skill which has been associated with empathy, as synchronisation elicits individuals' emotional states, enhances affiliation and promotes empathy (Rabinowitch et al. 2013). However, less attention has been paid to empathy's impact on rhythmic entrainment, although various social factors and personality traits are considered highly influential parameters of musical interpersonal coordination. In addition, the role of the type of musical interaction in this possible empathy's impact remains unclear.

Aim

To investigate how low and high trait empathy influence children's rhythmic entrainment (both their temporal coordination and their affective connection) during their musical interaction and how two different approaches to musical activities (cognitive vs. motor-emotional) contribute to empathy's possible impact. The cognitive approach required children to remain seated and perform some rhythmic games without further interaction with their peers while the motor-emotional approach included the same games with body percussion and movements.

Methods

In total, 40 children were recruited from three British primary schools. They were chosen according to their scores in the empathy questionnaire "Feeling-Thinking" by Garton & Gringart (2005). A pre-test ensured that all participants had similar personal rhythmic skills. The experiments included fun rhythmic activities, and children's tapping was measured via electronic drum pads. A follow-up questionnaire investigated children's affective connection during the experiment.

Results

Descriptive analyses indicated that groups with high empathy were better entrained than groups with low empathy. In addition, groups that participated in the cognitive approach of activities were less entrained than groups in the motor-emotional approach. Same results were stated for the affective entrainment of groups.

Conclusions

Results are in line with studies which highlight the role of Mirror Neuron System and the process of motor simulation during rhythmic entrainment (Novembre et al. 2014). These neurons perceive an observed action the same way as if this action was executed and contribute to the involuntary representation of the others' internal states. It could be supported that children with better ability to perceive the others' actions via their enhanced empathic ability can be better temporally and affectively entrained with their co-performers as they better anticipate and perceive the others' actions. Activities with motor-emotional approach seem to facilitate these processes by creating stronger shared experiences. A theoretical model is proposed which integrates the two dominant notions concerning the link between empathy and rhythmic entrainment and suggests that this relationship is continuous and bi-directional during children's joint musical interaction.

Keywords: Empathy, Rhythmic Entrainment, Music education, Musical interaction, Music psychology, Mirror neurons system

Topics: Education, Emotion, Neuroscience, Rhythm and movement