GAPS2 - Global Arts and Psychology Seminar
"Creativity in music and the arts"

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York, Graz, La Plata, & Melbourne

BOOK OF ABSTRACTS

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Table of Contents

All talks, posters, and flash talks are presented in alphabetical order according to the first author's surname. Presenting authors are underlined. Titles of flash talks are marked in purple.

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INVITED TALKS

Mathias Benedek
University of Graz, AT

The neurocognitive bases of creative thinking

Creative ideas change our world, from small improvements in everyday life to major contributions in art and science. But what are the (neuro)cognitive mechanisms underlying creative ideas? In this presentation, I briefly introduce how the complex trait of creativity is conceptualized and studied from the perspective of psychology. Then I will present recent findings on the cognitive and neural basis of creativity, which highlight the relevance of memory, control and attention processes in creative cognition. Relevant works in this field addressed among others the following questions: How do semantic and episodic memory support creative ideation? Are creative ideas based on spontaneity or cognitive control? What is the role of attention in imagination? And which brain processes are involved in the generation of creative ideas? Taken together, these findings enable us to increasingly understand how the interplay of ordinary (neuro)cognitive processes gives rise to the extraordinary human capacity for creative thought.

Mathias Benedek, is Assistant Professor at the Institute of Psychology, University of Graz, Austria, where he directs the Creative Cognition Lab. His research focuses on cognitive and brain processes underlying creative thought, psychometric issues in creativity assessment, and individual differences in creativity, intelligence, and personality. He obtained an MSc from the University of Graz, and a PhD from the University of Kiel, Germany. Mathias Benedek has published over 130 empirical articles and book chapters in the fields of creativity research and cognitive neuroscience. He was awarded the William-Stern Award by the German Psychological Society in recognition of excellent, innovative work in the field of personality psychology, and received the Berlyne Award in recognition of outstanding research by an early career scholar from Division 10 (Society for the Psychology of Aesthetics, Creativity, & the Arts) of the American Psychological Association.

Romina Cecilia Elisondo
CONICET, Universidad Nacional de Rio Cuarto, AR

Current theories of creativity: contributions for social transformation

Current theories indicate that people can be creative in different fields. We recover proposals from the sociocultural manifesto of creativity. We address models that integrate various manifestations of creativity and attempt to conceptualize this complex construct from dynamic perspectives. We present the following models: 4 C, 5 A, 7 C and 8 P. Four-C Model of creativity includes mini-c, little-c, Pro-c and Big-C creativity. The 5 A's refer to actor, action, artifact, audience, affordances. The 7 C's of creativity refer to Creators, Creating, Collaborations, Contexts, Creations, Consumption and Curricula. The 8Ps are purpose, press, person, problem, process, product, propulsion, and public. From the theoretical discussions, and defining creativity as a tool for social transformation, we try to make some contributions to generate innovations in formal and non-formal educational contexts. It is our interest to initiate some discussions about the role of creativity, education and the arts in social transformations.

Romina Cecilia Elisondo, PhD in Psychology from Universidad Nacional de San Luis (Argentina) and Universidad de Murcia (Spain). Master's in education (Universidad Nacional de Río Cuarto). Degree in Psychopedagogy (Universidad Nacional de Río Cuarto). Professor at Universidad Nacional de Río Cuarto (UNRC). Researcher at National Council of Scientific and Technical Research of Argentina (CONICET). Director of research projects at the National University of Rio Cuarto and the National Council of Scientific and Technical Research of Argentina. Director of the Master's in Social Sciences at Universidad Nacional de Río Cuarto. Research topics: creativity, innovation, and education. She has published more than 100 papers in national and international journals: Journal of Creative Behavior, Creative Studies, Public Health International Journal of Innovation, Creativity and Change and Creativity stand out.

SPECIAL TALKS

Best Paper – York

All roads lead to the Golden Section: Contrasting compositional thought processes producing similar musical structures

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Background

Many musicological works analyse the proportions of various composers' pieces and show how significant structural points align with the mathematical concept of the Golden Section (henceforth GS). Two well-known examples are Lendvai's writing on Bartók (1971) and Howat's writing on Debussy (1983). Other composers include Bach (Webster, 1950), Beethoven (Haylock, 1988), Mozart (Putz, 1995), and Satie (Adams, 1996). Much of this literature addresses whether the use of GS proportions by the composers was intentional (Phillips, 2019). First-hand accounts from more recent composers such as Knussen (Anderson, 2003), Gubaidulina (Lukomsky & Gubaidulina, 1999), and Daverson (2014) confirm their deliberate use of GS in their structures. However, for other composers such as Debussy or Bartók, authors must speculate based on manuscripts of scores or other biographical information. In some cases, such as in Atlas' (2011) analysis of Vaughan-Williams, the conclusion is that the composer's use of GS structures is not deliberate but instead intuited subconsciously. In my own compositional practice, I have deliberately structured my pieces around the GS for many years. I have also encountered these structures in the works of colleagues who have confirmed that their use was nonconscious.

Aims

This presentation explores nonconscious thought processes that might inform a composer's decision making when structuring and pacing their pieces. How is it that both conscious and nonconscious compositional approaches can be drawn towards the same GS structure as an outcome?

Main contribution

Movement for strings (2021) and *Vision* (2022) are two pieces by composer Adam Webster which both evidence GS proportions in their structure. These proportions were arrived at intuitively according to the composer. Examination and comparison of both pieces' Sibelius files saved at regular intervals (provided by the composer) show how the structures of both took shape over the course of their composition. An interview with Webster was also conducted to explore the thought processes behind various structural decisions made. A theme that emerged from the interview is the idea that the pace of events in music can evoke a feeling of correctness from the listener. This concept is common to much writing on the GS in music, with similar propositions being offered by Atlas (2003, p. 271) and Evans (1992, p. 305) among others. Webster describes this feeling of correctness as being the guiding principle behind his structural choices.

Discussion and conclusion

What remains unclear is what establishes the standard or criteria of correctness that the composer as listener judges the music in question against. Models of the compositional process proposed by Sloboda (1985) and Lerdahl (1998), in addition to Betsch's (2008) definition of intuition, suggest that established repertoire as it exists in one's long-term memory can have a strong role in setting these criteria. The prevalence of the GS in the structures of those such as Mozart and Beethoven, and later Bartók and Debussy, may therefore significantly contribute to its continued use even by those who compose intuitively. The reasons for the use of the GS by these classical period composers and the origins of this prevalence, however, are still unknown.

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Best Paper – Graz

Might musical emotion have a prenatal origin? A theory and a research proposal

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Abstract
The origin of musicality may be traced to prenatal development, as the fetus passively acquires associations between sound, movement, and emotion through repeated exposure to internal sounds and movements of the mother's body. These associations may influence later musical behaviors and ultimately represent music's origin (Parncutt & Chuckrow, 2018; Teie, 2016).

The first music-like sounds in ontogeny (perhaps also in phylogeny) may be created when patterns of sound and movement in motherese resemble patterns of sound and movement heard before birth, evoking corresponding emotions. Sounds audible in the uterus (heartbeat, footfalls, respiration, voice) can be compared to musical structural elements (Parncutt & Chuckrow, 2018). Heartbeat and footstep sounds are comparable to rhythmic pulse in musical meter. Spoken syllables of the maternal voice, heard through the low-pass filter of the mother's body, can be compared with melodic tones. The phrasing and prosody of maternal speech can be compared with melodic phrasing and expression.

Emotional variations in adults are associated with physical, psychological, and behavioural variations, including changes in heart rate, breathing, digestion, and voice patterns (Kim et al., 2018). Of course, the same is true for pregnant women. To the extent that fetal perception and cognition are operational (depending on gestational age), the fetus perceives and reacts to those changes. But investigating "fetal emotion" is challenging, given that the fetus cannot reflect on emotions in the way that adults or children do, combined with methodological difficulties. It is nevertheless possible to observe fetal movements including fetal facial expressions in 4D sonography (Kurjak, et al., 2017).

Fetal movements and facial expressions reflect fetal emotional states (Delafield-Butt et al., 2013). Facial expressions play a crucial role in infant-maternal communication including emotional regulation (Reissland et al., 2011). Facial recognition neurons in the amygdala reflect the emotional significance of facial expressions (Hata et al., 2012). The development of the amygdala begins in early embryonic life and matures in the first postnatal year (Humphrey, 1968). Thus, facial emotion-like expressions or emotion-like behaviors may be indicators of fetal emotional state (Hata et al., 2012). Fetuses may be able to feel pain and change their facial expression, frowning when stressed and smiling in a comfortable environment.

We propose a methodology for studying the role of sound in the emotional attachment between a mother and her fetus. How might induced maternal emotions influence fetal facial expressions and movements? Mothers will hear self-selected music or pink noise through headphones, while foetuses will hear the same sounds from a loudspeaker on the mother's abdomen. The duration of sound presentations will be one minute. The design will be within-subject with five conditions: (1) Mothers hear music that induces positive valence and high arousal. Foetuses

hear noise. (2) Mothers hear music that induces negative valence and low arousal. Foetuses hear noise. (3) Foetuses hear the music that the mother heard in (1). Mothers hear noise. (4) Foetuses hear the music the mother heard in (2). Mothers hear noise. (5) Control condition: both mothers and foetuses hear noise. Psychological and biological parameters will be monitored in mothers (subjective stress, oxytocin and cortisol in saliva, heart rate, HR variability) and foetuses (fetal facial expressions and movements, heart rate, HR variability, with independent raters observing the 4D video). We predict more laughing-gestalt faces and more/larger limb movements in Condition 1, and more crying-gestalt faces and fewer/smaller limb movements in Condition 2. For Conditions 3 and 4, we predict no effect: the fetus may react only to biologically meaningful stimuli, including the mother's emotional reactions to the music. The emotional qualities of music, as perceived by adults, may not affect the fetal response.

The proposed study aims to contribute to understanding of the role of sound in emotional communication between a mother and her fetus. Do maternal emotions induced by music influence fetal facial expressions and movements? The findings could contribute to an understanding of the role of sound and emotion in prenatal development. The study also has implications for the use of music as a therapeutic intervention during pregnancy.

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Best Paper – La Plata

Attribution of intentions and creative musical interaction during jazz improvisation: the second person perspective in music cognition

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Background
Both musical creativity and the communication between musicians are relevant issues in jazz improvisation research. According to 4E music cognition, musical creativity emerges from the social, embodied and situated interaction between performers (Van Der Schyff et al., 2018). Such creative interaction is based on musical and motor patterns of varied repetition. Some social perspectives of 4E cognition understand the interaction between performers in a strictly embodied way. In such musical contexts, dynamical patterns emerge from the coordination of the musicians' body movements (Martínez et al., 2017). In this paper, we introduce the second person theory to study jazz improvisation. This theory proposes a view of social cognition based on mutual attributions of basic mental states during face-to-face interactions (Pérez y Gomila, 2021). In previous studies, we found that the performer's intentions directed to the production of musical gestures, and the mutual attributions of these intentions are central traits of jazz improvisation (Martínez et al., 2022).

Aims
To classify the mutual attributions of intentions to the other musicians' mental states in episodes of second person interaction during online jazz improvisation. To analyze the links between the mental attributions of intentions made and the creative musical exchanges.

Method
We run an experiment in which 20 duos of jazz performers -a saxophonist (S) and a guitarist (G)- improvise aiming to create the performance together. Immediately after the improvisation took place, we conducted an interview with both musicians. It aimed at getting descriptions of the performers' experience of their musical interactions and the mental attributions that took place during the improvisation (for a wider description, see Martínez et al., 2022). In this paper, we selected two episodes of second person interactions from two different duets (D1 y D7). We run (i) a microanalysis of the verbal content of the interviews, searching for attributions of intentions; and (ii) a microanalysis of the audiovisual recordings of the improvisations, to describe the musical and body interactions between the performers. We present the microanalyses in the Results section, and interpret the links between the second person attributions and the creative behavior in the Discussion section.

Results
We identified 4 types of intentions mutually attributed by the improvisers. They aimed at eliciting some specific attitudes in the other musician, but also involved grasping the musical feature to which the other's creative intention was directed.

1. The intention of "communicating". It is a general state of approaching the other that is mainly located at the initial moments of the improvised performance. D7 participants say, for example: "we are guessing at each other" (G), "we are testing each other out" (S), "it's like the beginning of a football match, like saying: 'let's figure out what their strategy is'. Let's play ball and see if I catch it or not" (S).
2. The intention of "suggesting". It involves expectations linked to the partner's imitative musical actions.
3. The intention of "taking". It is bounded to ii. It accounts for the other's imitative response. Intentions 2 and 3 are tied to the cycles of varied imitation during turn-takings. D7 musicians exchange: "I started out playing quietly; but if you want a burst of notes… take this!" (S). G replies "If you come to me with…", and S interrupts him saying "Do not provoke me, because…!" (they both laugh when they find themselves recalling such mutual attributions).
4. The intention of "making jointly a single musical gesture". It emerges in instances where the musicians are playing simultaneously. This shared intention leads to the creation of a single phrase which unfolds a two-part counterpoint. D1 musicians identified a moment of communion during the improvisation. S says "the communion was like a momentum. I tried …I think I changed the density, didn't I?". And G responds: "I think that I received the signal, meaning 'let's do this…let's play'. Let's both play a bit more jointly'".

Discussion and Conclusion

The attributions identified in this work are tied to different modes of musical creation. 1) "Communicating" is oriented to figure out the musical attributes to which the creative intention of the other musician is directed. 2) "Suggesting" implies the intention of creating a novel musical gesture, and of proposing it to the other musician. 3) The intention of "taking" accounts for the attention to the suggested gesture. Both intentions shape the continuity of the creative process. 4) Although communicating and suggesting are intentional states mutually attributed during the musical interaction, the intention of "making jointly a single musical gesture" necessarily requires the sustain of an interactive loop that involves constant and dynamic sound-kinetic exchanges, resulting in a characteristic second person interaction. This intertwining of attributions of intention and musical creativity highlights a two-way link between musical improvisation and social cognition: on the one hand, a given performer's musical creation prompts the other's attribution of her/his underlying intentions; and on the other hand the perception of the other's intentions prompts the emergence of specific modes of musical creativity with respect to the other's musical behavior.

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Best Paper – Melbourne

Revelations of Composer Self: A Hermeneutic Study of Fifteen Australian Composers

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Background

The construct of 'self' has been researched from a plethora of disciplinary perspectives over millenia (Aristotle, ca. 350BC/2004; Damasio, 2012; Gallagher, 2011; Merleau-Ponty, 1945/2012). However, to date, there has been little investigation into the specific concept of *composer* self, its defining features and contributing factors. Although there are a range of narrative, phenomenological and neuroscientific accounts of the composing *process* their focus does not address the identifying features of a composer self.

Researchers increasingly view our interactions with music as a unique way in which we come to understand our phenomenological self (Bowman, 2004; Merleau-Ponty, 1945/2012). However, the definition of 'self' is still debated (see for example, Damasio, 2012; and Gallagher, 2011). In my PhD study, I drew on the phenomenological thinking of Maurice Merleau-Ponty (1945/2012) and the neuroscientific perspective of Antonio Damasio (2012) defining 'self' as 'the phenomenology of all that constitutes who an individual is' (Stefanakis, 2022, p. 33). The definition acknowledges the dynamic nature of self and notes that the *concept* is only possible with access to some form of self-awareness.

For composers, that is, those who sculpt sounds in novel ways into a meaningful form (Stefanakis, 2022), self is inextricably linked to the sound, expression, sharing and communication of their compositions. However, defining composer self is not as simple as the choice of sound. Personal narratives, beliefs, physical sensations, emotions, personalities, cultural context, collaborations, composing spaces and sympathetic resonance with sound, all feature in its formulation.

Aim

The complexities of the phenomenon of composer self were investigated in the study to determine the defining features and contributing factors to the concept of composer self.

Method

Fifteen Australian composers using diverse composing methodologies were engaged in extensive, in-depth, semi-structured interviews. A core aspect of the interviews involved the discussion of two pieces of chosen music by composers which they felt particularly reflective of their composer self. Composers also articulated their motivations and inspirations, creative thinking, methods, collaborations, and understandings of self as musicians and composers. A hermeneutic framework was developed for the study, to interpret both the chosen music of interviewees, plus their interviews and associated texts.

Results

The study found that the contributing factors to the concept of composer self are based on five broad themes. Of greatest import is composers' relationship with sound and the way they interact with it. The other four are: pivotal aspects of a composers' musicality, self attributes, pivotal times in the development of composer self, and pivotal people influencing composer trajectories and sound choices.

The defining features of composer self were drawn from these contributing factors. Although composer self is fluid and dynamic, altering with changing life experiences and adapting in collaboration with other musicians and composers to serve the music's intent, a distinctive personal aesthetic preserves essential sound preferences across a composers' oeuvre (Sweeney, 2010).

Ten of the fifteen composers described their composer self variously as an authentic, honest, true, deep, core, or open-hearted evocation of who they are.

Discussion and conclusion

The focus of this paper draws on the creative relationship composers have with sound and how, from this relationship, an 'authentic, honest, true, deep, core, or open-hearted' evocation of composer self that interviewees describe is derived. It elucidates aspects of the five broad themes but highlights two. The first is composers' self attributes, such as the effect of personality traits, values, and context on their creative sound manipulations. The second focusses on their sound interactions and composing methodologies. The reason for emphasising these themes, is that they raise questions about the nature of composers' creative endeavours with sound resulting in perceptions which expose aspects of self that can be revelatory, even for the composer. Composers' responses when discussing the particularities of sound suggest that they either deliberately, or unwittingly navigate and express 'self' in unique ways through this medium. Beyond the interviewees' experiences, Dmitri Shostakovich, for example, for his own survival, was able to express self, often contrarily through his words, as distinct from his music in which he did not compromise his composer self (Fay, 2000).

Although there can be a distinctiveness of a self forged through sound composition, interpretations, as I found in my analysis of composers' chosen works, can also effectively communicate many aspects of the composers' intended meaning, particularly affective meaning.

Composers can equally find themselves in non-reflective flow states when composing (Barrett, 2020; Limb and Braun, 2008; Stefanakis, 2022) where they may be 'absent' from their composing process. The resultant music is the only record they have of the dynamic and evolving self forged through this process. Still, it is seen by some as an expression of their 'honest' or 'authentic' self. The conclusions from the study therefore still raise conundrums requiring further investigation.

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Best Paper – Remote

Studies on children's musical creativity based on the MIROR Platform: Brazil/Italy partnership

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Background

The MIROR Project (Musical Interaction Relying On Reflexion) was co-funded by the European Community under the Information and Communication Technologies (ICT), 7th Framework Programme, sub programme Technology-enhanced Learning. The focus of the project was the development of the MIROR Platform (MIROR-Impro MIROR-Compo and MIROR-Body Gesture), an innovative system for children's music and dance learning and teaching, based on the "reflexive interaction" paradigm. The interactive reflexive musical systems refer to a special kind of human/machine interaction based on the mechanism of imitation and variation (Pachet, 2006) and has been systematically studied in the field of children's creativity and learning (Addessi & Pachet, 2005; Addessi, 2020a). Reflexive interaction is a mechanism that stimulates creativity as it places the child at the centre of the musical and motor experience; Addessi (2014, 2020b) states that the reflexive interaction between child and machine tends to present similarities with the interaction between humans and, in this sense, reinforces the perspective of imitation and variation as the basis of creative dialogue.

Aim

The MIROR project provided the development of a series of studies in different countries and in different contexts. The aim of this presentation, therefore, is to present the results of studies carried out with children and the MIROR platform in the framework of the partnership between the University of Bologna (Italy) and the Federal University of Paraná (Brazil), particularly on the use of the MIROR-Impro , devoted to the musical improvisation.

Main contribution

Two studies were carried out in Brazil within the framework of the PROFCEM research group at the Federal University of Paraná (Formative and Cognitive processes in Musical Education): (1) A study on the use of the MIROR-Impro with adolescents with autism spectrum disorder (Figueiredo & Addessi, 2022 ; Luders Figueredo & Addessi, 2021) and (2) a study on the musical creativity of drum students placed in an interactive reflexive environment (Pscheidt, Araujo, Addessi, 2021, 2022).Both the two studies were qualitative and based on case studies and the observation. The first study aimed to understand musical and social interactions in adolescents with autism spectrum disorder (ASD) in a digital learning environment. Data collection was carried out in a national compulsory school and seven adolescents with ASD, aged between 10 and 15 years old partecipated. The results pointed to four forms of musical engagement: unilateral, dyadic, triadic and collaborative. The second study aimed to investigate how the musical creativity of drums students occurs when they are inserted in an interactive reflexive environment; two kinds of interaction were studied: human/human and

human/machine interaction. Three cases were selected, drums students aged between five and twelve years, for data collection and analysis. The results indicated that the interactive reflexive environment stimulated a creative musical context and the dynamic experience which characterize the interactive-reflexive components such as turn taking, imitation with variations, shared regular pulse and co-regulation.

Discussion and conclusion

Both studies, based on case studies, brought relevant contributions to research on the use of the MIROR Platform and the reflexive interactive paradigm: (1) musical improvisation based on interactive-reflexive components encourages musical behaviours that favoured musical creativity such as exploration of new sounds and ways of playing, different types of musical listening (attentive, analytical, reflective, motor, intermodal), the curiosity to understand the interactive reflexive exercise, spontaneity, focus on sound, sharing musical ideas, and pleasure of playing; (2) technology can be an ally of the music teacher in contexts of inclusion as it is based on a learner-centred approach and allows participants to control the level of complexity of their interaction. From the two studies presented here, it is possible to conclude that the reflective interaction provided through the use of MIROR-Impro in the context of instrumental teaching and in the context of inclusion, provide relevant learning experiences and musical development, being a useful tool for the area of contemporary music education.

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REGULAR TALKS

Longitudinal variations in the frequency, duration, and musical structuring of adult's demonstrations of object use in triadic interactions

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Background

Communicative musicality studies (e.g., Malloch & Trevarthen, 2009; Papoušek & Papoušek, 1981) have shown that musical parameters such as tempo, rhythm, and melody in early dyadic interactions contribute to establishing intersubjective experiences and creating shared meanings (Trehub, 2003). Through communicative musicality, adults organize interactions with their babies, progressively facilitating their participation in social interactions. Classic studies have focused on analyzing dyadic interactions, body-to-body interactions between adults and babies. Recently, a set of research has extended the study of communicative musicality to early triadic interactions involving adults, babies, and objects (e.g., Alessandroni et al., 2020; Moreno-Núñez & Alessandroni, 2021; Moreno-Núñez et al., 2015). For example, Moreno-Núñez et al. (2015) explored the rhythmic, sonorous, and melodic components associated with the communicative strategies adults use during triadic interactions and found that infants pay attention to the musical elements of adult actions from two months of age. Relatedly, a recent case study (Alessandroni et al., 2020) described how the musical structuring became increasingly complex as the interaction between an adult, a baby, and a maraca progressed, including variations in rhythmic patterns, accents, and pauses, among other elements. Despite research advances, unknowns remain about the musical structuring of early triadic interactions and how this structuring varies throughout early development.

Aims

This study aims to analyze, in the context of triadic interactions between adults, babies, and a maraca, the longitudinal variations in the frequency and duration of object use demonstrations performed by the adult and their relationship with their level of musical complexity.

Methods and Results

We filmed eight adults (7 females) and their eight children (4 females) in their homes (Spain), every month, from 6 to 12 months of age. We classified the demonstrations performed by adults according to their level of musical structuring and proximity to the baby's body. For the musical structuring, we defined three levels. Level 1 included demonstrations without identifiable metric structures. Level 2 included behaviors with an identifiable metric organization and one of the following elements: accents, rhythmic cells, or coordinated voice use. Level 3 included demonstrations with an identifiable metric organization and two or more additional elements.
Data analysis was performed using R (R Core Team, 2020) within R Studio (v. 1.4.1103). Data wrangling and the calculation of descriptive statistics were performed in R using the tidyverse package (Wickham et al., 2019). To analyze longitudinal variations in the duration and relative frequency of object use demonstrations performed by adults, we utilized mixed-effects mathematical models (GLMMs) fitted with the glmmTMB package. Due to the continuous, non-negative, and positively skewed nature of the dependent variables—seconds for the

duration and rate/min for the frequencies—we fitted Gamma family models with a log link function. Model results show that the duration of adult demonstrations does not significantly vary based on the level of musical structuring, type of demonstration (distant vs. immediate), or child age. However, a statistically significant positive effect was found for the interaction between age and musical structuring level (level 3). Accordingly, the model indicates that the duration of level 1 and 2 demonstrations decrease as children's age increases (n.s.), whereas the duration of level 3 demonstrations significantly increases with children's age. Regarding the frequency of adult demonstrations, the model predicts differences based on type: distant demonstrations have significantly higher frequencies than immediate ones. Concerning longitudinal variations, there is a statistically significant negative effect of children's age on the relative frequency of adult demonstrations. However, a statistically significant positive effect was found for the interaction between children's age and the level of musical structuring (level 2). Thus, level 1 and 3 demonstrations decrease in frequency as children's age increases, while the rate/min of level 2 demonstrations increases with children's age.

Discussion and Conclusion

The results suggest that as children grow older, adults perform more musically complex demonstrations and less basic demonstrations. This might be seen as an indicator that basic demonstrations become less interesting or challenging for children. Combined with the first model results showing that, as children's age increases, the duration of level 1 and 2 demonstrations decreases, this seems to indicate that the increase in children's age corresponds to adults embracing not only more complex but also longer demonstrations. Level 2 demonstrations might become more frequent because, in addition to being more interesting from an interactive point of view, they are shorter (model 1). Conversely, while level 3 demonstrations decrease in relative frequency, they become longer (model 1). This might be viewed as evidence of adults necessitating more time when performing more complex demonstrations in order to deploy more sophisticated musical elements. The effect of demonstration type on its relative frequency can be understood by considering children's age. Between 6 and 12 months of age, children can skilfully explore objects in their environment. This contrasts with the motor capabilities of younger children, who may require more adult support for interaction with material culture, for example, through immediate demonstrations (Moreno-Núñez et al., 2017). Finally, the negative effect of children's age on the relative frequency of adult demonstrations suggests that, as children grow older, they become more active in interaction, leading to a withdrawal from adult scaffolding.

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Time as a creative performative strategy. An analysis of expressive timing comparing four different historical orchestral interpretations of tango

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Background

Arranging popular music can be understood as a creative process that combines two different creative modes: the practice of musical notation, and the culture of musical orality. Thus, a tango arrangement involves the combined elaboration of compositional and interpretive components. When an arranged piece is performed by a tango orchestra the way it is temporally unfolded provides stylistic identity to the interpretation. In this paper we posit that time regulation is a salient feature displayed by tango musicians during a given performance. Also, that temporal regulation is more important than other attributes in shaping the style of a given orchestra. For example, the way in which Anibal Troilo unfolds time during tango performance is a stylistic hallmark of his orchestra. In the psychology of music timing deviations are analyzed in relation to the established norm of musical notation (score). Currently, the application of computational tools allows the realization of statistical inferences, overcoming the limitations of classical timing analyses (Sapp, 2007). Therefore, the field has expanded to study other musical practices where written notation is less relevant (Alimenti Bel et al, 2021). Usually, the analytical results of computing pitch, time, dynamics, and articulation are accompanied by a structural, formal, rhythmic, and textural analysis of the musical surface (Spiro et. al, 2010). In our previous research, computational tools were used to analyze the temporal expressive component in tango *Mi Refugio*. We compared commercial recordings of Aníbal Troilo's orchestra with other tango orchestral styles. In this paper, we use the same tools to study *Ojos Negros* and *La Cumparsita*. We assume that the temporal variability of the expressive beat is bounded to the ways different structural components are communicated, and that this relationship contributes to the creative activity of composition and performance of a given arrangement.

Aims

To analyse and compare historical recordings of tango interpreted by four orchestras led by Aníbal Troilo, Horacio Salgán, Carlos Di Sarli and Osvaldo Fresedo.

Methods

Concerning timing, the beats were extracted manually from the audio recordings, and computational tools were used to analyse the beats temporal distribution. Tempo curves, Pearson correlation, and polynomial regression were obtained and used to compare the different musical interpretations. Three analytical assumptions that relate the temporal unfolding of the expressive beat with the features of the arrangement's textural organization were stated:

- AS1: the expressive beat varies according to the type of Melodic Articulation of the Attacks (MAA) depending on whether they are *legato* (pronounced lengthening and shortening) or *staccato*-accent (regular or isochronous).
- AS2: the expressive beat varies locally according to the rhythmic regularity of the accompaniment modes: *marcato*, *syncopated* and *marcato* in two.
- AS3: the expressive beat varies according to the types of orchestration (*solo*, *soli* and *tutti*).

Results

In Ojos Negros, the orchestras present a similar global temporal behavior. The recurrence of the *legato* of the MAA in section A causes that the four global tempo curves show a similar profile of variability. On the contrary, the variability observed at the local level in section B splits the four orchestral temporal contours in two pairs: on the one hand, Troilo's and Salgán's, and on the other Di Sarli's and Fresedo's. Troilo and Salgán recurs to lengthen the beat when the motifs are played with tied articulation, and to shortening it when the motifs are played with staccato-accent articulation. Despite sharing the MAA, the other two orchestras do not present a recurring temporal intention like that of Troilo's and Salgán's. As to La cumparsita, the tempo curves exhibit different global temporal contours. Troilo and Salgán display wavy temporal profiles with gradual beat decelerations and accelerations throughout the piece. Di Sarli and Fresedo, in turn, show flattened temporal profiles where the beat varies very little. The paired similarities identified account for two peculiar ways of organizing the alternation of the MAA's. As to Troilo and Salgán, the regularity of the tempo curves is modified, on the one hand, by the alternation of marcato and syncopated accompaniment modes; and on the other, by the alternation of the solo and soli types of orchestration with the orchestral tutti (bandoneons and violins solis, and piano solo). In Di Sarli and Fresedo, the expressive interpretation is based on other aspects of the arrangement, such as the dynamics and the rhythmic-melodic variability of the piano accompaniment.

Discussion and conclusion

The results highlight the relationships between the temporal regulation and the orchestral arrangement in the creative expressivity of four different tango styles. Thus, for example, temporal coherence in Troilo is based on the alternation of two expressive articulatory patterns: one containing a regular beat in staccato-accent passages, and the other containing a pronounced lengthening-shortening beat pattern when they play *legato*. The same applies to Salgán, who exaggerates this expressive aspect. In Fresedo and Di Sarli, on the contrary, the melodic articulation presents another type of temporal unfolding that in principle does not correspond to the production of a systemic temporal pattern. Similarly, the temporal arrangement of both the types of accompaniment and orchestration replicates the pairwise trend of the analysed orchestral styles. We conclude by stating that temporal coherence in tango orchestral style is a creative expressive musical practice that transcends the purely compositional dimension represented in the musical score. It is apparent in the normative behaviour unveiled by the analysis of the emergent temporal orality of the interpretive tango performance. Future works should collect larger amounts of sound data from recordings of the tangos already analyzed to identify trends in the temporal expressivity of orchestral tango.

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Music, tactile sensation and improvisation in movement. Movement observables. Incidence of tactile sensation originated in music on improvisation in movement

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Abstract

This article exposes the preliminary results of the analysis of three experiences of improvisation in movement from original musical signals. Such signals were created with the specific objective of causing -in some segments- bodily sensations (i.e.: tactile) of shock, vibration and others. Unaware of the object of the experience, the subjects had to "reflect in movement, moment by moment, what was perceived." The comparative analysis of the qualities of the improvised movements during differentiated segments of the musical signal (i.e.: some configured to generate tactile sensations, others configured to not generate them) allowed the research team to identify movement observables that show an effective incidence of the tactile component of the musical signal on the choices (of movement) of the improvisers. Some qualities of such observables were also characterized, detecting consistency with certain correlations between the qualities of the musical signal and those of the movement that were hypothesized at the beginning of the investigation. In other words, the recorded values of some observables suggest concrete links between specific qualities of the tactile component of musical cues and the choices made by improvisers. Given the novelty and complexity of the object of study, these findings are a success.

Background

Given certain conditions sound (and music) generate tactile sensations. In the presence of relatively high sound pressure levels and an extended range of frequencies (particularly to low and sub-low regions) sound and music become audio-tactile signals. Although there are rare occasions when subjects are 100% aware of the presence of vibration in their bodies, tactile perception can be defined as a self-awareness of part or the hole body that takes the form of a bodily sensation of beat, vibration, pressure, tickle or others. Consequently, audiotactile perception occurs when auditory and tactile sensations are linked to the same source of vibration. As a new field of research, the study of the tactile sensation originated in music (TSOM) presents few precedents. Therefore, the main source of information is Anzil's doctoral thesis. Published in 2017, it includes scientific evidence of both the effective existence of music-originated tactile sensation and the sensitivity of the human body to perceive changes in its qualities. There he mentions the following properties of the TSOM:

- Type of sensation: tactile, audiotactile or auditory (absence of TSOM).
- Quality: ephemeral (beat) or persistent (vibration, pressure or others).
- In-body localization: delocalized ("hole-body sensation") or localized in one or more sub-systems (with possible traslations and changes).
- Body depth: superficial ("textile" or cutaneous) or deep (in bones, organs and/or body cavities).
- Intensity: full range from imperceptible to subtle, medium and strong.
- Emotional response: pleasure, displeasure or neutral.

Aims

In the short term, this study seeks to establish correlations between the various qualities of the tactile component (i.e.: not audible) of the musical signal, those of the TSOM and those of the movement inspired by/originated from the above. In the long term, it is intended to collect data for a future statistical analysis of the relationships between the qualities of movement, those of the TSOM and those of the musical signal.

Methods

In three total field experiences, 57 experimental subjects (most 20+ year old movement students) exposed to audio-tactile musical signals were asked to "reflect in movement the qualities of what you perceive moment by moment" and "not to compose" [in movement]. Trying to eliminate references to specific senses, the words "listen", "hear", "music", "sound" and the like were avoided. Three different ad hoc musical signals were composed appliyng audio-tactile criteria (Anzil, 2017). Created with technological means, the three covered a wide aesthetic range (from "dance music" to "electroacoustic") and opposed segments configured to generate TSOM with others that do not.

Procedure

During the experience a) the improvisations were filmed on video (hole bodies on screen), b) music was recorded via a microphone (to capture the location's acoustics), c) sound pressure measurements were made and, d) after the improvisations, performers were interviewed. Besides the above, during the improvisations the research team did direct observations aimed at detecting changes in movement qualities (of each individual performer). After each experience the team did a comparative analysis of each improviser's movements, crossed-analized the other data collected and attempted further generalization.

Main Contribution

As one might assume, long-term goals are still out of reach. However, it is already possible to offer some partial results. Below is a list of those obtained to date.

- Integrated body movement. TSOM generates global body engagement. As opposed to localized movements where one or more body subsystems articulate more inconnexously or do not participate in the movement.
- Central vs. peripheral body response. With TSOM the sub-systems of the chest, spine, pelvis or similar are imposed on the extremities as organizers of the movement.
- Precision in trajectories, destinations and rhythmic. In the presence of TSOM movements tend to be more defined, launched, specific, adjusted and finished; reflecting more accurately the rhythm of the musical signal.
- Link to gravity. TSOM promotes movements linked to/in interaction with gravity.
- Greater amplitude and/or strong energy. TSOM promotes longer and more intense trajectories; destinations further away from the initial positions.
- Pre-conscious movement. With TSOM the response in motion is more immediate, "organic" and "visceral". Its absence seems to promote greater intellectual mediation between musical signal and movement; a more "elaborate" or "formal" response.

Discussion and Conclusion

Preliminary analyzes allowed establishing as "probable" certain schematic links between some qualities of the musical signal and those of the perceived audio-tactile sensation (* see below). These are:

- Sound intensity: type, intensity and depth of the sensation.
- Frequency/spectral composition: type and localization (also probably depth).
- Complex evolving spectral composition (intensity envelope) – Quality and localization.

(*) Mutual interference between the different properties of both signal and sensation configure an extremely complex system. The relations included are mere simplifications.

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Creating together: A qualitative study of psychological wellbeing in professional orchestral musicians in Australia

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Background

Music may have a positive effect on wellbeing, but perhaps paradoxically, wellbeing is not high always among those who perform it (Loveday et al., 2022; Musgrave, 2022). Professional musicians around the world experience higher than average rates of anxiety and depression symptoms (Gross & Musgrave, 2016; Kegelaers et al., 2021; Kenny et al., 2014). Additionally, while the creative process of music-making is a joint endeavour, current approaches largely focus on physical and psychological symptoms, and suggest individual solutions (Kegelaers et al., 2021). A biopsychosocial approach that also considers contextual factors allows for a broader approach to understanding how physical, psychological, social and environmental aspects interact to affect musicians' experience of wellbeing (Bronfenbrenner, 1974; Engel, 1977; Manchester, 2011).

Aims

The aim of the research is to understand how professional orchestral musicians perceive psychological wellbeing, including what is helpful and what is not. Specifically, this qualitative study explores psychological wellbeing from the point of view of musicians in 5 of the fulltime professional symphony orchestras across Australia, describing barriers and facilitators to wellbeing.

Methods

The study adopts a qualitative approach, involving semi-structured interviews with 15 professional musicians. Thematic analysis is used to analyse the data, including identifying themes and patterns across the interview data that responded to the research aims (Braun & Clarke, 2006). The research design involved a high level of consultation with professional musicians, to ensure that the findings reflected their experiences and were relevant to their priorities.

Results

Findings from this study reflect some important relational themes that musicians described as both helping and hindering their wellbeing. In particular, participants spoke about their experience of wellbeing as connected to their professional lives and incorporating interactions between physical, psychological and social aspects. Indeed individual wellbeing was often described as interconnected with other musicians and with the organisations they belong to. In line with this, key themes identified related to: 1) shared experience of performing; 2) wellbeing as interconnected; 3) relational factors in organisations; 4) the importance of open, honest conversations about wellbeing in contrast to the negative impact of stigma and secrecy.

Conclusion

This study contributes to knowledge about wellbeing for professional orchestral musicians, in particular by demonstrating that the interconnected nature of playing in a symphony orchestra results in a range of relational issues which impact the individual wellbeing of musicians both positively and negatively. To improve wellbeing for this group individual strategies could be complemented by enhancing relational aspects of their experience, improving understanding and communication both amongst the musicians and also with the organisations that employ them.

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Love songs and serenades: A theoretical review of music in romantic relationships

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Background

In the Descent of Man, Darwin (1871) first articulates the hypothesis that musicality may have been selected for sexually. In addition, popular musicians are frequently portrayed as sex icons, seemingly supporting the notion that musicality may be attractive (Marin & Rathgeber, 2022), and love songs feature in most human cultures (Mehr et al., 2018). Despite this, the scientific literature on the evolutionary functions of music has focused primarily on social bonding (Savage et al., 2021) and credible signalling (Mehr et al., 2021) theories, and there are limited examples of high-quality research to test a sexual selection function.

Aims

In this theoretical review, we aim to reconcile these apparent multiple functions of music, highlighting the ways in which music may be used in the formation and maintenance of romantic/sexual relationships, while drawing upon theories of love and relationship stages from social psychology.

Main contribution

We propose that there may be two distinct types of music making for these different functions: music for attraction, which would be virtuosic in nature to display physical and cognitive fitness to potential mates; and music for connection, which would facilitate synchrony between partners and likely engage the same reward mechanisms seen in the general synchrony-bonding effect, enhancing perceived interpersonal intimacy as a facet of love. These functions may also map onto the behaviours of non-human animals, such as birdsong (Rose, Prior & Ball, 2022) and duetting in non-human primates (Raimondi et al., 2023). Furthermore, we consider the additional function of shared musical knowledge or music preferences as a display of similarity (Figueredo et al., 2006), which may be important in attracting mates, as well as maintaining a relationship through shared interests. We make an initial attempt to map different functions of music to the facets of love in the triangle model (Sternberg, 1986), while recognising that the relative importance of these functions may change based on the relationship stage (Knapp, 1978). The possible role of individual differences in personality, attachment style, and love languages are also discussed.

Discussion and conclusion

Through this discussion, we produce testable hypotheses of the use of music in romantic relationships in contemporary society. This creates a roadmap for future research which may rigorously test whether there is a role for sexual selection in the evolution of musicality, or whether music in romantic relationships is just a special case within the general social bonding theory.

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Cognitive Impact of Active and Receptive Musical Training in Preschool Children

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Background
The effects of music training (MT) on human development remain uncertain, with mixed results from previous studies. While MT has been linked to better working and short-term memory (Guo et al., 2017), improved prosody perception, speech segmentation, syntactic processing, and spatial skills (Hetland, 2020) in children, a year of MT did not improve phonological development (Eccles et al., 2020). Making music may be more beneficial than listening to music (Gold et al., 2010), and the effects of active (AT) and receptive MT (RT) on child development have not been studied extensively. A study is needed to determine which type of MT is more beneficial, and the effect of both from early childhood in the Argentine context has yet to be investigated.

Aims
The goal of this study was to evaluate the effect AT and RT over 12 weeks in children aged 4 and 5, compared to a control group (CG) without MT.

Methods
Sample: Infants (n=132) in Buenos Aires were divided into six groups based on age and intervention. Their legal guardians provided informed consent and completed a socio-demographic questionnaire before the cognitive evaluations.
Instruments: The study collected demographic data and evaluated language, visuospatial abilities, and emotional memory using sub-tests from WPPSI-III (Weschler, 2002) and ENI (Matute et al., 2007) batteries and images from the International Affective Picture System (Lang et al., 1995). The study used small percussion instruments and sound-musical stimuli for the AT and RT groups, and black and white images and crayons for the CG groups.
Interventions: The study involved AT -including playing instruments and singing songs-, RT -including listening activities involving music and sounds-, and a CG, which involved coloring a drawing.
Procedure: The study had four phases: informative (guardians were informed and completed a data sheet), pre-intervention evaluation, interventions (AT, RT or CG), and post-intervention evaluation (12 weeks later).
Ethical aspects: Ethical approval obtained from the Ethics Committee of the "Alfredo Lanari" Medical Institute; data coded to ensure anonymity and confidentiality.
Data analysis: Data analyzed with SPSS Statistics 25 using non-parametric (Kruskal Wallis and Friedman tests) and parametric tests (univariate ANOVA) at $p<.05$. Assumptions not met for emotional memory, stick construction, complex figure copying, drawing, and repetition.

Results

***Pre-Intervention**:*

The pre-intervention evaluations did not yield significant differences for any of the measures or groups.

Post-Intervention

Language: MT (AT and RT) had a significant main effect on Information, Vocabulary, and Riddles subtests, with higher scores obtained than the CG. The KW test found significant effects in Drawings and Repetition. 4 (years old) AT and 5 (years old) AT performed better than 4CG and 5CG respectively in Drawings. 5RT and 5AT performed better than 5CG in Repetition.

Visuospatial Abilities: No significant differences were found in cubes and stick construction tests, but the group with MT scored higher in puzzles.

Visual Emotional Memory: Immediate Measures: The KW test found significant differences in recall and recognition of neutral, positive, and negative images. The 4RT had higher recall than the 4AT and 4CG, while the 5AT recalled fewer images. The 4RT had higher recall than the 4AT and 4CG, while the 5AT recalled fewer images. The 4RT recognized more positive images than the 4AT and recognized more images than the 4CG. The 5CG recognized fewer neutral images than the 5RT and 5AT. Delayed Measures: In free recall, significant differences were found for all types of images. The 4RT recalled more neutral images than the 4AT and 4CG, and more positive and negative images than the 4CG. The 5AT recalled more positive and negative images than the 5CG, and the 5RT recalled more positive images than the 5CG. In recognition, the MT groups recognized more images than the CG for all types of images in both age groups.

Conclusion

The study aimed to investigate the effects of AT and RT on memory, language, and visuospatial skills in preschool-aged children. The results showed that MT had a positive impact on language, this could be due to shared neural circuits between music and speech processing (Patel, 2011). However, no significant differences were found in the visuospatial test, which suggests the need for further research in this area. Regarding memory, the results suggest that MT acts as a modulator of emotional memory. Brain areas related to emotions, such as the prefrontal, auditory, cingulate gyrus, and posterior parietal cortices, are activated during musical listening and production (Satoh et al., 2015), which can reinforce memory formation processes. Overall, the study indicates that MT has a positive impact on cognitive functions evaluated after 12 weeks, which could have implications in education and therapy for improving health of children.

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Technology and Creation in Pop-Rock Music

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Background

From series and cinema to memes and TikToks, most of today's art experiences worldwide seem to be traversed by technology. Popular music, also a primary source for the experience of art, is no exception. In this sense, technology has come to play a key part in music distribution and reception, but also in its creation. In the case of mainstream music this phenomenon was unequivocally initiated in the sixties by pop-rock.

Whereas Theodor W. Adorno's insights on mass music function as prolegomena (1936, 1938, 1941, 1949, 1962, 1969), the pop-rock genre itself started awakening significant interest in the field of philosophy only in the nineties. A proper debate on the nature of pop-rock musical works arose in a series of 'ontologies of pop-rock': different authors discussed the specificity of pop-rock pondering the particular mode of being of its works (Gracyk, 1996; Davies, 2001; Kania, 2006; Pouivet, 2010; Arbo, 2013). Richard Shusterman (1992), Bruce Baugh (1993) and, more recently, Agnès Gayraud (2018) also reflected on the genre in an aesthetic vein. But although in the past few decades pop-rock music has become a more visited subject for philosophy, it still remains a marginal topic.

Aims

In this theoretical state of affairs, I aim to identify the most defining traits of pop-rock music, which tell it apart from the different genres of non-academic music, from an aesthetic point of view. Finding the key in its unique bond with technology, I intend to explore the crucial role technology plays in the creation of pop-rock compositions. Moreover, I aim to show that, while the compositional relevance of technology for pop-rock is an expression of the growing movement from the twentieth century onwards towards the technologization of experience, it also sets a trend for the popular music that follows.

Main contribution

First of all, this work helps to understand an object that, to date, has been little addressed —as has been popular art expressions in general, considering that the bulk of aesthetic theory is still focused on an academic canon of artworks. However, if today's best part of the aesthetic experience of art is the experience of popular artworks, as I am inclined to think, then the importance of the philosophical analysis of popular art becomes clear. Additionally, by offering what I hope will be a correct aesthetic understanding of pop-rock's main characteristics, I aim to provide the basis for critically judging pop-rock works following adequate criteria and thus avoiding the still common mistake of evaluating them from standards more appropriate for other musical styles. Furthermore, if I am right in considering pop-rock as a trendsetter, then analyzing the way in which pop-rock makes a creative use of technology will provide a good framework for understanding today's mainstream music. Finally, I intend to make a relevant contribution by complementing theory with a musical analysis of The Beatles' "Tomorrow Never Knows", in order to show the way in which the traits advanced from an aesthetic

viewpoint work within the immanence of the musical form and, therefore, help provide a truly grounded understanding of the object.

Discussion and conclusion

In discussing these matters, I will show that pop-rock's most defining feature is the determining compositional role sound technology acquires for the first time in non-academic music. This way, taking up Adorno's concept of musical material, I contend that the sonic means derived from the use of technology constitute pop-rock's primordial material, making timbral experimentation a chief concern. I will then argue that pop-rock takes part of a trend in contemporary art to embrace technology as a prolongation of artistic technique, which, in turn, is an expression of the tendency of human experience to become increasingly mediated by technology over the last century. Finally, by examining how the creative use of technological tools unfolds throughout pop-rock history, I will also provide the basis for considering pop-rock as a trendsetter in the realm of popular music.

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The becoming instrumental teacher - the creative leap forward

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Background

The development of music teacher identity is a complex and non-linear evolution effected by learning, experience, and environment. It includes progression from performer to educator, a pre-occupation with knowledge of self and creative processes to one who illuminates processes and thinking in others, experiences changing modalities from receiver of skills and knowledge to that of a giver as font of knowledge and wisdom. Engagement in an initial music teacher training program affords transformative learning journeys where students immerse in pedagogical, educational, and conceptual strategies and theories, and in which personal creativity of identity is seminal. Teaching is a manifestly creative life, through which we cognitively oscillate between factual content knowledge and the values and attitudes shaped by (re)visiting our own learning experiences. Becoming the best teacher we can be, implies a reconciling of the positive and affirming, and negative and damaging teaching we have experienced, creatively journeying through beliefs and values in becoming the better teacher.

Aims

This qualitative study investigated the views of 12 students engaged in a pre-service instrumental music teaching program in Melbourne, Australia. A diverse worldwide cohort evinced a range of learning experiences and the individual and communally driven aspects of personal and professional growth, highlighting that identity is not static but polymorphous, transforming, and a perpetually creative act. This involved critical thinking about teacher actions, thought processes, pedagogy, and relationality, highlighting how identity trajectory can be formed via the influence of external (social) and internal (individual) forces. Glaveanu's, 5 A's creativity framework—actor, action, artifact, audience, and affordances provides an elegant sociocultural and ecological foundation to the social psychology of our journey to becoming better teachers. We initiate learning apprenticeships and connection relationally (de Bruin, 2022), we evolve our self-awareness across experience, time and place, (Wenger, 2009), dynamically connecting to students, subject matter, and pedagogical knowledge (Rodgers & Raider- Roth, 2006), in a striving to become better (Southcott and de Bruin, 2022)

Discussion

Students do come to formal teacher education with a wealth of personal experiential knowledge about teachers and teaching built up over years of study in school and studio (Dollof, 1999). They store experiences of teacher role models as they shape their own approach to the practice. Knowles (1992) suggests that beginning teachers develop as experiences become internalized into an individual's own 'teacher role identity' (p. 131) and image of self as teacher. This emphasises how pre-service, and novice professional teacher experiences engages the formulating and expressing of personal identity politics (Hess, 2019), as well as their propensity to change and improve (Taylor & Cranton, 2013). Identity involves the sociology of music education in which teachers as actor instigate regulation of ones' social-cognitive strategies used to construct, maintain, and construct a sense of personal identity. Identity trajectories involve peers, supervisors, and teachers connecting artifacts from the past, present, and imagined future experiences as the beginning teacher derives meaning and sense of professional

person, purpose, and presentation of self to others. Teacher formation is constructed around our social milieu, our audience of students, peers and mentors as we conceive and construct concepts of how to be, act, and understand (Sachs, 2005). As creative beings we through technologies of the self (Foucault, 1988) refine and transform beginning teacher perceptions, evolve through the perception of values, actions of engagement, and perceptions as an enabler of student learning, changing to another more evolved state of self. Professional music teacher identity is shaped by socialisation within the professional community, the institutions that shape their practice during their careers, and music teachers that taught them (McCarthy 2007). Early teacher identity is shaped by positive, negative, proactive, and reactionary interactions between individual and social context. Dominant cultural attitudes and assumptions relating to agency and autonomy shape nascent careers, complying or resisting attitudes and behaviours they face in their professional practice. Such affordances bring a clarity to difference between one's actual and ideal self-concept as teachers evolving apperception and existential 'grip' on reality –as their teacher "grip on the world" takes hold (Merleau-Ponty 1962, p.449),

Conclusion

Becoming teachers, as creative individuals conceptualise teacher identity by who we think we are influences what we do. Personal practical knowledge at work is a perpetually creative act in which teacher identity formation is constructed not just through teaching who we are (Palmer, 1997), but in teaching who we want to become. This study points to the necessity for ITE to promote creative agency in becoming teachers, their ability to innovate and their preparation and progression into the music teaching profession.

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DJ decks: playback machines or a creative resource suitable for music teaching?

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Background

This paper follows many years in which the presenter worked as a school music teacher and used DJ decks for classroom music-making purposes (even though he himself is not a DJ nor especially an enthusiast of electronic dance music). He has also written a monograph on this topic (Dale 2017) and several journal articles, book chapters and research projects over the last ten years.

Aims

The paper seeks to wrestle with the question of creativity in relation to DJ decks: are DJs really doing much more than playback of pre-existing recordings? Can it really be creative when an existing recording with is tampered with such that a real-time 'remix' is created? If we allow musical skills that are of a relatively basic kind to be classified as creative, do we risk reducing 'creativity' to a dumbed-down level such that it is dispersed to all individuals in a school and, by implication, in society? Can it really be the case that everyone has the potential for musical creativity? The paper aims to answer questions such as these.

Main contribution

The main argument is that the feeling of creative accomplishment in music could and should be dispersed more widely in society: the idea that 'a musician' is a rare and special breed of person is unhelpful and if music wants to retain its status as a subject that all children will study in school, challenging this idea can only help music education to survive in the 21st century in schools.

Discussion and conclusion

The paper includes discussion of a 'pilot' study carried out a medium-sized secondary school in a small town in South Yorkshire where DJ decks had never previously been used for pedagogical purposes. In conjunction with expert DJ educator Jim Reiss of DJ School UK, a scheme of work was constructed for the two music teachers to use in order to introduce their learners to the DJ decks. Many of the Key Stage 4 students seized the new opportunity to perform on DJ decks, and the Head of Music in the school reported that 70% of the learners in the Key Stage 4 BTEC class had attained higher than they would have without this intervention, with 8 learners passing where the Head of Music judged they would have failed.

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"Unlocking the Creative Potential of Psychosis through Music Composition: The Positive Framework of Musical Hallucinations for Understanding the Link between Mental Illness and Creativity"

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Background

Does one need to be "mad" to be creative? Is there "madness" behind each work of art? Is creativity a gift to those who manage to endure mental disorders? These questions date back to Aristotle's time, who already stated "There is no great genius without some touch of madness". Research shows mild psychopathology aids originality and eminency in creative professions. The understanding of the link between creativity and "madness" remains elusive, and this is one of the main reasons why those dealing and coping with mental illnesses each day remain stigmatized while their creative light is not visible to those in their social contexts. The author of this abstract performed a study of a sample of the general population with direct and indirect creativity measures, including a classical Alternate Uses Task (AUT) and a pioneering musical Signal Detection Task (mSDT), showing that an increase in hallucination proneness in the audio-visual modality could be predictive of a reduction in false alarms during the mSDT. This implies that those with heightened hallucination proneness seem to have been better at identifying cues in their environment during this run of the mSDT.

Aims

The aims of this presentation are to (1) show how we can study the link between creativity and mental illness/health with cognitive science, from a first- ("a patient") and a third-person perspective ("a researcher") simultaneously; secondly, to (2) provide a more appropriate and constructive framework for the study of this link from a positive viewpoint; starting with the positive context of one specific type of psychosis (musical) that is perceived as less disturbing and bothersome than the more well-known sorts of psychotic experiences (e.g. auditory verbal hallucinations); and lastly, to (3) explore whether it could be stated that psychosis is essentially creativity, psychosis presenting itself in a "stubborn" form as long as there is no (creative) outlet for the traumatic experiences that antecede the psychosis.

Main contribution

A new framework is proposed, which allows for a new way of looking at the study of the link between creativity and mental illnesses. Starting with musical hallucinations, we can discover the positive aspects of mental disorders. This type of hallucination is generally perceived and experienced as less intrusive and less daunting than other hallucination types or expressions, such as auditory verbal hallucinations. A translation of the potential research findings to different – less favorable – experiences of hallucinations is the long-term objective of this research line. The realization that there is an underlying creativity – which is seen as a positive trait in our society – in every psychotic event is one that we must prioritize when trying to help patients and their loved ones because it could reduce stigmatizing beliefs from this same society on those with a mental ailment. By looking at the positive sides to mental illness – like creativity – instead of at the deficits usually associated with it, we could find new ways to reduce the experienced stigma of those diagnosed with a mental disorder.

First-person experience from the author showed that sometimes letting go of academically constructed beliefs about mental illness and replacing these with positive creativity reduced the frequency and intensity of hallucinations. The author will present the story of an academic in the neurosciences who overcame struggles with psychosis through the healing channels of creative expression. Identifying the sources and critical ingredients of the hallucinations, and approaching them from a positive standpoint, the musical hallucinations could be controlled, reducing the symptomatology, and managing to write close to 20 original songs in one year's time.

Discussion and conclusion

It is important to realize that more research on the study of this link is necessary and feasible with the cognitive sciences. Approaching the study of this link from a positive viewpoint, such as how musical hallucinations are experienced by most, could be a good starting point. The creative expression could seemingly be unlocking cognitive processes that are more difficult to tap into from conventional therapy approaches for some individuals. Following up on these ideas could bring a lot of (creative) relief to those who struggle because their mental illness has been framed as something only limiting and deficient, instead of the positive "gift" that is experienced by many. Future research could compare a sample of individuals with musical hallucinations and a sample of cognitively gifted individuals who do not experience psychosis. Gifted individuals could be taken as a control group of subjects who experience heightened levels of creativity, without psychotic symptomatology, and their creativity levels could be compared.

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Mbira and piano. A case-study of cross-cultural musical dialogue at the Sheldonian Theatre, Oxford

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Background

On 24 November 2022 a concert took place in the Sheldonian Theatre Oxford, combining Zimbabwean and European music traditions. The concert, organised as part of composer, performer, and Mbira specialist John Pfumojena's Visiting Fellowship at TORCH (The Oxford Research Centre in the Humanities), transpired with the backdrop of years of heated debates concerning a push to decolonise the curriculum. A year earlier the Oxford Faculty of Music had made headlines, after a Freedom of Information Act request had reported on - and skewed - internal discussions about broadening the curriculum. News agencies such as *The Telegraph*, and *Fox News* released articles stating that Oxford had 'branded sheet music as colonialist'.
Further, the somewhat inaccessible collection of Mbiras at the Pitt Rivers Museum, as well as the colonial history of the instrument gave rise to the project. Among others, John wished to educate people on the mbira, which the Oxford Dictionary of English still defines as 'another term for thumb piano' (Online Version 2015).

Aims

This paper explores the Sheldonian performance, examining the setting, staging as a ritual-like space, audience-feedback, as well as the rehearsal process, as a case-study of a constructive dialogue between different 'classical' music traditions. To achieve this aim, we use autoethnographic reflections from the performers, qualitative analysis of the performance, together with data collected from audience feedback forms by TORCH.

Main contribution

The concert aimed to create a dialogue between John's Zimbabwean music heritage, with him on the Mbira and vocals, and concert pianist Judith Valerie's European classical music education and can be seen as a push towards, what Robinson (2019) called, ending 'the dominance of Western hetero-patriarchal musical performance [and …] white male leadership.'
While the concert itself was a great success, simultaneously John was facing a lot of push-back regarding other 'checklist points' Robinson mentioned, namely a re-evaluation of 'what kinds of students [a] programme seeks to support.' Wishing to apply for a DPhil to explore mbira repertoire, as well as engage with the historical mbiras in the Pitt Rivers Museum, he did not receive particularly inviting feedback in talks with various members of the Faculty of Music.
As the 'resident white European musician', part of the opportunity and challenge for Judith Valerie in this concert was to avoid 'performative allyship' (Robinson 2019). Both musically, as well as in the staging of the performance, the concert was a process of balancing between making and holding space, with an intersectional array of agencies and agendas, particularly concerning race and gender. This collision led to opportunities for new pathways of communicating objectives and ambitions. Agawu states, '[…] it seems important to at least acknowledge the self-serving nature of difference-the fact that, at the end of the day, the glance of the ethnomusicological enterprise is on itself-rather than to pretend to be engaged in a dialogue with the Other.' (1992, p. 261)

This self-serving nature was largely avoided through John's position as the main actor and the one extending the invitation to collaborate. It was his agency that made the concert happen, and he who made space for Western Classical music to be present. The performers appeared as artists in their own right, while also representing a set of traditions. The concert avoided becoming a musical 'fusion', but rather created a new platform for communication. Thus, their performance serves as a microcosm of a dialogue between cultures. Situating the concert in the historic Sheldonian Theatre that usually hosts Western Classical music concerts, as well as having been the site of Matriculation for Oxford students for centuries, inspired the 'matriculation' of the mbira at the very beginning of the concert. This emphasised the role of the concert as ritual (Boyce-Tillman, 2009), in which the mbira could be transformed into an equal participant. This explicitly granted agency to the mbira, challenging its traditional position in the university as an object of (not very much) study. One of the audience members noted that, 'music is not just a narrow, sonic practice whose framings and politics can be considered superfluous: as Pfumojena put it, "Mbira is not just an instrument, it's life".' The performers acknowledged, and played with, various traditions and rituals associated with both musical backgrounds, challenging and questioning them by reframing these rituals in this musical 'third space' (Bhabha, 2004, p. 55).

Discussion and contribution

Through this paper we recognise that music is never neutral nor should it be seen purely as an object of study. For, 'music as an object, when used to describe peoples, cultures, and histories, also colonizes them' (Bohlman 1993, p. 426). Performance is always political, but may also serve as ritual, creating a liminal space. This case study shows how the concert as ritual space may be used to transform music from object to agent, and with the potential to reshape concerts to agents of change. This case-study is localised to a specific time and place. It lays out both the opportunities and challenges faced surrounding the process of putting together this concert, as well as moments of success and frustration in dealing with institutional powers and their unique agendas. While this paper does not contain any universal claims, it may nevertheless serve as a model - to be adapted, and built upon - for future cross-cultural dialogues.

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Social connection and resilience through intercultural music engagement – hybrid program evaluation

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Background

International students can experience a range of challenges while transitioning to university and a new country including cultural adaptation and social exclusion (Rosenthal et al., 2008; Sherry et al., 2010). Belonging has been found to positively predict well-being, academic motivation and reduced drop out intention among international students (Suhlmann et al., 2018), however there is some evidence that international students in Australia perceive a lack of social integration and belongingness (Arkoudis et al., 2019). To contribute to better understanding of effective interventions to mitigate risks to the wellbeing of international students, this research evaluates a hybrid program of face-to-face and online intercultural music and dance engagement (encountering other cultures through music and dance) designed with an aim to enhance intergroup attitudes, increase social ties, sense of community and resilience among international university students. The program logic is underpinned by literature about music and dance and social bonding (Tarr et al., 2014; Trehub et al., 2015); arts practice and individual and collective resilience (Havsteeen-Franklin et al., 2021; Ungar, 2012); intergroup contact theory (Allport, 1954; Pettigrew & Tropp, 2011); integration as an acculturation strategy and its association with positive wellbeing outcomes (Berry, 2005); literature about social network interventions (Boda et al., 2020; Blanco et al., 2023); as well as the ongoing need to include online alternatives to in person engagement.Existing research on intergroup ideologies suggests endorsement of polyculturalism (the belief that cultures are interconnected and influence each other) and multiculturalism (the belief that differences in cultures should be respected) are more strongly predictive of positive intergroup attitudes than colourblind ideology (the belief that cultural differences should be ignored) (Pederson et al., 2015; Rosenthal & Levy, 2012), hence intergroup ideology may moderate the intended effects of the program.

Aims

Research questions include:

1. Compared to a control sample, does participation in a specially designed program positively shift intergroup attitudes and increase sense of community and resilience? Does intergroup ideology moderate effects on sense of community and intergroup attitudes?
2. Does participation in the program strengthen friendship networks?
3. What is the engagement of participants (number of sessions attended and number of posts/engagement with online platform)?

Method

Drawing on quasi-experimental designs in implementation research (Miller et al., 2020) a program logic and program manual will guide evaluation of the program, with measures of sense of community, resilience, intergroup attitudes and ideologies included in baseline and follow up surveys to assess outcomes for program participants

against a control group. Social network analysis will be conducted to determine if participation in the program is associated with changes in friendship ties.

Main contribution

The program and research will be conducted in August 2023, as such results and conclusions are pending. While there is a body of literature considering arts for health, it has been criticised for its lack of rigor and transparency (Clift et al., 2021). As a subset of this literature, research about intercultural music engagement programs for adults can be found across a range of disciplines including psychology, ethnomusicology, pedagogy and leisure studies, but most are qualitative case study analyses. While these analyses are informative and demonstrate several converging themes that have been drawn upon in the program logic, there is scope to strengthen the evidence base in this field and build on nascent research on hybrid music programs. This research could provide specific data mapping inputs, activities, outputs and measures to facilitate understanding of the components and effectiveness of programs of this nature. Renewed interest in applied arts benefits with Australia's new cultural policy, *Revive,* reinforces the relevance of this research.

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The metric sense in free music improvisation. An approach from participatory sense making framework

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Background

Free music improvisation is an activity in which participants are not subordinated to any pre-established action script. In group improvisation communication between the different members of the group stands out in order to co-regulate the interaction serving an organized and expressive unified performance. This co-regulation depends on participants recognizes structural aspects of the music produced, but the way in which such structural features are configured is inherent to this interaction depending both on the intentions of participants and on the situational conditions of the interaction. In that way, co-regulation is new and original for each improvisation. Intentions of the musicians are oriented towards distal goals (for example, to sustain improvisation during a certain time). But, at the same time, individual proximal goals (e.g. to reach synchronization, consonance, etc.) appear permanently modified in the very course of the performance. The sounds made during the improvisation derive from the collaborative intention. Your organization accounts for the way in which individuals participate to achieve their goals. The local sense is configured when a given state of equilibrium is reached around their behaviors related to sound production variables (for example: they balance their sonorities, tune pitches, synchronize actions to establish a common temporality, etc.) coordinating the performance in order to sustain the musical discourse. From the enactivist perspective, particularly, the participatory sense making (De Jaegher & Di Paolo, 2007) free musical improvisation complies with the notion of autonomy, which allows us to understand it as a social process. Here the events are not only determined by the participants and their intentions. They take on a life of their own (Di Paolo, 2016). In this way, the infinite possibilities of fortuitous events and multiple responses to them make the improvisation constitute on the time trajectory of the singular path followed by individuals in intersubjective interaction in balance with their environment. Due to its non-propositional and embodied characteristic, this interaction does not imply the elaboration of theoretical hypotheses based on a high-level ability to infer the propositional states of the other by the participating agents, but rather the ability to capture intentions in action. Thus, we assume that it is the bodily commitment that binds the participants in the action.

Aims

This study aims to analyze how the metrical sense of improvisation is configured in participation, focusing on sound and visual data.

Results

metrical and grouping structures were defined. Participants do not pre-establish the organization, but rather the features of said structures emerge from the interaction. After 40 seconds the established time organization remains, a fact that contrasts with the variability and instability that such structures show up to that point. Then, this period is seen as a process of

sense making. Data of played keys (pitch) played, IOI (rhythm), sounds durations (articulation) and the velocity (intensity), are interpreted in terms of accentuation factors. Configuration of the melodic motifs, the establishment of the initial binary metrical structure, the consolidation of a tonal center, and finally the complete configuration of the polymetrical ternary/binary structure, throughout the performance can be detailly analyzed. Graphics display the interaction principles (turns, participation guidelines, etc.) and the metric structure achieved.

Besides, that co-construction takes place also through postures, body movements and facial and manual gestures that constitute these behaviors. Movement analysis shows that gestures trigger sound production behaviors, but they are also the result of the sounds production (both of the action of touching and of the perception of what is touched). For example, the initial melodic motif (pianist A right hand) dynamically emphasizes the third sound due to the oblique position of the hand as a consequence of the general body posture. Thus, the fortuitous position of the hand and its relationship with the particular topology of the keyboard guide the metrical organization. Simultaneously, the dynamic accent organizes emphasis levels throughout the time that shows how the metrical structure is being built. It can be seen that A -conditioned by the position of her hand on the keyboard- makes a dynamic emphasis every 2 sounds. Taking these values as a base, B organizes them with a ternary accentuation. A polyrhythm is configured that is consolidated around the first minute of improvisation and that remains stable until the end. The duration of the melodic motives in addition to the lowest notes of the bass establish a temporal unit that is configured as a stable 4 beat meter after 20 seconds.

Conclusion

Throughout the improvisation, interactive behaviors were observed according to the participation situationality. They show the improvisational process as intersubjective and the emerging musical sense as co-constructed in the interaction by the participating musicians according to their cultural/environmental background (for example, the polyrhythmic characteristic of the resulting metric structure was not alien to the participants). The consolidated musical structures were configured from negotiation and co-construction processes in the course of the performance. This is consistent with the idea of PSM that the interactive coordination of individual meaning searches allows new processes of participatory meaning making to emerge that would not otherwise be available.

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Shared time, shared flow, and shared physiology in Javanese gamelan performance

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Background

The experience of shared flow refers to the optimal balance between challenge and skill for a given task, resulting from interpersonal action in a group situation (Pels et al., 2018). The performance of Javanese gamelan is an ideal setting to investigate shared flow, due to the requirement that all instruments work harmoniously, allowing for shared flow and its native equivalent, Ngeli (Tan et al., 2020). My previous study into shared flow and physiological coupling found both positive and negative associations between physiological coupling and shared flow in the contexts of traditional and improvised playing respectively (Gibbs et al., in preparation). This suggested fundamentally different experiences of flow depending on the degree of individualism or collectivism that the performance required, supporting a recent taxonomy of shared flow (Hackert et al., 2022). However, shared flow here was assessed via a pre-validated measure that did not seem to account for these differences (Zumeta et al., 2016). One prominent component of flow is the transformation of time, and most questionnaires seem to only investigate this on a general level, rather than determining whether it is specifically experienced as a slowing down or speeding up of time. The next stage of my project employs the methods of my previous study together with a novel approach to measure shared flow, by combining self-reports with a measure of the difference in perceived subject time and actual time passing.

Aims

Through a combination of quantitative and qualitative tools, I aim to test whether there is a relationship between a shared perception of subjective time and shared flow and whether this is associated with the degree of physiological coupling arising in both traditional and improvised playing.

Methods

Several pre-established gamelan groups across the UK will each participate in an experiment, whereby they will be asked to play a traditional piece of gamelan music and improvise as a group. Quantitative methods employed in this experiment involved physiological parameters, self-report measures of flow state, and a self-report measure of time perception in performers following the performance of a traditional gamelan piece, and a group improvisation. A qualitative component of focus group interviews and individual surveys will aim to relate quantitative evidence to phenomenological insights.

Results

Although the study is yet to be conducted, I anticipate similar findings to the previous study, whereby shared flow will be positively associated with the average level of physiological coupling in improvised playing, and negatively associated in traditional playing. Supporting this, I expect to see some degree of consensus in estimates of subjective time passing during improvised playing and little consensus in traditional playing.

Discussion and conclusion

This study will be the first, as far as I am aware, to assess the possibility of a shared perception of time in music performance. Further to this, little work has been done to assess the physiological parameters of subjective time perception (Mella et al., 2011; Ogden et al., 2019), and no studies have identified this in a group setting. I hope to achieve this by relating each to the experience of shared flow. By adopting a mixed-methods approach, quantitative evidence will be related back to phenomenological insights, contributing to the discourse surrounding what shared flow experiences in music performance settings involve both consciously and subconsciously.

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Aspirated [p t k] in sung Spanish: A comparative study of Argentine opera and folk singers' pronunciation

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Background

In English and German, voiceless stops [p t k] at the beginning of stressed syllables are typically followed by a burst of breath or aspiration (Ladefoged & Disner, 2012). By contrast, in Spanish (especially in the Argentinian variety), these consonants are not commonly aspirated (Hualde, 2014). The length between the stop release and the moment when the vocal cords start to vibrate, which is called voice onset time (VOT), provides an important clue to studying phonetic differences between languages. Consequently, Spanish stops are expected to have a shorter VOT than English and German ones. However, we have identified that in sung Spanish these consonants tend to be aspirated by Argentine opera singers. In previous studies (Guzmán & Shifres, 2018, 2020) we proposed the existence of a colonial (Quijano, 2000) phonetic-aesthetic canon built on the main languages of the classical repertoire, since it is argued that some of their phonemes or their ways of pronouncing (such as [p t k] aspiration, [b] and [v] contrast, [b d g] reinforcement between vowels, [m n] doubling, etc.) provide clarity and precision to the vocal performance. Thus, Argentine opera singers follow these prescriptions as rules for good singing, even when they are singing in their mother tongue. This practice ignores the expressive and identity role of pronunciation in singing and the consequences that a foreignized pronunciation would have for communication between Spanish-speaking singers and listeners.

Aims

We have proposed to examine the degree of voiceless stops' aspiration in Spanish pronounced by Argentines specialized in opera singing (who would be influenced by the phonetic-aesthetic canon) and folkloric singing (without a canonical training). The VOT of these consonants is expected to be higher in the first modality. This would imply that Argentine opera singers foreignize their own pronunciation in order to adjust their interpretations to the classical vocal training requirements.

Methods and results

3 classical singers and 3 folk singers from Argentina participated in this study. Using a Shure SM58 microphone connected to a Zoom H6 recorder, voice samples were obtained from each participant in two modalities: (i) an interpretation of a chamber song composed with traditional elements of local music and poetry (N[p] = 8; N[t] = 35; N[k] = 13), and (ii) an interview that collects biographical data, musical preferences, and information about their musical training and practice (for this we considered the first spoken phonemes in the same quantity as those sung). Then, the VOTs of voiceless stops followed by vowels or semivowels in syllable beginnings were segmented, labelled and measured using Praat 6.2.07. As in speech, the dental stop [t] was more aspirated than the bilabial [p] but less than the velar [k] (which showed great variability) in all modalities. All three consonants were sung on average with higher VOTs by the opera singers than the folk singers. In fact, while for the former the sung dental phoneme showed a great tendency to aspiration, for the latter it had a slightly lower average than in

speech. Furthermore, the differences in these values between singing and speaking were greater for the opera singers. This supposes a great distance between both communicative modalities.

Discussion and conclusion

Sung Spanish by Argentine opera singers incorporates pronunciations that are not expected in their everyday speech. These incorporations seem to be motivated by a phonetic-aesthetic canon based on the hegemonic languages that promises high-quality performances, but results in foreignized pronunciations. In this work, we have studied the aspiration of voiceless stops —typical of English and German— in spoken and sung Spanish. Calculating their VOT, we found that Argentine opera singers tend to differentiate their voiceless stops when singing from the one they use regularly when speaking, resembling a more foreign pronunciation. We must emphasize the great tendency to aspirate the dental plosive in opera singing. This would be justified by the technical search for a projected voice and, for this, placed around the dentoalveolar zone, which offers a wide resonance capacity. The same thing happens, for example, to the French [r], which changes its typical spoken uvular position (back) for an operatic alveolar position (front) similar to the Italian [r]. Finally, despite the fact that singing and speaking often show some communicative differences (such as formality, spontaneity, speed, and expressiveness), their phonetic similarities in folk singers' samples (which were not conditioned by the classical canon) suggest that a more native way of singing Spanish is possible. In addition, this could contribute to more genuine interpretations and, consequently, to strengthen the bond between Spanish-speaking singers and listeners.

Deep Generative Models of Raw Audio for Creative Instrumental Practice

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Background

Generative modelling of raw audio through deep learning provides new means of creating audio samples and musical content radically divergent from traditional sampling methods in both process and output character. Their adoption by researchers and music practitioners though is currently limited and their applicability under-explored. I present an ongoing enquiry into the affordances of two significant models architectures in this domain - WaveGAN [1] and SampleRNN [2] - to my creative practice as an improvising saxophonist and composer.

Aims

Through a practice-based research methodology I aim to address issues around best practices for creating datasets and training models, practical implications of these model architectures' mode-seeking and mode-covering behaviours [3] and of their respective creative affordances. Through this work I also aim to explore notions of risk-taking and speculation [4], associativity and domain-specificity [5] in an interdisciplinary, experimental creative practice.

Main contribution

I contribute original audio datasets and corresponding statistical models created with each architecture. Novel audio samples generated from the trained models are compared with their corresponding datasets, prompting discussion of their relationships. New musical and audiovisual works are created, generating knowledge of the creative applications of the generated outputs to diverse experimental musical practices.

Conclusion

My work generates assumptions around best practices for audio dataset creation and dataset-model suitability, while motivating future work with alternative inputs in order to test these further. Through this work I generate new tacit knowledge of the creative affordances of generative modelling of raw audio to instrumental practice, improvisation and composition; this knowledge will be of interest and utility to practice-based researchers, musicians and sound artists curious about using AI within their own work. My reflections on specific notions of risk-taking and associativity as drivers of creativity will also be of interest to these groups and to music psychology researchers.

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Disruption and de-synchronization in individual and collective creativity

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Background in Timbre Perception and Memory

Many factors are deemed to play a role in creativity, but its underlying processes are often described as an individual and mental quest for novelty [1]. Such a view has three issues. First, practitioners often develop explicit strategies to disrupt and step out of established patterns, rather than explicitly searching for novel ideas [2]. Second, embodied actions and interactions with the environment are instrumental in creative processes, not solely internal "mental" operations [3]. Finally, whether in arts, in sciences or in companies, it is often groups which create, and they do so as a collective, not as a mere collection of individuals [4]. Creative processes are thus not entirely identifiable at individual or subpersonal levels where mental processes would seek novelty but can rather be distributed in the embodied dynamics of interaction, in the course of which established patterns can be disrupted and novel ones discovered.

Aims

Our aim is to propose a new theoretical perspective on creative processes that 1) spans both individual and group levels of organization, 2) emerges dynamically from the interaction between multiple components, and 3) accounts for the experience the embodied actions of practitioners regarding the primacy of pattern disruption. In other words, we aim at showing how the dynamics of interaction between multiple components (whether subpersonal or interpersonal) can help disrupting established patterns and, by renewing and expanding the set of opportunities at agents' disposal, foster the exploration of novel possibilities and favor creative discoveries. Our aim is to propose a general perspective on creativity, but one that is fruitfully informed by artistic practices.

Main contribution

Through the lens of enactivism and dynamical systems principles, we propose that creativity is not only about doing or thinking about something novel, but is also, if not primarily, about disrupting and stepping out from established patterns. Specifically, we focus on the de-synchronization between the components that form coordinated patterns and consider this phenomenon as a hallmark of disruption of established patterns. In effect, the uncertainty that results from de-synchronized dynamics provides opportunities of reorganization into novel patterns that can explored and potentially lead to creative discoveries. To support our perspective, we first join the results of studies on individual creative problem-solving and in sport, and relate them to dynamical systems principles [5,6]. These studies show, at the individual level, that 1) creativity requires to leave established patterns that hinder the potential discovery of novelties because we tend to get fixated on them 2) disrupting the coupling dynamics between the agent and its environment, by raising uncertainty, helps shifting away from established patterns and discovering novel behavioral patterns. Then, we extend our proposition to the interpersonal level by draw from our own practical and empirical work in the field of music and dance [2,7], as well as convergent work of other groups [8,9]. We show that, at the interpersonal level, de-synchronized dynamics of interaction favor pattern disruption in a way that fosters creative discoveries in two distinct ways. First, the disruption of collective

dynamics can reconfigure the set of opportunities an individual can explore by himself, thereby favoring individual creative discoveries. Second, the disruption of collective dynamics can trigger creative pattern reorganization at the group level itself, fostering creative processes that are genuinely collective.

Discussion and conclusion

While creativity is often seen as an individual and mental quest for novelty, and while the collaborative aspects of group creativity often incite researcher to focus on the synchronization of activities, we propose to shift the focus of creativity research to disruptiveness as a primary step in creative paths. In particular, we focus on one of the most prominent hallmarks of disruption: de-synchronization. Specifically, we propose to model creative processes, at both individual and collective levels, as emerging from the disruption of interaction dynamics through de-synchronization. The perspective we propose has pragmatic consequences on the pedagogy of creativity: getting creative would require exploiting dynamical principles of behavior, whether at individual or collective level, and strive toward more uncertainty in order to dissolve established patterns and allow for novel ones to emerge through reorganization. By emphasizing the interplay between de-synchronization and reorganization, we can account for creative processes as emerging from the interaction between multiple non-creative components, rather than by postulating processes or modules that are dedicated to creativity per se. In that sense, creativity is not just a situation where we problems, but where problematizing situations brings the solution.

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Healing music and self-disclosing: data mining and text analysis based on online music comments

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Background

With the growing prominence of public mental health issues, the "healing power of music" is being used by many music streaming platforms as a commercial gimmick to attract musicians and online users. However, it is unknown the extent to which this music "heal" people and the ways that music exert the healing power; in addition, it is unclear whether online users show a different characteristics of music engagement and response to healing music as compared to other types of music genres. In traditional music therapy settings, music is often used as an effective background stimulus to facilitate the self disclosure of clients . For example, Jensen (2001) found that background music influenced the disclosure topics chosen via promoting cognitive suggestions and expressions. Self disclosure relates to the process of making the self known to others (Joinson & Paine, 2007). Studies on self-disclosure on social media have suggested that disclosing one's emotional or personal information via computer-mediated communication (CMC) may have important therapeutic effects to improve physical and psychological well-being as compared to face-to-face communication (Luo & Hancock, 2020). Music streaming platform like Net-ease Cloud Music is a typical example of CMC environment where music users fully controls the information disclosure, including music taste (hours of listening, music likes), personalized playlist (self-created or collected), personal information (location, age, gender), and social relationship (fans, followers). However, it is still unknown whether music users use music streaming platforms as similar as other social media for self-disclosing.

Aims

This study aimed to investigate the self-disclosure function of online healing music via text-mining methods and linguistic analysis on online music comments. Recent developments in computer-aid text analysis programs such as LIWC (Linguistic Inquiry and Word Count; Pennebaker, Booth, & Francis, 2007) provide scholars with a more efficient and reliable method for measuring textual features of online text/messages. More specifically, this study attempted to answer the following research questions: what are the linguistic markers in online music comments that reflect users' self-disclosure intention/behavior? What are the differences in linguistic markers in online comments when responding to healing music and non-healing music? What are the main topics of self-disclosure in response to healing music?

Methods

To compare the differences in healing music comments and non-healing music comments, we extracted 160000 comments underneath the healing music (experimental group) and extract the same amount of comments underneath randomly grabbed music, such as hot-song list, new-song list etc. (control group). We used Octopus software to extract online data. Data analysis include Bag of words model, LIWC analysis, and LDA topic modelling.

Discussion and Conclusion

This study found that music comments of healing music have significant linguistic cues of self-disclosure as compared to randomly selected music reviews, such as significant use of first-person pronouns and pronouns, significantly more total words and words per sentence, and significantly more social process words, function words, and auxiliary verbs. Using thematic analysis, online music reviews addressed four main themes: music-induced memory, music-induced emotion, online social support, and aesthetic criticism. This study helps to understand psychological functions of people's use of music in online and everyday situations. Therefore, music platforms should encourage more contents of healing music and more often use of commenting function for self-disclosure, to create a better and healthier online music community culture.

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Designing a Virtual Reality Lab for Music Performance Simulation

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Background

Virtual reality (VR) technology offers multifaceted research opportunities in music psychology through an immersive and controlled environment for experiments (Osborne et al., 2022). Recent improvements have included biometric capture capabilities such as the tracking of facial expressions, eye movements and heart rate within readily available headsets (Siegel et al., 2021). However, the technical considerations for conducting music psychology experiments in VR are still largely unexplored. In this paper, the configuration of a virtual reality lab for music psychology research is discussed within a university context, outlining the procedural, technical, and ethical considerations necessary for running experiments using VR technology.

Aims

This paper aims to assess the technical and experimental considerations required for setting up a virtual reality lab for music psychology research. This will be done through a detailed review and critique of the hardware and software requirements necessary to conduct music psychology research using VR technology. By covering the ethical considerations involved in conducting experiments using VR technology, this research aims to provide a useful resource for other research institutions looking to undertake similar work in the field.

Main contribution

An assessment of the technical considerations involved in setting up a virtual reality lab for music psychology research will be provided. Consideration will be given to hardware and software requirements necessary to configure a virtual reality room, including the choice of headset, computer, and software. It will outline the procedural requirements for conducting experiments in a virtual reality environment, including the calibration of the headset, the design of the experimental tasks, and the collection of data. In addition, it will discuss the ethical considerations involved in conducting experiments using VR technology, including issues related to informed consent, privacy, and data security. Given the sensitive nature of biometric data collected in this context, the emphasis on adhering to ethical guidelines when conducting experiments using will be covered.

Discussion and conclusion

The use of VR technology in music psychology research offers ways to explore performance practice and training. However, the technical considerations involved in setting up a virtual reality lab for music psychology research are complex, and the ethical considerations are equally important. This paper provides a useful resource for other research institutions looking to undertake similar work in the field. By outlining the procedural and technical requirements, as well as ethical considerations necessary for conducting experiments using VR technology, it hopes to facilitate the development of guidelines for using VR technology in music psychology research.

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Cool or Creepy: Emotion Regulation Feature for Music Streaming Services

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Background

Emotion regulation is an essential skill for supporting one's well-being (DeSteno et al., 2013). One of the key reasons for engaging with music is for emotion regulation (Juslin & Laukka, 2004). Researchers in Human-Computer Interaction have found that people have appropriated digital music streaming apps (e.g., Spotify) for emotion regulation (Wadley et al., 2019; Smith et al., 2022). Music streaming vendors have acknowledged that their over half a billion users listen to music for emotional reasons and provide a range of mood-based music (Spotify & MindProber, 2023). Recognising that music streaming services could better support emotion regulation, several studies have proposed Music Recommender Systems that recommend music based on users' emotional data (Ferwerda & Schedl, 2014; Liu et al., 2023), and to help users regulate their emotions (de Assunção & de Almeida Neris, 2019; De Prisco et al., 2022; Svensson, 2023). It is clear that emotion regulation features within music streaming services are imminent. Therefore, it is urgent to investigate the perceived benefits and ethical concerns of (1) using emotion regulation enhanced music streaming apps and (2) providing emotion and personality data to streaming apps.

Aims

The aim of this study was to investigate how users would react to an emotion regulation feature being added to their current music streaming service, and to understand the perceived ethical concerns and benefits of using such a feature.

Main contribution

The current study used a short *design fiction* video that displayed a user interacting with *MoodDJ*, a fictional emotion regulation add-on for Spotify. A HCI methodology, design fiction (Mubin et al., 2015; Seberger et al., 2021) uses scenarios, prototypes, and material artifacts to probe for reactions and feedback to fictional technologies (Wakkary et al., 2015). After participants watched the video, we conducted semi-structured interviews to explore participants' perceived concerns and benefits of *MoodDJ* and to gauge participants' willingness to use an emotion regulation enhanced music streaming service. We used reflexive thematic analysis to analyse the interview transcripts (Braun & Clarke, 2006). Participants perceived that using *MoodDJ* would have emotional and usability benefits. However, participants raised concerns about the potential harmful emotional impacts of using the feature, functionality concerns and ethical risks with providing emotion and personality data to Spotify. Despite these concerns, 18 participants reported that they might use the feature. Participants discussed a range of contexts in which they might/might not use the feature.

Discussion and conclusion

Our findings highlight the importance of developing music-based digital emotion regulation interventions and present design and ethical implications for the development of such an intervention. By enhancing music streaming services with emotion regulation features, the well-being outcomes for over half a billion music listeners may be enhanced.

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Cross-Cultural Emotion Recognition: A Comparative Study of Chinese Traditional and Western Classical Music Among Chinese and Western Listeners

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Background

Previous research has indicated that music emotion recognition exhibits a dual nature, comprising both universality and cultural specificity. While basic emotions can be recognised across cultures (Fritz, 2009; Laukka, 2013), an in-group advantage may emerge when music and its listeners share the same cultural background (Argstatter, 2016). Emotion recognition in music appears to be achieved through a combination of universal and cultural cues (Balkwill et al., 2004; Balkwill & Thompson, 1999), leading to varied influences on listeners across cultures. Similar to Western classical music, Chinese traditional music is widely admired for its emotional expressivity within Chinese culture (Fritz, 2013; Zheng & Yang, 2020), despite being distinctly different from each other in musical structures and instrumentations. However, there remains a scarcity of research comparing these two musical genres in terms of cross-cultural recognition of musical emotions.

Aims

The first aim of the study was to examine whether the in-group advantage of music emotion recognition, which has been found in previous studies, can be replicated in Chinese and Western contexts. The second aim was to investigate how acoustic cues are associated with the recognition of musical emotions in Chinese and Western listeners.

Methods

278 Chinese (69 males, 98 musicians, M = 25 years) and 136 Westerners (54 males, 68 musicians, M = 35 years) participated in an online study via Qualtrics. In random order, participants listened to 18 generally unfamiliar Chinese and Western music excerpts that conveyed happiness, sadness, peacefulness, anger, and fear. These musical excerpts were selected from two pilot studies with experts in both musical genres. Participants were invited to indicate the degree to which they thought the music expressed the five emotions on continuous scales ranging from 1 to 5.

Results

The repeated measures ANOVAs revealed that regardless of the cultural origin of the music, Chinese participants were more sensitive than Western participants to the recognition of happiness and sadness, while Western participants were more sensitive to fear. By extracting the acoustic features via the MIR Toolbox 1.8.1(Lartillot et al., 2008) and conducting mixed linear regressions, it was also found that the number and degree that acoustic features correlated with emotion recognition differed across cultures.

Discussion and Conclusion

Instead of an in-group advantage, a cultural advantage in specific emotions in music was found in this study. The differences in acoustic features correlated between the two cultural groups and between the two musical genres embody different sensitivities to acoustical cues in music listening across cultures, which have been assumed to be associated with different cognitive styles across cultures (Thompson & Balkwill, 2010). These findings were incongruent with the pre-hypothesised in-group advantage assumption in cross-cultural music emotion recognition, which suggests the need for more empirical research on various emotions and cultural contexts. They also imply further explorations in personality traits and cognitive styles as potential causes of the differences in music emotion recognition (Juslin et al., 2016; Thompson & Balkwill, 2010).

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Embodied technology-assisted musical creativity and living with dementia

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Background

Creative arts engagement has been shown to be related to maintaining wellbeing in older adulthood (Tymoszuk et al., 2019). For people living with dementia, music can be engaging and rewarding (Baird & Thompson, 2018), and is often presented as a therapeutic activity. It is theorised that music's capacity to effect change is due to its engaging, emotional, physical, personal, social and persuasive qualities (Brancatisano et al., 2020). However, music itself is a complex intervention (Loui, 2020) and the 'creative' in music activities in the small number of studies with people living with dementia is rarely described or critiqued (Creech et al., 2020). Music is often described as passive (receptive)/active to reflect different listening or playing activities. Only a few studies detail opportunities for people living with dementia to exercise creativity (e.g. Zeilig et al., 2019).

Technology to assist these musical interactions in dementia falls under distinct categories of listening to music, or playing music, with very little afforded in the way of agency, choice or control (MacRitchie et al., 2023). A few possible explanations could be: i) the musical activity is valued in terms of pre/post cognitive or social changes (Kontos & Grigorovich, 2018) i.e., the activity itself is not particularly critiqued, ii) creativity is assumed to be embedded in the activity and does not need to be enhanced or supported, iii) the locus of creativity is in cognitive processes occurring in the brain, so people living with dementia are often ascribed a passive role in creative musical interactions (Zeilig et al., 2019).

We propose a new way of thinking about musical interactions for people living with dementia, building from the enactive, embodied experience of music (Schiavio et al., 2022), and considering a more relational view. Leaving aside the framing where the person with dementia is limited in what creativity they can offer, we propose instead a framework of design where subtle acts of agency and (mini-C) creativity are afforded, supporting a myriad of musical interactions that sit between listening and performing.

Aims

We aim to re-examine musical interaction for people living with dementia, leaving behind the receptive/active distinction of musical activities, and instead looking through an embodied and relational lens. We examine how agency and creativity are related, and how these can be supported to foster meaningful interaction for people living with dementia and their carers.

Main contribution

The Music, Dementia, Technology team at The University of Sheffield continues to run consultation activities with representatives from local community, residential care, and people who are caring for, or themselves living with dementia. These activities have included discussion groups on broader conceptual work, and hands-on workshops where we collectively

explore and re-imagine pre-existing and specially developed musical devices. The SliderBox is a mixing-desk analogy, using faders to control the volume of pre-recorded stems of music (Pigrem et al., 2023). The 'In C Box' is an arcade machine analogy, using buttons to procedurally generate Terry Riley's 'In C' (Pigrem et al., 2023). The Music Boxes use a turntable-type procedure to control playback of two streams of audio, designed for group music playing (Christensen et al., 2023). The HUG is a weighted sensory object designed to simulate a hug for the user, which has a music player installed inside (Treadaway et al., 2019).

We use these examples of technology-supported musical interactions to extend Kontos' proposition of rethinking musicality for people living with dementia across a range of musical activities. Our design considerations include basing operation on pre-existing embodied knowledge of interacting with the world, e.g. through familiar and safe materials, promoting obvious interaction (Pigrem et al., 2023). For each device, we detail how choice, control and creativity are afforded, how the musical interaction is embodied and how this stimulates or maintains relationships with others.

Discussion and conclusion

Through the examples of use-cases provided, we discuss how musical interaction is almost always creative, and almost always a relational act. By laying out musical interaction activities on sliding scales of participation, we can examine how the voice of creativity, however quiet it may be, can be included, helping us to better hear the voices of people living with dementia. The enactive embodied perspective can provide a new way of thinking about meaning-making and creativity in musical experiences for people living with dementia, and consequently how technologies can be designed to support these interactions.

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Creativity in learning a musical instrument during older adulthood

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Background

The creative arts are framed as an avenue for maintaining wellbeing and quality of life in older adulthood. Creativity is described as the intervention outcome for older adults (e.g. from songwriting), or as a tool that facilitates self-expression (e.g. in free improvisation), with often little criticism on the creative act itself (Creech et al., 2020) or how creativity can be evaluated as developing over any time-period.

Music instrument training, often described as a creative pursuit, is proposed to offer various cognitive, social and emotional benefits for older adults. When beginning to play a musical instrument, the type of task(s) involved may affect the rate of learning. School-age students showed better music performance skills when training involved improvisation as opposed to performing pre-composed music (replication) (Azzara, 1993). Music performance skills are often evaluated with improvisational tasks in order to assess levels of creativity (McPherson, 1995). Achievement in these tasks may lead to personally meaningful lifelong learning for older adults (Perkins & Williamon, 2014), however, it is unclear how progress on creative tasks can be practically assessed past subjective judgements on fluency, musical syntax or overall 'creativity' (McPherson, 1995). Following Creech et al (2020) that further research is needed that critiques creativity within different musical tasks (including improvisation), our current research examines how to evaluate creativity as it is demonstrated by older adult novices.

Sixty-eight older adults aged 65 to 79 were engaged in a 12-month instrument training program (the *Active Minds Musical Ensemble*, AMME). They received alternate 3-month blocks of instruction on (i) replicating melodies, and (ii) improvising melodies. Participants spent half of the 12-month period learning on a keyboard, and the other half learning on the iPad touch-screen app Thumbjam. As part of the larger project, participants' cognitive and motor skills were assessed every three months. To assess participants' musical development, performances were collected during and at the end of each instruction block via series of performing and improvising tasks. All instruction was aural, i.e. with no notation, using single-line melodies.

Aims

We aim to explore how creative instrumental skills are evaluated for older adult novices. We do this by developing new approaches for large-scale computational analysis in two types of task: replication and improvisation.

Methods

In replication blocks, participants were given short audio fragments to learn in order to reproduce various familiar and unfamiliar melodies. In improvisation blocks, participants were presented with fourteen different methods: adding repeated notes, adding passing notes, changing the distance between notes, changing note lengths (duration), changing dynamics (louder or softer), making sudden changes in volume (accents), adding rests, varying speed,

playing legato, staccato, or a combination of the two, reversing the notes (retrograde), repeating sequences higher or lower in pitch, and modulation. Participants practiced these techniques after being prompted with the first three to five notes of a melody. After each instruction block, participants recorded performances that demonstrated their skill in performing rehearsed music, performing unrehearsed music and in improvisation.

We are using a novel set of tools for objective analysis: Automated Measures of Melodic Replication and Improvisation (AMMRI) (Dean et al., 2023). AMMRI uses pitch and inter-onset interval (IOI) combined in a single measure to assess performances. In replication tasks, fidelity is evaluated via dynamic time warping, estimating the distance from the original to the performed melody. In improvisation tasks, diversity is evaluated, as well as the degree to which any of the fourteen improvisation tools are fulfilled.

Results

Using a set of simulations, we demonstrate that automated analyses conducted with AMMRI can detect a suitable level of diversity across assessment parameters for both replication and improvisation tasks. Following this, automated analyses of our dataset of 68 participants at 3-month intervals show progression of fidelity to the original melody for replication tasks. Improvisation task results reveal a diversity of approaches across participants, as well as some aspects of progress across the 12-month instruction period. This sits in conjunction with the broader project results of cognitive and motor measures over the 12-month period: Bayesian modelling shows very strong evidence for improvements in the Forward Digit Span test, Trail Making Test (A and B), and strong evidence for improvements in melody memory (Müllensiefen et al, 2014). Very strong evidence is shown for improved performance in dual finger tapping - a task based on the single finger tapping test (Seinfeld et al., 2013). We found no evidence of improvement for the single finger tapping test.

Discussion and Conclusion

Results from automated analysis of improvisations inform discussion of how to monitor the progress of creative task performance in beginner instrumental education. For replication of a melody, this may be evaluating whether the performance is more or less similar to what is expected. For improvisation, this may be the diversity of the material, and how it may fit with selected tools. Assisting older adults to monitor their own development would facilitate self-evaluation (and an estimate of their progression) in these performance tasks over the longer-term. This objective approach can be utilised depending on the aims of the program, and in combination with more subjective methods that also assess the individual's confidence and satisfaction with the output.

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An insight on creativity during the practice of a piano piece by ear: an exploratory study

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Background

Ear playing may be defined as the performance of pre-existing music aurally learned without the aid of notation (McPherson, 2005). Studies by Johansson (2004) and Woody (2020), for instance, investigated different strategies employed in ear-playing tasks. However, under the Western formal music education tradition, one cannot neglect that the reference to the score is the common procedure to learn a given piece. In this kind of procedure, a creation of a given music product depends on cognitive procedures regarding visual-aural grouping of the perceived musical content, which in turn may involve problem-solving procedures. Among them, creative thinking may affect the understanding of the resulting product. Although pedagogues within the Western music learning tradition generally recognize the importance of learning by ear, there is a paucity of studies that investigate such practice. Learning piano compositions by ear may involve a kind of productive thinking which in turn involves breaking out of one´s pattern of thinking about something (Weisberg, 1999; Amabile, 2018). In the present context, we investigated how learning by ear would occur when piano students learned real piano compositions by ear.

Aims

Investigate the practice approaches and performance outcomes of piano students as they learned a piano piece by ear.

Methods

16 piano students were asked to learn one piano piece written by Franz Schubert by ear. The students were of differing levels of expertise and. The four selected pieces, (1) Landler D145 n°3, (2) Écossaisse D781 n°5, (3) Écossaisse D781 n°4, and (4) Waltz D365 n°6, were similar in extension (all 16 measures long) and level of difficulty. The audio stimuli were extracted from Schubert's complete dances performed by Michael Endres (Capriccio label). Each experimental session consisted of a maximum period of 15 minutes of practice, followed by the recording of a final performance of the learned piece, and a semi-structured interview. The analysis of the semi-structured interviews aimed to gain insight into potential strategies that were employed during practice. The participants' final performances were thoroughly transcribed into musical notation, in order to evaluate the contents that were apprehended during practice and how those elements came to integrate the participants' performances.

Results

Interview data:

Focus on melody was the most prominent element during practice, cited by 14 participants. Based solely on that information it seems that, when approaching learning an unfamiliar piano piece by ear melody is the first, or most important element to be focused on. Harmony (herein bearing a sense that is interchangeable with 'accompaniment' or 'left hand') was mentioned by

nine participants. It is interesting to notice that, out of these nine students, five related a somewhat more systematic approach to harmonic information, seeking to capture elements such as definite chords, bass notes or harmonic functions. Conversely, four participants commented that their approach to harmony was more 'approximative', describing that they played chords that could fit in with the apprehended notes of the melody, in a trial-and-error fashion. Only two participants commented having tried to recognize patterns in the presented stimuli, which suggests that note-to-note approaches could have been privileged within the investigated sample.

Performance data:

Three participants played only the melody of the first eight measures (the first section) of the practiced piece. Twelve participants could integrate harmonic and melodic information in their performances. Out of those twelve, nine played the whole piece and three approached only the first section of it. The analysis of how the accompaniment was performed revealed two main trends. Five participants performed the piece's harmony in a way that maintained the original chord voicings of the left hand part, keeping the distances between the bass notes and the mid-range chords in a way that closely reflected the composer's text (and hence what was heard in the recording), with the chords showing a similar note disposition with the score. Seven participants, on the other hand, adapted the voicing of the accompaniment, changing the left hand texture, notably in a way that eliminated left hand leaps and allowed the chords to be played in close position. One student produced a performance that was highly deviant from the presented stimulus, which could be potentially attributed to a (mis)apprehension of the contents that led to distorted images of the piece.

Discussion and conclusion

Even though the participants were confronted with a complex task, positive results were observed. 15 out of 16 (93.75%) students presented performances that reflected what was presented in the stimulus, with the apprehension of the melody being the main element upon which those performances were constructed, as testified by 87.5% of the participants. 75% of the performances presented the integration of melodic and harmonic information. The differences in the approach to harmony, however, point not only to potential personal differences regarding expertise with harmony, but also to cognitive operations that might take place in order to synthesize the harmonic information into more meaningful units. It is worth still mentioning that these results impinge reflections about potential solving problems in contexts that demand breaking out of one´s pattern of thinking about something. In the present case, the fact of bringing a practice situation focusing on the audio stimuli (instead of the written score) may promote alternative experiences in organizing texture (harmonic and melodic patterns).

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Explosive music, bodies & minds: the experience of the EXPLOSION image-schema in electronic dance music

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Background

Most of the concepts about music are metaphorical, e.i., they are based on image-schemas derived from our embodied experience with the physical world. Thus for example, the FORCE image-schema structures the perceiver's experience of being moved by the music, and also the way we imaginatively organise in cognition the sonic stream of events in terms of different musical forces (Martínez, in press). The most common variants of the FORCE image-schema are COMPULSION, BLOCKAGE, COUNTERFORCE, DIVERSION, REMOVAL OF RESTRAINT, ENABLEMENT and ATTRACTION. Mark Johnson also mentions the case of EXPLOSION explaining that "in less prototypical cases, such as explosions, the force moves off in all directions creating a potentially infinite numbers of paths" (1987, p. 43). However, this image-schema has not been yet empirically inquired. In this paper, we present a study about the experiential concepts that result from the instantiation of the EXPLOSION image-schema as reported by participants of electronic dance music parties. In these social environments the dancers align their movements with the electronic dance music's break routine, a formal structure defined by the removal and addition of textural layers, and changes in intensity. Movement alignment is tighter at the drop (the beginning of the theme, characterised by the entrance of low frequencies and a sudden increase of sound pressure) (Marchiano & Martínez, 2018).

Aims

Identify the experiential concepts that result from the instantiation of the EXPLOSION image-schema as reported by participants of electronic dance music parties. Analyse the correspondence between the EXPLOSION image-scheme domain and the abstract concepts to which it refers.

Methods

Participants: 3 DJs and 3 participants of electronic dance music parties in La Plata City, Argentina. Procedure: individual interviews to the 6 participants. The interviews were phenomenological and semi-structured, oriented to the recall of the participant's experiences during past electronic dance music parties. Data analysis: use of the cognitive linguistic methodology, consisting of (i) identification of metaphorical expressions, (ii) classification according to the concepts that they represent, and (iii) analysis of the imaginative structures involved (Ibarretxe-Antunano & Valenzuela, 2012).

Results

Several conceptual metaphors related to the EXPLOSION image-schema were identified. They were related, respectively, to the formal sections and/or to the attributes of the music, and also to the psychological (body and mental) states of the participants. The metaphors are causally related: a musical explosion causes an explosive body and mental state. The moment of the

explosion is considered the GOAL of both the music and the participant's experience. In reference to 'musical explosions', participants refer to the drop moment as an 'explosion', activating the EXPLOSIVE FORCE image-schema; e.g., "when the low sounds emerge, you feel like everything is exploding" (DJ3), or "people tell you: 'Come on! Blow it out!'" (DJ1). As to 'body explosions', the concept of explosion represents the quantity of dance movements; e.g., "I play this track and it's going to explode; people are going to fly through the air, they are going to jump everywhere'" (DJ3), or "if you see the people moving… that's a good sign. If you see the people exploding… they finish" (DJ1). Finally, concerning 'mental explosions', the mental states conceptualised as explosive are described as joyful reactions; e.g., "when the track explodes it's like… people go wild, they start to celebrate: 'at least, it explodes!'" (DJ3) or "the joy for the merging of two tracks at a moment when something exploded" (P1). This explosive mental state is distinguished from emotions of negative valence: "if it's the moment when the people explode, or if they got a little extra bored in some breakdown" (DJ3). The characteristics of the body and mental dimensions are constitutively related: the psychological state named as explosion is described as a high quantity of dance movement and a wellbeing emotional state like joy, as opposed to the non-explosive states characterised by low quantity of movement and negative emotions like boredom.

Conclusion

Results represent a contribution to the conceptual metaphor theory. Although the drop moment is specific of electronic dance music, the changes on intensity and spectra that characterise it are important musical features not only in this type of music but also in other creative activities such as composition and musical expression during performance in a wide range of genres. Therefore, the mapping of the EXPLOSION image-schema to these musical attributes is likely to appear in other musical contexts. Also, the acoustical nature of physical explosions highlights the aural origin of the EXPLOSION image-schema, and the close link between the sound features of physical and musical explosions (loud sound and charged spectrum) suggesting a monomodal mapping. With respect to the explosive psychological state, the high quantity of movements of the dance can be thought both as a source of body sensations that causes joy, and also as an expression of the mental dimension of a wellbeing emotion. Given the shared schematic structure of these musical and psychological states, it is likely that one of them will acquire its name from the other in the context of electronic dance music parties.

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Connections and Disconnections Between Student and Teacher's Perceptions of a Year 12 Singer's Motivations and Intentions for Continued Singing During and After Secondary School

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Background

Research on community music participation for adults continues to grow (Lee et al., 2018; Rohwer, 2016) with various studies having examined how participation is connected to the well-being of musicians (Matherne, 2022; Sattler 2013). However, little research has examined how adults between school and retirement ages experience music (Rohwer, 2016). Similarly, research on motivation in music is focused almost exclusively on music education in schools (Evans et al., 2013; Freer & Evans, 2018) or through reasons for participation in community bands and choirs (Dabback et al., 2018; Lee et al., 2016; Rohwer, 2016).

Aims

Extending past research, this pilot study explored motivation for participation (including the choice to not participate) as students leave the structures of secondary education. This study examined choral musicians in the transition between formal schooling and early adulthood in one musical community in the Mid-Atlantic region of the United States. Research questions include:

1. What are the perceived motivations for secondary choir students to participate in choral singing in school?
2. What connections and disconnections exist between new graduates' intentions to continue singing and their adult participation in choir?
3. How do choral teachers perceive their year 12 students and recent graduates' intentions to continue singing after secondary school?
4. What connections and disconnections exist students' and teachers' perceptions of the motivation to continue participating in choir?

Method

The teacher was contacted via email with an invitation to participate and to invite students who would be graduating from their choral program to participate in two interviews over the time period before and after graduation from secondary school. The teacher was interviewed providing a profile of their school and the experiences of students in the choral program, as well as answering questions about perceived motivations for their students' participation in choir and their continued participation after secondary school. One student from the school choir was interviewed twice, once in the final months of school and once during the week after graduation. Analysis: This research employed Self-Determination Theory as a model of motivation for participation in music learning (Evans, 2015) and made connections to a prominent theory of leisure participation, the Serious Leisure Perspective (Stebbins, 2020), exploring how early participation in singing through formal education develops leisure pursuits in music. Descriptive coding, using both in vivo and a priori codes based on these frameworks, was employed to analyze the interviews in this pilot study for themes related to motivation and participation in music.

Preliminary Findings

The teacher in this pilot study indicated that social connection was a major motivator for their students' participation in choir, as well as the desire to improve singing ability and a sense of pride in developing the choral program in the school. According to the teacher, despite searching for opportunities to continue singing, past graduates of the program were unable to find choirs available to them in their local communities or that fit their financial situations. The student in this pilot also noted the importance of the scoial connections and working together to accomplish musical goals. They also explained that being in choir was a respite from their other courses and that singing helped to build self-confidence. In particular, the student noted the importance of the relationship with the teacher and the support they received from that teacher. The student intends to continue performing after graduation when they begin university and feels participating will support building relationships in university. They also noted that they are motivated to continue in order to build their musical skills and knowledge.

Discussion

The findings of this study help us to better understand motivation for musicianship and to provide support for amateur musicians across the lifespan. The challenges faced by participants in finding accessible music-making opportunities suggests that music teachers and community music-makers may need to expand offerings to continue to engage musicians as they leave the structure of secondary school. The findings of this study were used to clarify interview questions and to provide insights for a phenomenological study in the same musical community. Stated motivators for participation in choir in this pilot align closely with Self-Determination Theory's assertion that motivation is developed from satisfaction of basic psychological needs. Group accomplishment was noted as a motivator for continued singing, but social connection was highlighted as a major motivator for students to continue from one year to the next. These findings help to reinforce our understanding of the reasons that students participate in choir since bonds of social connection in community music across generations are well-documented (Lee et al., 2016; Matherne, 2022; Sattler, 2013). As social attraction and group accomplishment (Stebbins, 2020) are also two of the rewards of leisure participation, the findings of this pilot also suggest that building the connections between the motivators for adolescent music participation and the rewards of adult leisure activity may help to maintain participation in music across the lifespan.

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The Influence of Expertise in Musical Improvisation on Non-Improvised Musical Performance

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Background

A growing body of literature describes creativity as a fundamental human capacity, rather than a prerogative of just few people (e.g., McPherson & Limb, 2013; Abraham, 2018). While creativity is not solely confined to artistic domains, such fields are consistently associated with prodigious levels of creative expression, with music serving as a prime avenue for exploration of such a phenomenon (McPherson & Limb, 2013; Deliège & Wiggins, 2006). Musical improvisation, in particular, is a musical activity that is frequently correlated with creativity, as both share characteristics of novelty, unpredictability, lack of control, and possibly immeasurability (McPherson & Limb, 2013). The peculiar extemporaneity of improvisation has also been widely studied in music psychology and neuroscience, providing a taxonomy of the rich variety of cognitive mechanisms involved in it (Dean & Bailes, 2014; Beaty et al., 2013). Furthermore, considerable research has been dedicated to exploring the profound significance and meaning of improvisation for musicians, particularly with regards to their personal and professional identities, which are often intricately interconnected (Smilde, 2016; Lewis, 2013). Conversely, limited scholarly investigation has been directed towards exploring musicians' personal encounters with learning and honing improvisational skills, as well as the potential influence of such expertise on their musical style in contexts where improvisation is not employed. Analyzing this dimension may yield fresh perspectives on how improvisation can facilitate the development of musicians' self-identity, and how the mastery thereof can enable improvisers to engage in a personally meaningful dialogue between self and art in non-improvisational contexts.

Aims

The present study seeks to examine the extent to which expertise in improvisation affects non-improvised live performances among skilled musicians. It is assumed that live performance, which encompasses diverse music genres such as pop and rock, serves as an ideal testing ground for this inquiry, as musicians are constantly subjected to an array of unforeseeable factors that can potentially impact the quality of their performance. These factors include, but are not limited to, their relationship with their musical instrument and their interaction with the social context in which they are situated. By employing a qualitative approach, this research seeks to capture the personal views and perspectives of participants on these themes, which will provide a rich and nuanced understanding of the complex phenomena at play.

Methods and Results

As the research is in progress, I will outline the proposed methodology through which empirical data will be collected: semi-structured phenomenological interviews will be conducted online with 8 expert improvisers with different cultural backgrounds. Building upon prior qualitative research involving both skilled and unskilled improvisers (MacDonald & Wilson, 2006; Smilde, 2016; Lewis, 2013), the forthcoming interviews will firstly center on the educational background and improvisational experiences of participants. Specifically, the goal is to gain insight into how informal music-making during the early stages of their careers, coupled with

engagement in high-quality performances and improvisation, enabled them to utilize a diverse array of improvisational skills within various contexts. Secondly, the interviews will focus on participants' experiences playing live non-improvised performances, with a particular emphasis on how their expertise in musical improvisation influences these performances.

Discussion and conclusion

This investigation has the potential to uncover innovative perspectives on improvisation as a skill that cultivates particular tools, such as attentiveness, divergent thinking, willingness to embrace ambiguity, risk-taking, and self-assessment (see Lewis, 2013). These tools may enable musicians to navigate various musical contexts that do not necessarily involve improvisation, expanding their capacity to meaningfully engage with a range of diverse musical situations. The results of this study will contribute to the current body of literature on improvisation and live performance, providing insights that have significant implications for both musicians and music educators. Improvisation should not be taught as a rigidly structured pedagogical process, but rather as a mindset that can be cultivated and nurtured. By fostering such a mindset, musicians may enhance their performance quality and develop a distinctive approach to music and creativity (Hickey, 2009). Overall, this study emphasizes the importance of improvisation as a fundamental aspect of musicianship and highlights the need to consider its role within music education. The insights gained from this research can inform the development of more effective pedagogical approaches that prioritize the cultivation of improvisation as a mindset rather than simply a set of technical skills. As such, the implications of this study extend beyond the immediate field of music to a broader understanding of creativity and skill development in other domains.

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The Rhythm of Compassion: Exploring the Role of Music Listening in Cultivating Self-Compassion

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Background
Music can exert a wide range of emotions in people facing hardship. Indeed, research into music listening and emotions is growing (Dingle et al., 2021), however there little known about self-compassion in this context. Self-compassion is a predictor of mental health and involves acknowledging, alleviating, and preventing suffering within oneself (Gilbert, 2010). According to Neff (2003) it includes three primary components: self-kindness, common humanity, and mindfulness. Conversely, self-judgment, isolation, and over-identification represent its opposite counterparts.

Aims
This study aimed to explore the potential impact of music listening on self-compassion by utilising both quantitative and qualitative data.

Methods
A sample of 296 university students in Australia aged 17-33 (M = 19.32, SD = 2.37) completed a survey on self-compassion and music listening. The survey included the Self-Compassion Scale-Short Form by Raes et al. (2011) as well as a music focused author-adapted version of the scale. Open-ended questions were asked to explore personal experiences of self-compassion through music listening.

Results
The results indicate that most participants (82%) experienced self-compassion as a result of listening to music with the thematic analysis showing that music listening fosters self-compassion across themes such as emotional experience, cognition, connection, music styles, self-care and outlet. The quantitative analysis is currently underway.

Conclusion
This study provides insights into self-compassion and the music use of individuals during challenging times. The findings aim to enrich existing literature on music and emotions as well as build on previous studies demonstrating self-compassion's ability to improve mental health.

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Purposes of potential repetitions during practice of three piano students

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Background in Embodied Rhythm Cognition

Repetition plays a significant role in the acquisition of knowledge and skills in experiential learning, being considered as one essentially intuitive learning principle (Weibell, 2011). In the context of music practice, repetition may involve variability of complex motor skill, directed by sequences of movements managed by performance goals. The normative human creativity is its generative capacity to move beyond discrete stored experiences (Ward, Smith and Finke, 1999). If repetition is considered an intuitive learning procedure, reflection on its purposes may generate information about the nuances of this practice procedure. Therefore, the aim of this communication is to present the purposes of potential repetitions during piano practice by three participants at different academic levels.

Methods

Secondary data analysis was adopted as a methodological resource, which involved the use of already produced data to develop new social scientific and/or methodological understandings about the similar research object (Irwin, 2014). Data from the present research were previously collected by Mantovani (2018). Three practice sessions of three participants at different academic levels were considered: Miguel (university outreach student), Amanda (undergraduate student) and Jeremias (master's student). All selected participants studied sonata movements from the Classical period and had three months of piano practice of such pieces.
The analysis of the practice records was initially carried out through two organizational steps: (i) selection of parts of piano practice (clipping) bearing repetitions and (ii) analysis of the actions involved in such repetition, including the purpose context. The focus of attention during practice was also considered. Recurrence and frequency of such repetitions (same clipping) were evaluated by two referees.

Results

In a total of ca. 20 min of practice, Miguel repeated for 7 min 32s. The ratio between repeating and rehearsing for the performance was 1:3, indicating that the participant spent more time playing than using repetition as a practice strategy. Such behaviors is consistent with the instrumental practice literature, which reports that novice students spend more time playing the pieces than carrying out specific strategies to solve specific problems (Hallam, 1997a; 1997b; Nielsen, 2008, for instance). During Miguel's practice, five types of purposes of repetition were identified: Topographic retention, correction, clarity, fluency and maintenance procedure. His practice seemed aiming at strengthening motor programs. Particularly, in the repetition procedures, his actions suggested to be carried out as warm up. Therefore, Miguel insisted on the movement actions stressing fingers articulation, accentuating strong beats, with sharp dynamics, with separate hands and diversifying the tempo, seeking to acquire the necessary motor skills to performance a large piece section. Consequences of the repetition actions also involved errors, bumps, rhythmic inconsistencies or asynchrony between hands as generating incidents. At other times, the purpose of maintenance procedure occurred in passages in which the participant already has presented fluency indicating his searching for reproducibility.

The modus operandi of Amanda's practice involved playing with separate hands and then with both hands. Tempo alternation was also involved. These procedures corresponded to the main repetition strategy. The repetitions, by isolating parts, were performed to obtain clarity, performance maintenance and fluency. For Jeremias, most of practice time (ca. 16 min.) involved repetition actions, while ca. 5 min was devoted to rehearsal for performance. His repetition procedures corresponded to 3:1 ratio (repetition versus playing). In the present case, six purposes were identified: Correction, topographical retention, clarity, maintenance procedure, fluency and refinement. Jeremias fragmented his practice by the structure of the piece, shifting the focus of attention at each texture change on the score. Therefore, he practiced by studying short excerpts, adding a new segment, and reviewing the increasing the music fragment throughout the entire practice session. It is worth noting that Jeremias practiced a piece that was already memorized and fluent. The repetitions are mostly performed in a lively way, with a firm and articulated touch, indicating a repetition phase aiming at keeping the fluency, clarity and refinement of the passages.

Final Remarks

Six types of purposes of repetitions were found in the practices of the three participants in different academic levels, i.e., topographic retention, correction, clarity, fluency, maintenance procedures and refinement. All cases approached the repetitions emphasizing motricity, however, with subtle differences: Miguel employed an articulated strong touch with insistent repetitions in the passages that he worked motor programs. Amanda, on the other hand, sought motricity through the insistence of repeating isolated parts and despite having the same touch as Miguel, her way of performing was more subtle, with a softer sound. Jeremias addressed the repetitions to maintain his already acquired motor aspect, which enabled him to think on other simultaneous demands such as dynamic and agogic. Repetition was revealed (and described) in the participants' practice as an essential tool through which they used to acquire, maintain or reproduce a given performance skill. In addition, repetition proved to be a basic procedure in all cases to achieve any desired purpose here described. The present results provide cue of generative ways of thinking in the repetition procedures. Further empirical research is necessary to deepen the comprehension of such phenomenon.

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Digital Musicianship: Evaluation of the Digital Score Research from the North American Tour 2023

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Background

At the start of 2023, DigiScore visited the US and North America to evaluate higher education music students' wants and needs from digital musicianship education through engagement with digital scores. This work is part of the DigiScore research project focusing on the analysis of case studies and research in music departments worldwide known as "Roadshow".

Aims

The tour gathered data from the point of view of 'a person's ability to perceive, understand and create sonic experiences', through the broad range of musicking activities revolving around digital score creativity. Here, we hope to present the results of tour through an emerging theoretical framework which encompasses the following areas of interest:

- Skills: what are the skills needed to articulate and interpret features and effects of digital score musicking?
- Contexts, Cultures & Literacy: what contextual, cultural literatures and insights are required to inspire creative thought and support musicking ideas
- Musical Identity and Creative Practice: what are the new modes and possibilities of creative practice?
- Perception and awareness of (digital) music: how do musicians actively analyse digital score music, and what interpretations are they generating when making music?

Main contribution

We conducted two types of polls, the first was embedded Mentimeter slides that allowed the students to engage and contribute to the discussion through the 90-minute lecture. There were also two online survey questionnaires made for the roadshow tour, one addressing the students who would attend the DigiScore lecture and another to collect responses from the students participating in the workshop with digital scores.

By evaluating digital musicianship through digital score creativity we can start to see patterns that suggest it is shifting across 4 realms: skills, contexts, identity, and awareness. We wish to stress that these four realms are immutably interconnected and should not be isolated to the point of exclusivity of the influence of others. The dynamic behaviour of these patterns suggests a DST (Dynamic Systems Theory) approach rather than a separation by each category. For example, skills that are enacted in real-time are done so because of the individual's context and education, which has informed how they perceive and what they are focusing their awareness on.

Discussion and conclusion

Through the early analysis of our data, it is becoming clear that all four categories are mutually interdependent. We are also able to see that *creativity* plays an important part in digital musicianship setting it apart from regular musicianship. It is also a primary force in this

dynamic system as it draws from a person's context and background, contributes to the music identity and helps in the self-evaluation of one's digital skills and learning processes.

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Exploring final-note melodic expectancies using pupillometry

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Abstract

Pupillometry has become increasingly popular in cognitive sciences in the last decade, and it has also been widely applied in various areas of music psychology. However, to our knowledge it has never been applied to study melodic expectancies, which this study seeks to address. As a follow-up to our previous study (Nagy et al., 2022), the present experiment aimed to examine the final-note expectancies of listeners in a Western melodic context using pupillometry. We specifically focused on the direction of the final interval (i.e., downward vs. upward step) and the effect of key (major vs. minor melody). To achieve this, we composed two 8-bar melodies in C major and A minor, with their final notes altered to randomly finish on any semitone between an octave upwards and downwards with respect to the original tonic final note. We created two additional melodies by transposing the first two melodies, resulting in the C major melody becoming C minor and the A minor melody becoming A major. The final notes of these transposed melodies were also altered in the same way as the original melodies. Participants (N=34, 20 females, age = 23.25, SD = 3.64) were divided into two groups: the first group listened to the first pair of melodies (C major, A minor) and the second group to the second pair of melodies (C minor, A major), respectively. Each participant listened to all possible final-note endings for the melodies assigned to their respective group. Pupil dilation was measured using a Tobii TX-300 eyetracker (with a 300 Hz sampling rate). Our results revealed that final notes ending lower than the original final note elicited significantly larger pupil dilation than those ending higher, indicating that the processing of downward final note-steps require more mental effort in listeners. However, there was neither significant difference in pupil dilation between major and minor melodies, nor any difference in pupil dilation between the two versions of the melodies.

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Let's Jam: Collective Music Improvisation and the Process of Attunement

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Background

Music improvisation has been an integral part of human experience across cultures and provides a rich ground to explore creative collaboration (Veloso, 2017), self-organisation (Schiavio, 2018) and improvisational cognition (Sol, 2021).

Aims

In this line, the larger aim of this project is to integrate the current state of research on collective music improvisation with enactive theory. For this purpose, an exploratory case study was conducted, which investigated the lived experience and sense-making of a group of musicians with different musical backgrounds improvising together. The case study was designed to explore collective music improvisation, identifying moments of interpersonal synchronisation and group flow. Particular attention was afforded to the process of attunement, tracing strategies of decision-making used by the group to lay down a common path in musicking. Deprived of the certain ground of established music traditions and guided by a shared intention to perform a 'good' improvisation, how is music utilised to establish 'meaningful' communication? What can we learn from music improvisation about the self-organising processes of social cognition and collective decision-making? What are the necessary conditions to enable a shared scaffolding to emerge?

Method and results

The research was conducted in the author's music studio in Vienna and followed a three-fold design, including three improvisation sets interspersed by short open group reflections, microphenomenology-inspired individual interviews, and a group review session of a selected improvisation set. All sets were recorded in audio and video and complemented by time stamps. Participants included a professional sitar player educated in classical Indian music, a balafon player trained in traditional Senegalese music, and a TaKeTiNa rhythm practitioner playing the berimbau. The author conducted participant observation, playing the drums. As data analysis is still ongoing, the presentation will focus on study design, methodology, and data collection, while elaborating on some emerging insights from interview data.

Discussion and conclusion

Preliminary findings highlight the ability to create common ground, constituted by intra- and interpersonal attunement, as quintessential to transcultural music improvisation, guiding decision-making. In their optimal equilibrium, these elements enable autopoietic musicking, i.e. *musicopoiesis.*

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Contributions from the multimodal aesthetic perspective on early development to the study of theatre spectatorship: An analysis of forms of vitality and present moments in a theatrical performance.

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Background

Semiotics, considered a key discipline for theatre theory, understands everything on stage as signs to be decoded (De Marinis, 2005; Fisher-Lichte, 1999). Phenomenological approaches, instead, see watching theatre as a perceptual global experience. States (1987) argues in favour of a binocular view comprised of both. Hart (2006) argues that such vision becomes possible only insofar as semiotics does not understand language as disembodied.

I am designing a way of observing and analysing theatre utilizing findings from the multimodal aesthetic perspective on human development, specifically Daniel Stern´s theory (1985, 2004, 2010). This perspective assigns a fundamental role to intersubjective experiences pre-existent to language in infancy, running parallel to it in adulthood; it also views meaning and language as fundamentally arising from the body. Stern found a direct link between early intersubjective experiences and time-based arts, offering a rich framework for deeper, complex understandings of watching theatre.

I present my observations of one play through the use of micro-analysis which, like a magnifying glass, allows for the emergence of multiple rich subtle events taking place in short moments. I specifically apply Stern´s notions of forms of vitality and present moment. Forms of vitality is the way in which the human mind deals with dynamic experiences, crucial in interpersonal encounters and time-based arts. It refers to the style of doing things, the energetic and temporal profile of movements, sounds, emotions, thoughts. Present moments, proposed by Stern to account for "now" experiences, are continuous, analogic, flowing wholes, intuitively grasped as global units with boundaries, like a musical phrase.

Aims

To analyse theatre spectatorship from an embodied, multimodal perspective, enriching its understanding as a global, immersive, intersubjective experience. To identify, in one specific theatre production, forms of vitality, present moments, and procedures combining the meaningful and the sensorial.

Main contribution

I present parts of my analysis of the play Krapp´s Last Tape, by Samuel Beckett (1958). The version I consider for this analysis is that of Robert Wilson, an acclaimed contemporary theatre director. Wilson and Stern held a longstanding creative relationship that influenced each other´s work; they explored together the concept of forms of vitality in theatre (Wilson, Stern & Bruschweiller-Stern, 2009). I watched Wilson´s version live, and subsequently analysed it through iterative observations of video recordings. Specifically, I look at the temporal dynamics of body movements, voice, other scene-sounds and light over short intervals. In passages with spoken words, I pay attention to meaning conveyed in relation to the above, in the context of the overall narrative of the play. Complex creative procedures deployed by Wilson become

clear; I have created original categories to name them, at the same time identifying their relationships with forms of vitality and present moments. For example, the stylization of goal directed actions operates by running on a vitality form that falls outside the range of vitality forms normally used for that action in everyday life, creating aesthetic effects and breaking realistic illusion. Scaffolding of meaning uses clear-cut vitality forms (i.e. sudden, crescendo, abrupt, gentle) carried by movements or sounds to support meaning emergent in a specific moment, anchored in the overall narrative of the play. Certain pauses in movement/sound operate to create boundaries between present moments; multimodal occurrences thicken the now by overlapping events. Some procedures work with conjunctions or disjunctions of vitality forms in different modalities, others create diffuse meaning or a "floating intentionality" (Cross, 2010) by unfolding unusual movements/sounds.

Discussion and conclusion

This paper continues previous work using the notion of vitality forms in relation to theatre (Wilson et al., 2009, Stern, 2010, Wojciehowski, 2014, Bussières, 2018, Weeks, 2013, Nudler et al., 2020); it deepens it by looking in detail at the specific ways in which vitality unfolds, in combination with meaning. Micro-analysis through video, deployed by Stern for his studies of mother-infant interactions, has proved, along with concepts stemming from his theory, to be a valid tool for observing theatre performance, revealing a complexity otherwise difficult to grasp. Such richness most likely impacts on spectatorship, contributing to the watching theatre experience, albeit not in a completely conscious way. This method reveals that layeredness, following from there that theatre, besides being "a density of signs and sensations", as Barthes famously stated, is also a density of present moments and vitality forms.

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Presence, immersion, and personality predict enjoyment and social experience of a virtual reality Western art music concert.

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Background
Previous research has found that digital engagement with Western art music concerts does not elicit a social experience to the extent that live presentations of the same music achieve. It is often suggested that mediated or mediatised performances typically do not recreate the authenticity and presence that concert goers expect or seek. Virtual reality (VR) is increasingly being used in various sectors to mitigate these limitations since it can create a more immersive and active experience for users, with particular emphasis on increased presence and immersion. Despite this, there is limited research that explores the use of virtual reality to present concerts.

Aims
We sought to explore the general experience of virtual reality presentations of a Western art music concert, and whether personality predicts enjoyment of this mode of engagement. More specifically we looked at the extent to which a virtual experience is considered social by participants and whether this is predicted by any interindividual characteristics. Finally, we tested whether perceived presence predicts the social experience of a virtual reality Western art music concert.

Methods
To do so, 50 participants were presented musical stimuli including Beethoven, op. 104, Brett Dean, "Epitaphs", and Brahms, op. 111 in virtual reality. A monoscopic 360° VR recording was professionally produced, based on the live string quintet concert. This was then presented to participants using an Oculus Quest 2 head mounted display, with ambisonic sound, via headphones. Since there is little previous research on the subject, a series of open questions were included to explore the general experience, both positive and negative, of the virtual reality concert. SEC Scales were employed to capture the social experience of participants, and the PANAVA to measure change in mood, in addition to the multimodal presence scale, and the brief version of the Big Five Personality Inventory.

Results and discussion
The findings suggest that the overall experience of a virtual reality concert can be categorised into a model in which concert factors and the overall user experience combine to contribute the experience of immersion and presence. Personality was found to predict the enjoyment of a Western art music concert presented in this way, specifically extraversion, agreeableness, and openness to new experiences. Social presence, and physical presence predict the extent to which participants rated the concert as providing a social experience, based on the MPS and SECS. These results significantly contribute to the field of research on virtual reality and music.

Putting musical feelings into words: An exploratory study of children's music-evoked experiences

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Introduction

A developmental study of children's music-evoked feelings may offer insight into how humans begin to create meaning, imagery, emotions, and other sensations from musical sounds. There is very little empirical research exploring the variety and diversity of children's subjective responses to music, despite extensive examination of their ability to recognise or discriminate emotions said to be *expressed* by music. To date, for example, no psychometric instrument for measuring music-evoked feeling has been validated for use with children, and there is no standardised format for recording children's verbal responses.

Aims of the study

In preparation for a longitudinal inquiry into children's subjective responses to music, the purpose of this exploratory study was to learn how children use language to describe feelings elicited by stories and music and to design a means to record their verbal responses. We recruited 26 children aged between five and eleven years to test the age-appropriateness of a categorical measurement scale, and, additionally, we collected children's free descriptions of feelings evoked by musical stimuli to understand more about their capacity and willingness to report on their music-evoked experiences.

Methods

We adapted six terms from three pre-validated rating scales (Zentner et al., 2008; Coutinho & Scherer, 2017; Cowen et al., 2020). These were *happy, sad, tense, relaxed, powerful* and *longing for something in the past.* In a listening experiment, we tested children's understanding of our adapted terms using short stories and asked them to describe and rate feelings induced by six musical extracts taken from pre-validated examples (Widen & Russell, 2010b; Eerola & Vuoskoski, 2011; Ali & Peynircioglu, 2006).

Results

For the experimenter-selected terms, a chi-square test revealed a significant association of moderate effect size between stimulus emotion category and children's selected emotion for both the stories, $X2 (5, N = 26) = 20.09$, $p = .001$, phi=.359, and musical extracts, $X2 (11, N = 26) = 26.15$, $p = .006$, phi=.409. Most children chose the target emotion category for all six stories, and for the *happy, relaxed, powerful and tense* music. *Relaxed* was chosen more often than the target emotion for the *longing* and *sad* music. In their free descriptions, children used *scared* more frequently than *tense*. Children's free responses revealed a wide range of feelings of which five emerged repeatedly: *excited, proud, heroic, brave* and *triumphant*, as well as visual imagery and stories.

Discussion

Our results indicate that children aged five years and older are aware of and able to describe qualitatively different subjective experiences induced by different pieces of music. Our participants understood and could use our six adapted terms in relation to both stories and music, results which were corroborated by their free responses, although *longing for something in the past* and *tense* required some explanation to the younger children. Nevertheless, the concept of nostalgia appears to have been understood, often rephrased by the children as "looking back" or "wanting to go back". The ubiquity of reports by adults of music-evoked nostalgia, along with the frequency of its appearance in our participants' free responses, suggest this an important concept to investigate in developmental research. Replacing the word "longing" with "wishing" or "wanting" might render our term more accessible to young participants. Furthermore, their responses offer evidence of a capacity and willingness to describe subjective responses to music in considerable detail. Through thematic analysis, we found that the free responses could be grouped into thirteen conceptual categories, many of which map onto categories which feature in pre-validated scales used with adult listeners. In the interest of developing an age-adaptive response format, a categorisation task with a small number of terms may be accessible to all participants. Incorporating a free-response option allowing children to use their own vocabulary may elicit data that can inform about their emotional granularity Barrett (2017), as well as more detail about their music-evoked experiences. The quality and diversity of free responses from even our youngest participants, along with recommendations from the literature (e.g., Gabrielsson, 2010; Cowen et al., 2020), endorse an inductive approach when conducting exploratory research. Our listening experiment will be tested further online with the aim of increasing the size and heterogeneity of our sample in search of an optimally appropriate format for young listeners.

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Analysis of Cultural Differences in the Creation of Romance and Break-up Playlists

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Background

Extending previous work examining contextual listening through the lens of creating and listening to playlists (Krause & North, 2014), the present research considered whether there would be differences in the music selected for playlists concerning two love-related themes, "romance" and "break-up".

Aims

Given previous research on cultural differences concerning popular love songs (Cachia & Tsai, 2021), our research question asked whether there would be cultural differences in music listening practices concerning playlists for different situations and their use in everyday life.

Methods and Results

Semi-structured, individual interviews *(n = 52)* were conducted with participants residing in Australia, Brazil, Nigeria, Singapore, and the United Kingdom. In the interviews, participants were asked to discuss their everyday listening practices (including making and using playlists specifically) and to think specifically about how they would construct playlists for two love themes, "romance" and "break-up". Additional questions asked the participants to characterize the music they would select for their "romance" and "break-up" playlists from Cachia and Tsai's (2021) themes (i.e., crush, physical, romantic, ambivalent, heartbreak, over someone, and reminiscing). A reflexive thematic analysis (Clarke & Braun, 2013) was performed using transcripts of the interviews.

Preliminary findings indicate that most participants, regardless of country of residence, listen to music using their mobile phones. Those residing in Australia, Singapore, and Brazil tend to access music via Spotify, while people residing in Nigeria listen to music via any music player default on their phone. People in all countries varied in terms of how often they made and listened to playlists (personal and pre-made lists recommended by Spotify). For some, framing a playlist to a theme such as love also did not match their usual way of grouping music into a playlist (e.g., by activity, genre, or artist). Nonetheless, participants entertained the thought exercise and said they would select songs based on lyrics, emotions, what the people of their community listened to, or associated memories (i.e., of a partner) to populate love-themed playlists. When looking specifically at the data concerning Cachia and Tsai's (2021) love song categorizations, the romance playlist music was most often described as crush, romantic, physical, reminiscing, and ambivalent. In contrast, heartbreak, break-up, angry, sad, emotional, reminiscing, depression were used when characterising the break-up playlist. There were no differences based on the participants' country of residence.
Additionally, future analyses will speak to the cultural similarities and differences in the types of music selected for the contrasting playlists.

Discussion and Conclusion

Implications of this study concern improved recommendation algorithms for playlists designed for the public, based on preferred listening choices.

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Exploring the use of meditation as a tool to overcome music performance anxiety

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Background

Music performance anxiety (MPA) affects a large number of musicians preventing them from performing to the full extent of their abilities (Kenny, 2011). Musicians often employ a variety of tools to cope with the multifaceted symptomatology of MPA. In recent decades, meditation has become a frequently used tool and an object of interest for researchers (Butzer et al., 2016; Czajkowski et al., 2022; Lin et al., 2008). Although a distinction is made between the types of meditative techniques and their impact, this is still not thoroughly investigated, particularly in regard to the effects on MPA. This study may be of interest to musicians who use meditation as a tool for emotional and cognitive self-regulation and to educational institutions that aim to support the emotional growth and well-being of students in conjunction with the development of technical and musical skills.

Aims

The purpose of this research is to investigate which meditative techniques are most commonly used as a tool to counteract MPA and what are their main effects, proposing a potential negative association between meditations and MPA symptoms. In three different qualitative studies, the perspective of specialists working with musicians suffering from MPA, and of musicians was examined in detail. First, a preliminary interview study was conducted with 16 music performance coaches, teachers, and psychologists. Findings and potential associations between meditative techniques and potentially mitigated symptoms of MPA were further explored in two subsequent case studies. These focused on mindfulness and the cognitive mechanisms of emotional regulation involved in the meditative practice of 12 students and professional musicians attending two meditation interventions of 21 days and 4 weeks.

Methods

A qualitative approach was considered suitable to explore the different experiences of the participants (Williamon et al., 2021). Both the perspectives of specialists working with musicians suffering from MPA and of musicians suffering from MPA (university students and professionals), were investigated. The first interview study included 16 semi-structured interviews with experts using meditation in their work with musicians suffering from MPA, conducted online with Zoom and Skype. Interviews were transcribed and imported into the Nvivo software, with which a 6-step thematic analysis was conducted (Braun & Clarke, 2006). A subsequent case study and a grounded theory study explored the effects of two meditation interventions. A total of 12 students and professional musicians attended the meditations courses practicing a total of 6 meditative techniques. Qualitative and quantitative data were collected pre- and post-intervention. The qualitative data of the case study were analysed with interpretative phenomenological analysis. Pre- and post-intervention questionnaire scores were compared to explore levels of mindfulness, MPA, mental rumination, self-compassion and self-efficacy (study 2), mood and MPA (study 3). Grounded theory was considered the most

appropriate approach to analyse qualitative data of study 3 to examine the processes of emotional self-regulation in relation to MPA (Charmaz, 2014; Williamon et al., 2021). Preliminary models of cognitive and emotional regulation mechanisms mitigating MPA were developed, with potential association between meditations and MPA symptoms.

Results

Findings show which meditations are most commonly used to counteract MPA and draw a potential association between the techniques and MPA symptoms that might be alleviated through their practice. Findings from the case study and grounded theory study confirm potential associations between meditative techniques and the perceived reduction of MPA symptoms from the students and professional musicians' perspective. Cognitive mechanisms of emotional regulation that occurs with meditative practice are illustrated within preliminary models in relation to their effect on MPA symptoms.

Discussion and conclusion

This research expands on previous studies on meditation as a tool to counteract MPA, outlining in more detail the characteristics and effects of meditative techniques in relation to the symptomatology of MPA. Results echo the previous research in musical and extra-musical context, which showed a general wellbeing and mindfulness improvement effect and a reduction in MPA by practicing meditation (Butzer et al., 2016; Czajkowsky et al., 2022; Lin et al., 2008; Singer & Engert, 2019). This research can be of interest both for musicians who independently use meditation as a tool of emotional self-regulation, and for educational institutions supporting the development of emotional skills besides foundational technical musical skills of future professional musicians.

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Students' collective creation in virtual environment. A case of study in videoconference platform during COVID-19 lockdown

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Background

Making music together requires mutual understanding in face-to-face and body-to-body interactions. Sound, gesture, movement and conversation are some of the resources most used by musicians to communicate within and outside the musical task. The roles established by professional practice facilitate the development of group dynamics. In previous research, leadership roles have been found to be central, especially in rehearsals where scores of musical works are performed (Gilboa & Tal-Shmotkin, 2010). Traditionally, music composition has been developed and taught as an individual task. In situations where music is created collectively, however, collaborative modes of production must be negotiated and agreed upon, reducing the egocentric perspective. In social distancing instances (such as the COVID-19 pandemic), artists tend to develope artworks through digital platforms and formats. Videoconferencing can be tricky to musicians' interaction, due to low-fi sound and latency (Wu, 2021).

Aims

This paper aims to investigate musical interactions of non-professional musicians to perform a creative group task in virtual environments.

Method

A case study was designed with 3 undergraduate music students: S1, pianist (Male, 28 years old); S2, singer (Female, 21 years old); S3, guitarist (Male, 56 years old). Task was to create a musical arrangement of Lágrimas Negras (Miguel Matamoros, 1931). They interacted and recorded the meeting vía Zoom. After the rehearsal, personal experience information regarding videoconferencing, group dynamics and individual assessments, was obtained through an online questionnaire. The dialogues were transcribed. The video was edited to achieve a better visualization of the participants for microanalysis. The whole rehearsal (1h-46m) was divided identifying work units, according to collective goals and strategies to achieve them. Then, 4 fragments that presented a higher degree of interaction were selected (F1: 2m-57s, F2: 2m-40s, F3: 5m-07s and F4: 2m-28s). Actions were identified in multimodal microanalysis and annotated (ELAN 6.4) and discussed by both researchers. Resulting data consisted in the following actions: musical (vocal/instrumental) and verbal utterances; direction and change of position (body and gaze); gestures (hands and face). Actions were grouped into non-mutually exclusive interaction modes (verbal and musical). Temporal measures were obtained for each annotation.

Results

Fragments 3 and 4 presented more musical actions with simultaneous performances: F3 with unmuted microphones; in F4, S3 played guitar accompaniment and the others played along with muted microphones. F1 and F2 presented non-simultaneous performances. Verbal interaction modes consisted of explaining, choosing, endorsing and valuing musical ideas; while musical interaction modes supported sharing (propose, show, test and/or blend) ideas in sound.

Temporal proportion of each mode (verbal-musical) differed between fragments (F1, 66.08%-33.92%; F2, 42.07%-57.93%; F3, 52.47%-47.53%; F4: 31.58%-68.42%). Throughout the 4 fragments, S3 spoke and performed music (playing/singing) for a longer time than the others and S2 did it for the least time. Additionally, only S1 spoke more than he performed.

Regarding reciprocal interactions, the 3 students participated simultaneously most of the time (79.70%). The rest were one-to-one exchanges -while the other performed individual actions- (17.11%), and moments without exchanges (3.19%). All participants looked at the screen longer than other directions. Specifically, they preferred the right side, where participants' cameras were displayed when the screen was shared. The microanalysis of individual cameras allowed to identify relevant gestures and movements: a) agreement (nodding, thumbs-up) (19 times); b) sway (torso and head) in resonance with musical actions of a partner (10 times, 11.06% of total time); c) coupling of hand gestures and verbal enunciations (18 times); and d) spontaneous smiles (16 times). S2 performed 2/3 of these gestures and movements. S1's participation was highlighted by his partners in the questionnaire, mentioning positive attitudes for interactive creation. The interaction dynamics were analyzed from previous data. It was considered tha understanding and fluency in communication predominated during interaction, generating a pleasant climate. The group overcame limitations and occasional difficulties by helping each other or reorganizing tasks. This dynamic was achieved due to some key aspects identified in each participants' features:

S1 helped to use technological resources in a friendly way for the group and managed the exchanges between all participants in collective creation.

S2 stood out performing attentive, receptive and responsive actions, observed in movements and sound productions simultaneously with other persons.

S3 provided in greater extent the sound material for collective elaboration, due to his experience with the guitar and familiarity with musical style. Nevertheless, he also presented limitations and technological issues that affected group functioning.

In summary, the dynamics were based on all members' contributions. These avoided interruptions and enabled an ongoing flow of ideas and elaborations to achieve task.

Discussion and Conclusion

In absence of face-to-face's features (spatial and temporal coexistence), the group showed a particular use of Zoom, adapted to their preferred modes of interaction. This musical modalities featured (i) situations of individual sound elaboration (listening and playing along with others' audio in self space-time) and (ii) sound simultaneity -beyond synchrony- in shared virtual space. As previous research showed, students were flexible to exchange roles at different moments of the task (King, 2006). In a creative activity, the leadership role is softened in favor to pluralism and flexibility in interpersonal interactions. In future research we aim to deepen this and other type of creative group activities. Also, to compare professional and non-professional musicians populations performing group creative tasks.

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The emergence of EDM creative synthesizer performance

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Background

The synthesizer, both in its physical and virtual versions, is the main instrument of Electronic Dance Music (EDM). Synth musical playing includes creative actions that, despite having similar characteristics to a traditional instrument performance, would not be entirely the same. Some of the aspects that differentiate this special kind of performances are the actions prior to the sound production which involves the adjustment of parameters, bringing the synthesist's performance closer to the creative actions of a composer, a producer or a sound technician. On the other hand, not all the actions that take place during the performance activate or produce the sound, but rather are oriented to modify timbral aspects of it while the devices produce it automatically. Instrument automation is possible by triggering a pre-programmed sequence. Synthesizers, unlike traditional instruments, do not provide us with natural haptic feedback, since they are not direct energetic-mechanical interfaces. The loss of sense of contact with our body is frequent as a result of mapping freedoms (Leman, 2008). Synth players' performance has the musical expression limited to highly average processes by the programmed or activated parameterization through buttons, keys, sliders or wiring. In recent works, similar aspects have been studied for DJ performance in electronic music (Marchiano, Martinez, 2018).

In this work we will empirically study the performative and creative processes of the electronic musician in interaction with three different synthesizers within the framework of embodied and enactive cognition. The hypothesis that guides this proposal is that, the interaction with these technologies allows the construction of new musical meanings and aesthetically novel music. These would be possible due to the special kind of bodily experience that they enable in relation to the expressive sound-kinetic patterns of music (Martínez, 2014).

Aims

Explore the performance of the synth players to recognize the basic processes and strategies from which they creatively make music. Understand the way in which synth players think and reflect about their own practice. Categorize embodied and imaginative modes of interaction for each device studied.

Methods

Semi-structured interviews were conducted with a group of 5 EDM synth players musicians (within the spectrum of techno and house), from La Plata and Buenos Aires (Argentina) after they played over a techno backing track with a set that included the following devices: Roland TB-303, Minimoog Model D and Korg MS-20. Procedure: Each participant initially had a 10-minute familiarization with the set. After the familiarization, he was asked to design a patch using the set to produce sound materials; and finally he was asked to play them on the backing track. The session took about 1 hour, and the interviews were conducted at the end of it. The performances and interviews were video-recorded and watched. Video and interview data were examined with qualitative analysis tools (NVIVO 11 software) based on the constant comparison method (Grounded Theory) from which novel descriptive categories were induced.

Results

From performance and interview analysis, six categories of actions that implies different modes of interaction with devices were derived. This actions take place in different moments of the performance and involve both the production of the patch and the execution of sound materials over the backing tracks: (i) Patching: preparation, construction, manipulation of the routes of the audio and control signals through cables or options available in the interfaces to elaborate a sound that will be activated later (ii) Inscription surface: involves the process of fixing ideas in a sequencer and later the transformation of the sounds produced. (iii) Triggering: the manual execution of sound events using traditional keyboards, buttons, or other components of the synthesizer interface. (iv) Tweaking: the control operations that are carried out on a sound continuum that materializes in the interface of a synthesizer in a pre-built patch, where tactile perception, the resistances that interfaces provide. (v) Live Patching: the live construction of a patch becomes part of the performance. (vi) Listening: also includes observation and reflection on the current state of a synthesizer's parameters.Finally, links were established with imaginative aspects of the performance that account for its sound discursive intention in relation to a series of timbre categories such as Rise, Pads, Leads, Pluck, etc.

Discussion and conclusion

The synthesizer determines the creative processes, performance, production and sound design. The materials produced by synth players are a consequence of the performative possibilities enabled in the first instance by the interfaces of the synthesizers. Although the performances have resources and gestures present in other traditional instrument performances, due to its particularities, new performative modes of interaction emerge that are not general and depend on the particular design of each synthesizer. Synth players are able to read the interface of the synthesizer to anticipate the possibilities that the synthesizer offers. The awareness of synthesis architectures acts as a scheme on which the synthesist can project the sounds expected and possible to produce. The study of synth players performances is an opportunity to evaluate new technologies in musical creation, and can give us valuable clues and information to think about how to train future synthesizer performers. This research can be useful in the dimension of instrument design to create technologies where interfaces enable current performance practices and encourage the emergence of new creative practices.

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Towards the Concept of the Embodied Voice: Voice in Action

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Background

The act of singing is a bio-psycho-social activity, with all the complex interactions necessary to balance the physiological, psychological, somatic, proprioceptive and cognitive elements involved. Scientific investigation has shown the effect that the act of singing has on these interactive processes. But little work has been done to measure how the balancing of these processes affects the performing outcome itself. The Embodied Voice is a progressive longitudinal study developed in collaboration with Santa Fe Lírica, alongside the diploma singing course at the Instituto Superior de Música in the National University of the Litoral in Argentina, designed to quantify the perception of qualitative changes in performance outcome that can occur over a period of consistent study. Here, these perceptions were investigated further, using the same parameters, by adding integrated movement.

Aims

To assess the degree of association between the perception of changes that teachers and students experience in the singing studio by designing a simple method of quantifying qualitative observations while avoiding the possibility of subjective bias.

Method

23 singing students, 15 female and 8 male, took part in a four-day course, in turn as active students, and as observers. The age range was 18 to 36, with ability ranging from first year students to semi-professional. 8 students participated in both classical and jazz/pop categories, 12 in classical alone and 3 in jazz/pop alone. Each prepared a piece of about 4 minutes in length. Each day began with a group movement class incorporating basic stagecraft. Then, observed by the group, a forty-minute period was used for collaboration between teacher and each student to create individual scenes with simple integrated actions relevant to the repertoire. Each student in turn presented their scene on stage in concert to a public audience. The students were asked to evaluate on a scale of 0 to +/-10 their perception of vocal, physical and psychological changes perceived in themselves as performers, and as observers in others, from the start of the course to the completed performance. The students were numbered to assure anonymity in the evaluations, and the evaluations were submitted anonymously. The evaluations were collated and put into simple chart form.

Results

In all instances except one there was a perceived improvement in performance outcome in all categories, with variance between the categories of each individual. The range for each individual was large +10% to +76%. However the range of mean evaluations was +45%, which coincidentally was also the median of the range.

Discussion and conclusion

It was important to remove subjectivity as far as possible and present a quantitative analysis. The study acted as its own control as all students were subject to the same conditions. The

added element of being observed acted as good preparation for public performance. The characteristics and tendencies of each individual were assessed and addressed in the time available, ensuring that each student, while challenged, felt comfortable with the outcome, free from unnatural impositions.

The scale of evaluations was not an absolute against which all students were compared, but reflected changes at whatever level of development the individual student happened to be. The difference in range of evaluations did not necessarily reflect the difference in ability of the students. A small percentage improvement for an advanced student may be significant in terms of creative advancement, whereas a less advanced student may experience a greater change from a more basic level of development without approaching the same level of creativity. The range of mean evaluations, 40% to 49%, is more indicative. Likewise, the final overall mean of 45% acts as a crude indicator of the overall beneficial effect, although neither can be guaranteed for every individual. The results were generally in line with the teachers' evaluations, with some small variations in detail. It can also be added, on a subjective level, that some of the performances were truly affecting. The additional cognitive, proprioceptive and psychological burdens of adding movement to the already complicated act of singing might be expected to result in an inhibition, or even a deterioration, of the performance outcome. However, this study evidenced a liberation of inhibition, a general improvement in vocal, physical and psychological materialisation, and a more expressive performance outcome, enhancing the individual performer's creativity.

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The Embodied Voice: The creative interaction between teacher and student as the basis for developing a holistic pedagogical approach in the singing studio and in performance

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Background

The act of singing is a bio-psycho-social activity, with all the complex interactions that that involves. The singing teacher's role is to facilitate the student's understanding of this complex process. For a successful learning outcome it is essential to balance these physiological, psychological, somatic, proprioceptive and cognitive elements in a holistic pedagogical paradigm. Extensive experience has shown that a teaching model adapted to each individual invariably improves performance and psychological perception. Towards the concept of The Embodied Voice is an ongoing activity in collaboration with Santa Fe Lírica, complementary to the diploma course at the Instituto Superior de Música in the National University of the Litoral in Argentina.

Aims

Its aims are two-fold: to challenge students to maximise their creativity and performance potential in a nurturing environment, while quantifying, where practicable, qualitative empirical judgement.

Main contribution

Each student, whether beginner or advanced, is given technical and musical guidance in a singing master class format. Subsequently, integrated movement is added. A group class establishes simple but effective principles of stagecraft. Then each participant brings a song or aria they have prepared musically (classical, jazz or pop) to work on appropriate expressive movement and gesture. At each stage the resulting performances are given in the context of public concerts. The activity culminates in student participation in a fully staged operatic production.

Discussion and conclusion

The presentation will illustrate how the student discovers optimal voice from primal voice through assimilation of the various elements involved and is led to expression and interpretation via the imagination and elimination of negative diversionary movements, with the goal of artistry in performance. It will discuss the effects of self-determination and its outcomes as part of the conscious competence cycle, including short videos demonstrating the effects of different teaching approaches, and of student experience in performance. Finally, it will show how the outcome of the staged productions contributes to a rounded development of the student and, equally importantly, communicates to a new audience. After all, the objective in singing is to express and communicate creatively.

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Unravelling Perception-Action Coupling in Responsive Movement Improvisation: An Interdisciplinary Study of Sound, Motion, and the Brain

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Background

The coupling of perception and action in creativity has piqued the interest of researchers across various fields, yet a gap in research persists in this area. This interdisciplinary doctoral project aims to explore how the coupling of perception and action influences creativity in responsive movement improvisation. Specifically, the project examines how blended music and environmental sounds influence the creation and execution of physical movements, using a combination of performing arts, cognitive neuroscience, and neuroimaging techniques.

Aims

The primary objective of the project is to investigate how recorded music and environmental sounds influence the physical and mental responses of performers, specifically contemporary trained dancers, during improvisation in the studio and functional magnetic resonance imaging (fMRI) scans. The research will lead to an experimental data-driven performance through the analysed data.

Methods

The experimental procedures in the project aim to measure the perceptual and cognitive mechanisms involved in performers' interpretation and response to blended music and environmental sounds during movement improvisation. Motion analysis techniques, such as Motiongrams and Laban Movement Analysis, will be used to analyse the physical responses of performers during improvisation. Additionally, fMRI will be used to measure the mental responses of the performers during sound and movement-based paradigms. The analysis of the collected data will lead to a better understanding of the mechanisms that influence creativity in responsive movement improvisation and ultimately contribute to the development of data-driven experimental artwork.

Discussion and conclusion

The findings of the project will contribute to the development of a data-driven creative process grounded in pragmatic information, aimed at reducing artistic bias and offering new perspectives in experimental performance approaches. This approach will enhance the ways that different music and sounds influence movement responses through the act of improvisation. By exploring the relationship between perception and action in creativity, the research will offer novel insights into the cognitive and neural mechanisms underlying artistic expression.

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"A Space for Reconnecting With My Creative and Positive Side": An Art-Based Inquiry Into Participants' Experiences of Individually-Tailored Brief Online Art Therapy With Young Adults Who Experienced Challenging Life Events

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Background

This paper presents my doctoral research project exploring the ways 15 young adults made meaning of an individually tailored brief online art therapy program. This project took place in an Australian university during the global pandemic, with participants self-identifying as having challenging life experiences. Universities are considered an environment promoting young adults' self-exploration and identity and skills development (Gutierrez & Park, 2015), and an integrated sense of self and experiencing self-efficacy are understood to be one of the protective factors against mental health and wellbeing concerns among students (Baik et al., 2017). Moreover, considering that young adults are 114elbourne114ize as self-motivated and creative individuals who are open to exploring novel, stimulating and playful activities (Csikszentmihalyi, 1996) and experiencing shifting identity and value formation (Harris et al., 2015), there are exciting possibilities for investigating the potential for integrating art therapy with student and other youth services to offer guided opportunities for their creative self-exploration and personal resource development. This project aimed to respond to this opportunity by exploring young adults' experiences of the art therapy program that was designed to tailor to their various motivations, desires and needs and promote their self-agentic use of the program (Schwan et al., 2018).

Aims

In this paper, I aim to present the key results of my doctoral research undertaken at the University of Melbourne from 2019 to 2022. An analysis of the results from the project will be presented to illustrate the concept of co-exploration and how it illuminates the creative self-exploration in relationship as the most significant aspect of the online individual art therapy program from young adults' perspective. The significance of the research findings will be presented in terms of the usefulness of a co-exploration theory, particularly its practice implications in the relevant fields where the constructs of mental health, wellbeing and creativity of young adults, especially university students, intersect.

Main Contribution

This emergent qualitative research was designed as an art-based grounded theory study where 14 university students and 1 young adult participated in up to six art therapy sessions for 6 to 12 weeks and described their experiences in a post-program interview. The art therapy program was designed to explore participants' self-definitions of their adverse life experiences and their diverse uptakes, interests, and motivations for joining art therapy. The individually-tailored approach was intended to facilitate participants' flexible, creative and self-modulated actions in the program. Making and viewing art was actively integrated with generating data by participants and researcher (McNiff, 2008), while Strauss and Corbin's (1990) approach to grounded theory was principally applied to the procedural steps in data analysis.

A theoretical understanding resulting from this study, conceptualised as co-exploration, comprises three components- creative, relational, and emotional processes: It explains young adults' self-exploration that occurred in the relationship with the art therapist and through integrating art-based activities with individual therapy. Co-exploration elucidates the young adults' key motivation for and meaning of engaging with art therapy, maps the actions and interactions among young adults, visual art and art therapist and illuminates the conditions conducive to and constraining young adults' creative self-exploration. In particular, the data analysis revealed the compatibility between the young adults' high motivation for self-growth and engagement with novel activities and the features of art therapy that could facilitate the creative, relational and emotional processes promoting self-discoveries and care. Additionally, participants indicated their preferred style of engagement was to co-navigate the therapy process to support their expression of self-agency, autonomy and creativity. These findings correspond to a previous study by Wilson (2021), where a small number of fine art and performance students described experiencing art therapy as a novel and supportive experience for their wellbeing. Additionally, encouraging impacts resulting from young adults' participation in the art therapy program were 115elbourne115ized in this study as their enriched self-understanding, self-compassion and self-efficacy. As would be expected with a diverse group of young adults, the significance of these impacts varied among the participants, depending on their pertinence to the participants' current life situations.

Discussion and Conclusion

This study illuminated young adults' desire for growth and self-care-promoting activities and the features of art therapy that are compatible with young adults' self-agentic engagement with creative self-exploration leading to self-enrichment. The findings support the positive correlation between creativity, wellbeing and mental health of young people (Smriti et al., 2022). Moreover, the implications of the findings suggest broadening the landscape for youth-centred wellbeing and mental health programs to extend the diversity, accessibility and flexibility of these services for university students.

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Creativity in music therapy – What to expect?

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Background

Music therapy is a legally regulated health profession in Austria (Music Therapy Act MuthG; BGBI. I Nr. 93/2008). The MuthG describes music therapy as an independent, scientific-artistic-creative form of therapy (§6) that involves the conscious and planned treatment of humans who suffer from emotional, somatic, intellectual or social behavioral disorders. The conditions of suffering are treated through the use of musical means in a therapeutic relationship between one (or more) therapist and one or more client(s) / service user(s) with the following three goals: i) prevent, mitigate or eliminate symptoms, ii) change the behavior and attitudes that require treatment, iii) promote, maintain or restore the development, maturation and health of a patient. Consequently, music therapy activities address five purposes: 1) prevention including health promotion, 2) treatment of acute and chronic diseases, 3) rehabilitation, 4) promotion of social skills including supervision, and 5) teaching and research.

Aims

Relating to these contexts of music therapy our aims are to i) define creativity within the discipline of music therapy, to ii) investigate how creativity can emerge in various music therapeutic settings, to iii) define what the possible influencing factors regarding creativity in music therapy are and, iv) how creativity may link to the goals and purposes of music therapy. To answer these questions, we will carry out secondary research and will show examples from literature.

Results, Discussion and conclusion

Defining creativity within music therapy is challenging because music therapy is very closely related to various other disciplines e.g., arts, health, medicine, education, psychology, the humanities, neuroscience, etc. (cf. Bruscia, 2014) – such as is the situation with creativity (cf., Liggett et al., 2023; Odena, 2011; Runco, 2011; Thomaz & Brito 2022) – and both creativity and music therapy, seem to be inevitable linked. Music therapy relies on different music therapeutic approaches including different methods and techniques (cf., Edwards, 2016; Smetana, 2018; Smetana & Storz, 2020; Smetana et al., in press; Stegemann et al., 2019; Wigram, 2004). The simplest differentiation is between receptive and active music therapy. Within the latter, free musical improvisation is one option and characterized by its individuality and uniqueness of the interaction between a therapist and a single person (individual-music therapy) or the interplay between one or more music therapist/s and multiple clients / service users (group-music therapy). Following, music therapeutic improvisations are of spontaneous, unforeseeable, and creative nature, encompassing a broad variety of human expressions as well as personal and aesthetic experiences of all persons involved (Smetana et. al., 2023). Thus, awareness about and a mindful handling of the potential of creativity in music therapy is desirable.

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Musical creativity and gazing in second person interactions during jazz improvisation

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Background

Gazing is a feature of human communication and music performance. Moran (2013) analyzes patterns of gaze spatial direction during interactive music performance. Bishop et al. (2019) propose two gazes' functions: engagement-driven (to check the other's involvement in performance) and intention-driven (to communicate one's own action-based plan, and to learn about the other's). The Second Person Perspective of Social Cognition proposes that basic intentions are expressed in body behavior, and that such embodied intentions are perceived by others (Pérez & Gomila, 2021). In previous studies, we identified features of second person, sound-kinetic interactions in jazz improvisation (Martínez et al., 2022). This creative behavior is structured based on the varied repetition procedure, characteristic of early intersubjectivity (Español et al., 2023). As to gazing, we could distinguish two functions of second person intention-driven gazes during music interaction: expressed intention-driven and perceived intention-driven.

Aims

To analyze the relationships between the gaze functions, the mental understanding of musical intentions, and the creative musical production during jazz improvisation.

Method

Participants. 3 duets (D12, D14, D16) of professional jazz improvisers -guitar (G) and saxophone (S)- were selected from a larger sample. *Stimulus*. Chorus 1 of Watermelon Man's backing track. *Participants' task*. To build together a melodic improvisation over the backing track. *Data analysis*. We run (a) a qualitative microanalysis of the music interactive behavior, aiming at identifying gestural patterns of novel and varied music repetition, and (b) another qualitative microanalysis of gaze behavior, using an observational code with categories of gazing. We compared (a) and (b) analyzes searching for links between the improvisers' attitudes toward joint musical creation, and the types of gazes.

Results

Given the relevance of intentions in the second person theory, in this paper we focus on the detection and analysis of perceived and expressed intention-driven gazes. The three duets begin with turn-taking, and end playing joint musical gestures simultaneously. However, each duet's analysis shows different outcomes between (i) the way music is created, and (ii) gazing:

- D12. (i) The music interactive behavior consists of S's melodic proposals, and G's varied imitations of S's musical gestures. (ii) During S's turns, S's gazes express the intention of creating a novel musical gesture. During G's turns, G's gazes express the intention of varying S's immediately preceding musical proposal. Perceived intention-driven gazes are oriented to grasp the musical intentions while the other is playing.

- D14. (i) S and G produce and sustain contrasting rhythmic gestures during turn-taking (S: fast notes; G: few, slow notes). Notwithstanding, both take features of the other's pitch contour in their turns. (ii) G's gazes are accompanied with manifest body movements towards S, apparently expressing an invitation to join his rhythmic behavior (expressed intention-driven gazes). Predominance of mutual gazes during G's turn (83% of G's turns' total time), and S's and G's joint synchronous, isorhythmic performance at the end of chorus 1 are interpreted by G's leadership behavior.
- D16. (i) Turn-taking gradually changes into an overlapping musical improvisation, which requires a tight and constant interaction between performers. This process is enabled by a strict tonal agreement of the melodic creations to the backing track harmony, and by the prevalence of a simple repeated-notes gesture shared by both performers. (ii) S looks at G permanently (93% of the performance total time), while G rarely looks -short glaces- at S (21%). To the extent that G musically and bodily follows S, we interpret that G aurally grasps S's intention in her musical creation.

Discussion

Perceived and expressed intention-driven gazes contribute to understand creative behaviors in taking the other's musical gesture (varied repetition) and emphasizing the own musical proposal (novel and varied). During his/her turn, the performer's gaze expresses his/her current music's intentional action to the other; and during the other's turn, the performer's gaze aims at perceiving the other's musical intention in his/her expressive body behavior. The intertwining of the music creative behaviors (novel musical gestures and varied repetition) and the intention-driven gazes (expressed and perceived) accounts for reciprocal interaction that is characteristic of second person perspective. Creativity is embedded in and emerges from musical intentions that shape moment by moment jazz improvisation. However, this general behavior of creative musical interaction presents specific characteristics in each duet. On the one hand, due to D14 G's leadership, attention is directed more to G's intentions than to S's. This is apparent both in the prevalence of G's musical proposals and in the high amount of mutual gazing during G's turns (co-occurrences of G's expressed intention-driven and S's perceived intention-driven gazes). On the other hand, it is apparent that the mutual understanding that arises from the highly cohesive interactive performance of D16 does not depend on the mutual gazing behavior. The low amount of G's gazing is counterbalanced by G's aural perception of S's intentions along her musical improvisation. Summing up, in this musical context, gazing contributes to mutually understanding the other's musical intentions and to negotiate the online musical creation.

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Colours and Sounds: A Study of Aesthetic Emotions in Paintings and Music

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Background

Music and visual arts are known to elicit intense emotions (Robinson, 2004; Juslin & Laukka, 2004), with emotion regulation being a popular reason for engaging in such activities (Lonsdale & North, 2011; Drake & Winner, 2012). The term "aesthetic emotions" is used to describe the emotions triggered by art, which involve evaluation, appreciation, pleasure/displeasure, and are distinct from basic emotions (Menninghaus et al., 2019). While much research exists on the link between musical structures (e.g., Gabriellson & Lindström, 2010) or personality aspects (e.g., Gerstgrasser et al., 2022) and music-induced emotions, less is known about visual arts. Nonetheless, it is widely assumed that the mechanisms involved in emotion induction are similar for both domains (Konečni, 2015).

Aims

In a retrospective study, Miu and colleagues (2016) asked participants to recall the emotions they felt during their last encounter with music or art. While the study did not involve actual exposure to art, it highlighted some interesting differences between music and art, such as predominant emotions or influencing factors. With the present study, we aimed to expand on this previous work and empirically compare the aesthetic emotions experienced while listening to music and looking at paintings. Using a within-subject design and selecting pieces of music and paintings with specific emotion categories, we sought to identify the predominant emotions and predictors that determine their intensity.

Method

To answer the research question, we conducted a quantitative online study. We selected 16 pieces of music and 16 paintings belonging to four emotion categories in a pre-study: Sublimity, Vitality, Tension, and Sadness. These categories were derived from the Geneva Emotional Music Scale (GEMS, Zentner et al., 2008), a domain-specific scale for measuring music-induced emotions, which has also been used for emotions when viewing art (e.g., Miu et al., 2016). Participants indicated which emotions they felt how intensely for each piece of music and painting, using a short version of the GEMS scale (GEMS-9). In addition, we asked how interesting, complex, and understandable they rated each stimulus and how much they liked it. In addition to demographic variables, we assessed current mood before the experiment, as well as characteristics that could have an influence on the intensity of aesthetic emotions: Big-5 personality aspects, empathy, absorption, music and art expertise, and proneness to aesthetic chill.

Results

At the time of writing this abstract (March 2023), data collection is currently ongoing with a total of 182 participants. Thus, only preliminary results are available in this abstract, with more comprehensive results to be presented during the conference. Preliminary analyses indicate that the general intensity of induced emotions did not differ between music and paintings and the intensity levels were highly correlated.

However, in response to music, participants reacted more intensely with feelings of power, nostalgia, wonder, and peacefulness, whereas in response to paintings, participants reported more intense feelings of sadness and tenderness. With respect to both art domains, we found moderate positive correlations between emotional intensity and age, positive mood, openness to experience, absorption, and proneness to aesthetic chill. Emotional intensity in response to music was positively correlated with musical and art expertise, while only art expertise was positively correlated with emotional intensity in response to paintings.

When all variables were entered into regressions predicting emotional intensity in response to music and art, the primary predictors for music-induced emotions were positive affectivity, openness to experiences, and rating the piece as interesting. Conversely, the primary predictors for painting-induced emotions were proneness to aesthetic chill and rating the painting as interesting and understandable.

Discussion and conclusion

Our preliminary results suggest that the nature of aesthetic emotions in response to music and art is distinct, although both domains evoke comparably strong emotional responses. Notably, emotional reactivity appears to be more closely associated with personality factors, mood states, and inherent characteristics of the stimuli than with expertise. Therefore, individuals who exhibit positive affect and possess personality traits like openness and a propensity for aesthetic chills are more likely to respond with heightened emotional intensity to stimuli in both art domains.

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Expert listeners' evaluation of the originality and quality of commercial classical piano recordings

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Background

The discourse of classical music performance is replete with the notion of originality, which is invariably regarded as key to professional success and the aesthetic appreciation of music. Performers exercise their originality by deviating from the written values and expressive markings of a score and are expected to offer at least some freshness of perception on a previously performed rendition of the piece. This prerequisite presents an unusual challenge for performers' creativity when considering how creativity is defined. Whilst not a unitary concept (Plucker *et al.*, 2004; Gabora, 2010; Sowden *et al.*, 2015), it is agreed that creative outcomes must be both original (even surprising) and of value (or appropriate quality) within a given field (Kaufman & Baer, 2005, 2012; Kaufman & Stenberg, 2010). To what extent is originality discernible by expert listeners?

Aims

This exploratory study investigated how originality and quality (or overall aesthetic value) inter-relate with one another, and with other criteria of performance (technique, interpretation, expression, communication and enjoyment) in expert listeners' evaluations of commercial classical piano recordings. The study design was based on the consensual assessment technique (e.g., Baer & McKool, 2009). Three research questions framed the study:

Q.1) What is the inter-relationship between originality and quality in experts' evaluations of commercial piano recordings, and how does it vary according to musical genre?
Q.2) What is the effect of experts' characteristics (including their creativity) on the evaluation of originality and quality?
Q.3) What is the level of agreement among experts when using a subjective and consensual assessment of musical creative products?

Method

An online survey was designed in Qualtrics comprising four sections: (a) demographic information; (b) musical expertise and listening habits; (c) self-reported creativity using the 'openness' questions from the big-5 inventory (McCrae & Costa, 1987), and 4 brief alternative uses tasks for discerning musical and non-musical creativity (fluency, flexibility and originality) (Sovansky *et al.*, 2016); and (d) evaluation of 10 recordings of Grieg's Op. 43, No. 1, and 10 recordings of Webern's Op. 27, No. 1 based on 8 criteria scored on a 10-point Likert scale: 'technique', 'interpretation', 'expression', 'communication', 'originality', 'quality', 'enjoyment' and 'recommendation'. Recordings were anonymized and presented in a randomized order. Ethical approval was obtained prior to recruiting participants from the respective institutions of the research team and their wider network of contacts. Data were analyzed in SPSS (version 28).

Results

Participants (N=23) completed the survey (number exceeds recommended minimum of experts, Kaufman & Baer, 2012). The experts' characteristics are summarized at the start of the paper. In both musical genres (Grieg and Webern), both older and more recent styles were rated comparably high for 'originality' and 'quality'. With the exception of the MIDIs (low originality / low quality performances), there was a consistent pattern in how the experts scored originality and quality regardless of date of recording or performer. In both genres, there was a strong positive significant correlation between the scores of 'originality' and 'quality'. Moderate significant correlations were also noted between the mean scores of 'originality' and 'quality' and the variables 'formal musical training', 'actively listen to recordings' and 'musical creation'. Comparison of *inter-rater* reliability (Cronbach's alpha) between the sub-groups 'pianists' and 'non-pianists' yielded overall good reliabilities (values above 0.8), but with subtle differences between sub-groups. The *intra-rater* reliability for 'originality' and 'quality' scores, using the weighted Cohen's kappa, yielded more varied findings (with high, mid-range, low and even negative kappa values), suggesting more heterogeneity in these experts' internal consistency of their evaluations of 'originality' and 'quality'.

Conclusions

The strong association (positive significant correlations) between 'originality' and 'quality' suggests that for these judges 'originality' does not appear to be 'what stands out' but what is 'overall good' in performance. This raises the question: how might originality be separated from quality (or overall aesthetic value), and is it even possible to separate the two? Although there was overall good inter-rater reliability in judges' scores, subtle differences between musical genres and sub-groups of experts were noted. There was more variation in the findings of intra-rater reliability (weighted Cohen's kappa) raising the questions: how far do so-called experts agree on underlying notions of originality and quality? Is there a difference between how experts demonstrate creativity (through the evaluation of originality and quality) and how they actually perceive it? Notwithstanding the limitations of this exploratory study, the findings call into question how far an underlying notion of originality exists objectively, and even separately, from other attributes like quality, and how far it might be consistently discernible by expert listeners.

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Designing Artificially Intelligent Music Technology (AIMT) for Acceptance and Adoption by Musicians

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Background

Video games have long been considered a medium well suited to music generation, due to their real-time computations and interactive nature (Collins, 2009). However, in comparison to their visual procedural counterparts (i.e., the generation of visual assets, such as weapons or levels), music generation has seen a much more limited scope of application in the games industry. Artificial intelligence-driven music technologies (Music AI) are advancing in their capabilities in performing creative tasks such as composition (Collins & Laney, 2017; Huang et al, 2018), expressive rendering (Jeong et al, 2019; Worrall, Yin & Collins, under review) and musical in-filling (Guo et al, 2022), and can provide assistance to novices in musical co-creation (Louie et al, 2021). However, there are also ethical and legal concerns around creative AI (AI that can be used in art, music or other creative tasks) that may play some part in this aversion (Collins & Laney, 2017; Flick & Worrall, 2021; Yin et al, 2021). Further, it is important to understand the apparent resistance to AI technology expressed by creatives, and potential problems that are limiting its application and use within the games industry.

Method

Creatives in online forums and social media present a potential narrative of aversion to Creative AI (especially in the advent of tools like ChatGPT). In this presentation the authors lay a foundation of empirical research by interviewing 11 professional video game composers of varying experience levels about their thoughts on intelligent music technologies in games. Based on ~13 hours of transcribed interview audio, we perform a reflexive thematic analysis (Braun & Clarke, 2008; 2013) of the data in order to establish a variety of recurring themes and sub-themes, addressing the two following research questions:

RQ1: How do composers feel about intelligent music technology, and how does this inform future research?

RQ2: What can we learn about professional workflow, technical knowledge and tool use to inform future intelligent music tool research/design?

Results

The results of this research show a handful of themes that have been identified in the data that correspond to the above research questions. Half of these themes form a narrative that while composers can see the benefits of Music AI, that they have muti-faceted and complex concerns beyond the obvious creative overlap, and that there is an inherent clash between the creative ego and Music AI, which depends on how closely the focus of the Music AI gets to the role of composition (compared to music production, mixing, mastering, etc). The remaining themes outline how a lack of standardised technical knowledge, support and understanding and trust of Music AI is impeding tool development and use within industry.

Discussion/Conclusion

The implications of this research will further inform Music AI researchers and industry professionals on how to better design and communicate their tools to music professionals. Additionally, this research lays an empirical foundation for research into better understanding professional creatives and their relationship with emerging AI technology, in a way that is under-emphasised in current research.

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Thinking Outside the Pattern-Based Box in Jazz Improvisation

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Background

Jazz improvisation has long been considered an art form centered around creativity: To successfully improvise in the genre, one must play creatively, while adhering to the stylistic traits of the jazz genre. The main classic methods of teaching jazz improvisation are generally based on some or other combination of the "theory-based" or the "practice-based" approaches (Prouty, 2012, p. 63). The first focuses on the interaction between scale and chord and can be implemented by an improviser in real time (e.g. one could play a C Mixolydian scale over a C dominant chord), while the second revolves around learning materials that are derived from existing musical sources (i.e., recorded or transcribed solos), intended to be studied in all twelve keys, and applied during improvisational performance These approaches benefit students by teaching genre conventions, or in other words ensuring "appropriate" (genre-adherent) improvisation - an important aspect of improvising well within the genre. Both approaches lean, in one way or another, on pattern-based learning that enables fast automatic retrieval but, in and of themselves are not novel or creative. Improvising within genre conventions was researched by Norgaard (2011), who examined through interviews, the ways in which expert musical improvisers think while improvising. Results revealed four generative strategies for idea generation: 1. the use of a memory bank of melodic concepts from practice done prior to the improvisation. 2. improvising with focus on harmonic priority, 3. improvising using melodic priority. 4. repeating material from previously played sections in the same solo, either exactly or with modifications (Norgaard, 2011, p. 119). Norgaard's study contributes significantly to our understanding palyers' strategies for playing in ways that are "appropriate" to the genre. However, "appropriateness" alone does not suffice in nurturing creative thought. How then, does one study, or teach creativity within jazz improvisation education?

Aims

Our aim was to explore how the preliminary stages of jazz education could help illuminate the building blocks for developing both a strong understanding of the genre, as well as developing creative thought during genre-specific improvisation.

Methods and Results

The research materials were accumulated through semi-structured qualitative interviews conducted during the last half of 2020 and the first few months of 2021. The interviewees are all music teachers specializing in jazz. The questions asked during the interview focused on their experience teaching jazz improvisation, and were designed as "experience-near questions". These aim, as their name suggests, to reveal the experiences of the interviewees (Josselson, 2013, p. 45). The analysis of the interviews was done through several qualitative analysis methods. These different methods helped highlight aspects of the interviewees' opinions, whether they were plainly spoken, or otherwise. Throughout the interviews and their analysis, two broad categories of constraining exercises were identified: musical constraints (e.g. playing three notes per bar) and musical repetitions (e.g. repeating a phrase three times). Repetition is also the basis for grounding motives in music and in turn motivic development. This allows for a clearer understanding of the music on the listener's part

(Margulis, 2014, p. 25). The findings indicate that the use of repetitions may assist the improvising student by lowering their cognitive load during improvisation. For example, when asked to only play three notes per bar during an improvisation. Secondly, these constraints can make the task of improvisation at hand very clear. The student has fewer musical aspects to focus on, thus, she or he can understand what is required: The "rules of the game" (broadly as in the jazz genre, as well as specifically within the limitations of the exercise), are stated very clearly, defining what they must adhere to but also where their freedom lies. The lowering of the cognitive load during constraining exercises may help the student focus on other musical aspects (e.g. rhythmic variation when asked to play three notes per bar).

Discussion & conclusion

We claim that one method for teaching jazz improvisation would be the use of explicit types of constraints like repetitions and constraints using musical features , in tandem with the traditional pedagogical methods of jazz education and establishments. This combined use could be thought of in relation to the "path of least resistance" (Ward & Kolomyts, 2019). This model claims that one builds novel ideas on top of existing knowledge. This is achieved here by one aspect (pattern-based approaches) focusing on teaching the building blocks of genre conventions, and the other (constraints) relating to creating novel ideas within these conventions and musical forms. Future research could focus on a few important issues: one could analyze improvisations made by interviewees according to the themes found here, or analyze written pedagogical material with constraining exercises in mind: if and how these materials tackle the problem of developing creative thought and creative action. The subject of creativity in improvisation generally and creativity in jazz improvisation specifically is very broad and under-researched. It is also probably one of the most intriguing and difficult to study. We believe the approach presented here could unravel some of the mystery of creative thinking in music.

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POSTERS / FLASH-TALKS

Masacote prototype 5.0. Advances and pitfalls during the development of an innovative sono-musical exciter

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Background

All acoustic sound generation methods consist of systems where (a) the main oscillation frequency and (b) the frequency spectrum of the emitted vibration are -respectively- totally and partially dependent on the properties of the vibrating body. The underlying principles and exploratory works related to the doctoral thesis "Sensación táctil y audiotáctil en la música. El caso de las músicas electrónicas utilizadas para el baile social en locales de baile de la Ciudad Autónoma de Buenos Aires y alrededores." (Anzil, 2017) demonstrated the possibility of taking advantage of certain technological advances to decouple the main oscillation frequency (and therefore, also part of the emitted frequency spectrum) from any property of the vibrating body. The described dependency relationship results from the methods in which energy is delivered to the vibrating body. These are conditioned by limitations of human biology that today can be overcome through technological devices. In the aforementioned systems, energy is transferred to the vibratin body in only two ways: resonance or impulse/impact. While the former can be understood as a mode that continuously and sustainably delivers energy, the latter transfers it in a single instantaneous act. Modeled on some properties of reed wind instruments, the team was able to design and develop a device that decouples the main oscillation frequency from the vibrating body properties. Halfway between the two historical acoustic methods of energy delivery, the device excites the vibrating body below and within the audible range (approximately 10-86 Hz). As a direct consequence, the main oscillation frequency (and partly the emitted frequency spectrum) is no longer determined by the properties of the vibrating body. In this context, it's properties (i.e.: mass, shape, main dimensions, construction material, fastening system, etc.) only partially affect the emitted frequency spectrum.

Aims

The main objective is to develop a marketable technological musical device consisting of 2 modules compatible with modern modular synthesizer systems: an electro-mechanical exciter module and an electronic control module. As the guiding axis of the development, it is sought that the system as a whole can operate in a wide range of different situations, being able to excite vibrating bodies of very different sizes, shapes, materials and fastenings.

Main contribution

Beyond the technological novelty that the device itself represents, the main contribution of the project consists in making available to the music and sound art community a new form of acoustic sound generation (i.e.: non-electronic, non-synthetic). More precisely, an innovative way to excite a wide variety of vibrating bodies.

Methods

In the 5 years since the start of development, 2 different prototypes of the control module and

5 of the exciter module were produced; on each occasion, manufactured for different purposes and with different characteristics. The tests with the current version were especially fruitful regarding the link with the user, the possible modes of interaction with the device and the necessary ergonomics.

Structure, support system and housing

During the design and manufacture of the first prototypes, it was deemed necessary for them to have a robust and heavy frame, support system and housing (hence the name "Masacote" given to the device) which -eventually rested on the vibrating body or the surrounding area - will provide the exciter module with stability and consistency in the sound produced (ie, by keeping the point of contact with the vibrating body unchanged). However, later testing showed that in some situations such a design muted (i.e., like a "sordina") the vibration of the vibrating body, demonstrating that a more "aerial" approach (i.e., suspending "Masacote" from some sort of support) is more appropriate for the proposed objectives. Thus, we arrive at two possible paradigmatic situations of use: one in which the exciter module was directly held by the user's hand (that is, being able to modify at will the contact points with the vibrating body and other variables involved) and another in which will hang over the vibrating body, in a fixed position. The first, directed by a conception closer to the type of "fine" and immediate interaction that is best established between the performers and their instruments when these are of an acoustic nature (ie: non-electronic, non-technological). The second, offering the advantage of freeing both of the user's hands for other tasks (something highly recommended, especially considering that Masacote is designed and developed considering the possibility of its integration into larger and more complex modular synthesizer systems). Both situations were put to the test. For the second one, it was decided to use a microphone stand as a support. This resource is not only available in many studios and spaces dedicated to music (which would facilitate the commercialization and integration of “Masacote” as a product) but was initially thought to be adequate for the task. Musical beauty in relation with emotional features of sadness, tenderness and pathos, as well as with musical features of simplicity, tonality and slower tempo. In turn, the aesthetic attribution of ugliness in music was associated with larger recruitment of brain regions dedicated to auditory processing (STG), and indeed a more complex (in terms of execution, harmony and rhythm), arousing and agitating musical content. In the literature (Torst, Ethofer, Zentner, & Vuilleumier, 2011) such high-arousing aesthetic emotions in music correlated with brain activity also in sensory-motor areas. These results seem to suggest that the motoric and rhythmic complexity resonate in the mind of the listener (Godøy & Leman, 2010) resulting in excessive complexity and aesthetic unpleasantness. The aesthetic appraisal of ugliness (or beauty) seems to arise also from embodiment, resonating in the sensorimotor circuits and in the motor system.

Results

Although it would be prudent to carry out some more tests, all the tests carried out so far (2 days) indicate that holding the device directly by hand can be excessively difficult to the point of making it practically impossible to perform. The interaction between the exciter module and the vibrating bodies is so intimate that even the slightest involuntary muscular movements of the hand-arm body system are reflected in clearly perceptible or even abrupt changes in sound (i.e., in intensity, timbre and/or tone). In turn, the use of microphone stands has been discarded due to a) the multiple vibrations, instabilities and parasitic sounds associated with their use and

b) the difficulties that these supports present for the precise positioning required by the exciter module.

Discussion

For the reasons stated, it is now evident that the exciter module must include an ad hoc designed support that provides stability, has configurable feet, anti-slip supports, does not contribute substantial weight/mass and acts as a moderator between the user and the resulting sound.

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Metacognition and creativity: a study on music composition practice

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Background in Creativity

According to Ribeiro (2003), metacognition is the ability to know the act of knowing, permitting the analysis and evaluation of how people learn. Zimmerman (2000) explained that individuals who are metacognitively aware are also self-regulated, which means that they have greater control over their learning processes. For Flavell (1979) and Portilho (2011) metacognitive regulation occurs based on three stages: planning, monitoring, and evaluation. Planning includes the establishment of goals, the organization of procedures and strategies, and the organization of time. This process is a result of the individual's ability to anticipate and prepare for the task, creating a guide for cognitive activity (Portilho, 2011). Monitoring is the process of observation and review of the paths taken in the execution of the task, it works as a kind of self-questioning. The evaluation, the last stage of the metacognitive process, is the judgment about the quality (and quantity) of the progress achieved, in which the strategies used and decisions made are examined and evaluated.

Aims

Therefore, considering that metacognition promotes students' autonomy to take control over their learning processes, the goal for this study was to analyze the metacognitive process of a music composition student during the creation of a new work.

Methods

The present study was conducted by an in-depth interview with a 26-year-old composition student, who was pursuing a doctoral degree in music composition. The interview was organized in topics, based on the questionnaire developed by Schraw and Denninson (1994) called MAI - Metacognitive Awareness Inventory. According to Ribeiro, Simões, & Almeida (2016), the MAI was designed with the purpose of identifying the level of cognitive awareness. For Schraw and Dennison (1994), The components of metacognition assessed utilizing the MAI are knowledge of cognition and regulation of cognition. Knowledge of cognition includes three subprocesses: declarative knowledge, procedural knowledge, and conditional knowledge. Regulation of cognition includes five subprocesses: planning, strategies for managing information, monitoring comprehension, corrective strategies, and evaluation. The interview script was composed of 06 questions about the knowledge of cognition and 10 questions based on the 5 subprocesses of cognition regulation. The results indicated that the composition student presented a high level of cognitive awareness, possibly resulting from his experience as a composition student in a doctoral course in music. About the knowledge of cognition it was possible to check the three subprocesses present in the interviewee's answers: (a) declarative knowledge: he indicated that he recognized his qualities and limits as a composer and considered himself capable of organizing the information he learned in class to apply in his compositions; (b) procedural knowledge: he stated that he used strategies to compose that were useful in other composition experiences and that he was aware of which strategies he needs to use when he needs to compose; (c) conditional knowledge: he stated that he used a variety of strategies to compose as needed and that he was able to motivate himself to compose when he

needed to. About knowledge regulation, it was possible to verify that the student was able to: (a) often schedule a specific time to compose, but did not always find it easy to manage these schedules; (b) specify goals for the work to be composed by establishing in advance some general idea of the work; (c) have a suitable place to compose to be able to concentrate and have resources to perform the task; (d) think of several ways to solve a problem and choose the most suitable approach; (e) consider several possible alternatives to make decisions for the composition; (f) periodically review the work during its development; (g) when encountering some difficulty, ask for help from teachers or colleagues, exchanging ideas to continue with the composition; (h) change strategies when necessary to solve some specific parts of the composition; (i) evaluate if the goals were achieved in a satisfying manner; (j) and evaluate if everything that was considered capable of accomplishing to conceive the artwork was accomplished.

Discussion and conclusion

The creative process of conceiving a new musical artwork is a complex and particular procedure for each composer, however it is possible to analyze how the composition student managed the conception of a new musical artwork (regulated his cognition) through the way that the composer reflected on his own practice. It was also noted that he referred to declarative knowledge, procedural knowledge, and conditional knowledge when reflecting on his own cognition. In the present study, the composition student in question clearly had a well developed process of metacognitive regulation, considering his age and experience in the compositional area. He was able to clearly identify his main difficulties that were reported as time management and control over the motivation to compose when it was necessary (and not just when he felt like doing it). He was also aware of his qualities and his resources for accomplishing the task of composing. As indicated by Flavell (1979) and Portilho (2011) planning, monitoring, and evaluation are stages of metacognitive regulation. All these steps were indicated by the interviewed composer when reporting about his process of designing a new composition,. This result, therefore, has implications for the studies on creativity, by associating the creative process to the field of studies of metacognition, demonstrating that in the practice of musical composition, metacognitive processes are involved and are fundamental to orient and facilitate creative practices.

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*Titles of flash talks are marked in purple.

Divergent and Convergent thinking in an expert pianist's decision making on fingering

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Background

Fingering is one of the first aspects considered when learning a musical work on the piano and is influenced by physical, motor, cognitive and interpretive constraints (Parncutt & Troup, 2002). Decision making on fingering can be seen as a creative problem-solving activity, especially in technically demanding passages. Drawing from the notion that creative processes involve divergent and convergent thinking (Guilford, 1967), what has been recently explored in the context of music (Webster, 2002; Van der Schyff & Schiavio, 2022), the purpose of the present paper is to examine the role played by them in an expert pianist's approach to fingering in the initial stages of practice.

Methods

Over the course of one month, a professional pianist (P1) learned D. Scarlatti's Sonata in C major K. 271. Data from practice sessions and semi-structured interviews were collected. Participant P1 was 61 years old and kept an active career as concert pianist and professor. Based on multistrategy research (Williamon et al., 2021), the study included quantitative and qualitative approaches to data gathering and analysis.

Results and discussions

Results/Discussion

P1's initial approach was characterized by a search for an overall understanding of the piece, from which he mapped points that would require greater attention during practice:

"The first thing I do is sit down and play [...]. I can mostly sight-read the piece, but there are a couple of passages that I made a mess [...]. So the first goal was to fix those passages [...] [and] learn to play the notes at the right tempo. At the right tempo is important for me."

P1 practiced the piece in fast tempo (vivo) and in its entirety without excessive concern with errors, setting practice goals according to the difficulties encountered. Such approach has been described as characteristic of experts (Chaffin et al. 2003). Kruse-Weber and Parncutt (2014) argue that experts deal with errors flexibly: starting from a management of errors based on tolerance and risk-taking, experts acquire relevant information in exploratory and creative stages of learning.

Decisions on fingering were present at points considered challenging by P1 and involved large experimentation and changes from what was suggested on the score. In passages which the left hand has long and fast leaps, P1 transferred the last note of the left hand to the right. This idiosyncratic arrangement was made based on interpretative demands (tempo), a characteristic of expert pianists' approach to fingering (Clarke et al., 1997). This pattern proved to be consistent across all similar points throughout the piece.

P1 mentioned another passage in which the hands move simultaneously in sixteenth notes in parallel and opposite motion:

"The passage [bars 14-17] I spent the most time is that one I made a mess in the first practice session. For the brain this is the most difficult passage because the hands do different things."

The fingering decision on bars 14-16, in both hands, revealed a concern with consistency of fingering patterns. In the right, consistency was maintained in the appoggiaturas as well as the other notes, despite the melodic pattern of bar 14 being slightly different. In the left, P1 maintained a fixed fingering pattern for a melodic sequence: the figuration started on the last note of bar 14 to the second to last of bar 15 (C-D-C-B-A-G) appears in descending sequence (B-C-B-A-G-F).

In bar 22, P1 changed the fingering of the left hand and kept the one of the right in order to avoid a thumb pass. In doing so, he maintained a stable hand position, even though it involved the sequence of notes G-F#-G with fingers 3-4-3. According to Parncutt et al. (1997), consecutive use of fingers 3 on white key and 4 on black is potentially uncomfortable for motor and physical reasons. Thus, the choice seemed to be related to cognitive constraints: the fingering of bar 22 was also used at the structurally corresponding passage in section B (bar 79). Furthermore, P1 kept the same fingering for another similar passage in both hands: on bar 14, the pattern between the hands is the same as on bar 22. Therefore, both the right-hand fingering change (bar 14) and that of the left hand (bar 22) served a purpose: to maintain consistency in motor patterns between hands at various points (such as bars 14, 18, 22, 24, 28, 31, 71, 75, 79, 81, 86 and 88).

Final remarks

Both divergent and convergent thinking were influential in P1's fingering decisions. While divergent thinking was related to experimenting with different possibilities (including idiosyncratic ones) in light of interpretive constraints, P1's concern with maintaining consistency between fingering and melodic/motor patterns throughout the piece, in light of cognitive constraints, points out to convergent thinking.

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Comparing difficulty and complexity in written music among three different sources: RIM, IMSLP, and flutists' criteria

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Background
Readability, as the ease with which we read a text, is an understudied subject in music. Readability is the result of personal criteria that we seek to improve, by means of quantitative and complexity data. We have made an index, called RIM (Readability Index for Music), designed as a tool for aiding the creation of readability criteria in musicians, but it is not yet tested.

Aims
For the purpose of validating this tool, we gathered a group of flute teachers of the Faculty of Music (in UNAM university) to perform two tasks. First they ordered a group of baroque scores according to difficulty, taking into account the development of their students. Secondly, they were interviewed about the process of ordering.

Main contribution
With that information we made a comparisson between three rankings of difficulty for the same baroque scores (1. the original ranking taken from the IMSLP's website; 2. a new one based on the RIM's indicators; and 3. one based on the percentage of agreement in the flute teachers.). We found out that the RIM ranking has the fewest differences among them, and their indicators attend to the criteria used for the ordering.

Discussion and conclusion
The RIM appears to gives quantitative information about the complexity in music, and this data is somehow equivalent to the criteria for difficulty in music reading, according to a group of flute teachers, evaluating a corpus of baroque scores. The RIM is as useful as a tool, as other indexes in literature, for give information about difficulty in written musical texts.

*Titles of flash talks are marked in purple.

Voices from the Field: The Happenings

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Background

How does one consider art? How can art help us connect with each other and build community? How can art help us use our imagination to potentially create social change? These are all questions grounded in philosopher and educator, Maxine Greene's pedagogy of social imagination (Greene, 1995). Social imagination pedagogy helps us consider art as a community space to encourage social transformation (Moon et. al., 2013). In the late 1950s and 1960s, an avant-garde art movement began forming that consisted of visual arts, music, and theater performance. These art installations were called a Happening, named by the visual artist Allan Kaprow. These Happenings started popping up all over New York City, inviting spectators in to see art in the making with the understanding that they too could possibly become part of the art as well (Kirby, 1965; Higgins, 1976; Rodenbeck, 2011; Routledge, 2020). At the school where I teach music, we were challenged with the task to create a collaborative project for the specials classes, that included Art, Physical Education, Music, Spanish, and Media Center. This collaborative project focused on students building community through imagination, creativity, and teamwork. We decided to call this collaborative event, The Happening, after the interactive art movement from the 1950s and 60s.

Aims

This conference presentation I aim to share how we can make connections with our students through an art and music collaboration activity. Through a social imagination lens, I will also explain why creating opportunities for our students to experience art in this specific setting can build community among our students and allow them to use their imagination in order to consider something new.

Main contribution

The point of the Happenings were to help fuse art and life together, with the need to have individual freedom to create. According to Routledge (2020) "art, they suggested, should be a means to communicate essential truths about human experience that were absent from and could not be communicated by other dorms of discourse" (p. 101). The Happenings helped bring people together in community, to experience art in a variety of ways that helped build relationships between the work of art and the life and world around them. The 4th grade curriculum covers sound in science, so we connected what the students were learning in science to music, by creating a sound meditation in the garden. I have been trained in sound therapy using Tibetan and crystal singing bowls, along with gongs. I shared my singing bowls with my students, taught them how to use them, and we spent a few weeks learning how to create sound meditations for each other in class. We added other sound effect instruments into our sound meditation such as rain sticks, kalimbas, and windchimes. While the sound meditations were happening for the music classes, the 4th grade art classes were creating art by showing the 3rd graders how to yarn bomb. Yarn bombing is when a person wraps, crochets, or knits yarn around trees, rocks, or other outdoor pieces such as benches or fences, which creates a beautiful large-scale piece of art. The 4th grade students learned how to yarn bomb, and taught the 3rd graders how to do it in the garden. While the music sound meditation was going on, the yarn

bombing was taking place in the same garden, creating a beautiful creative collaboration between students, art, music, and nature. It was a very joyous and fun time for our students, and as teachers we considered The Happening a success. Not only were students able to experience art in very different ways, but they collaborated with each other, creating a community of teamwork, and envisioning the garden together in a different way through art and music.

Discussion and conclusion

If you are interested in putting on your own Happening with your students the following will be covered:

- Get your teachers on board.
- Choose your interactive art space wisely. Look for spaces around the school that can accommodate large groups.
- Scheduling- this event takes some coordinating with different class schedules.
- Brainstorm with your students on what they would like to do, pull ideas from their interests.
- Have the classroom teachers stay with their students and experience the Happenings with them! This is a large event and you will need help.

My school's Happening event brought our students together in a community of creativity. Students imagined an artistic way to work together, create art, connect with nature, and transform our school garden into something new and beautiful. In the words of Maxine Greene (1995) "art offers life; it offers hope; it offers the prospect of discovery; it offers light" (p. 133). It is through the arts and social imagination that the life, hope, and discovery that art offers have the potential to create change, community, and new ways of thinking.

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*Titles of flash talks are marked in purple.

Music improvisation: A study on communication and social interactions

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Background

In music therapy, improvisation is understood as a combination of sounds created within a frame with a beginning and an ending (Aldridge, 1998; Wigram, 2004). It is one of the most widely used interventions for establishing non-verbal communication between therapist and client, or therapist and educational/therapeutic group. This approach focuses on the processes rather than the products of improvisation (Alexakis et al., 2013). Clinical and non-clinical improvisation in music therapy allows participants and clients to use musical expressive means for nonmusical proposes, according to their own capabilities and technical abilities, cultural background, and musical preferences (Carroll & Lefebvre, 2013; Seabrook, 2018; Wigram, 2004).

Some studies rooted in educational, musical, social, and philosophical orientations describe musical improvisation as interactive music-making with special attention given to social interaction (Procter, 2016). In this sense, several authors argue that musical interactions in these experiences could provide knowledge about the nature of human social interactions (D´Ausilio et al., 2015; Moran, 2014; Walton et al., 2018). This knowledge could contribute substantially to understanding improvisation in music therapy.

Aims

This research aims to compare music improvisation with a non-improvised music performance activity in order to identify differences concerning variables of communicative and social interactive musical processes between them. For this purpose, six analytical categories were generated to evaluate different aspects of the social interrelation and nonverbal communication of the participants (groups of younger and older adults) during two different musical experiences: improvisation and imitation.

Methods and results

One hundred and thirty-one young adults (43% female) aged between 18 and 40 years (27.53 ± 0.83) and 110 older adults (73% female) aged 60 or over (72.5 ± 0.81), participated in one of two types of music activities: group musical improvisation or group rhythmic imitation.

Participants worked in groups of 8 to 13 people (younger and older adults worked separately). Each group listened to a rhythmic pattern played live by the music therapist and when they wished started to participate. In music improvisation task group, participants generated and combined musical patterns with instruments, voices, or bodies, spontaneously creating music according to the context provided by the base pattern. In rhythmic imitation task group participants started to imitate the pattern as faithfully as possible, avoiding variations or new musical ideas with instruments, voices, or bodies. Both tasks lasted 3 minutes.

Eight group musical improvisation tasks were compared with eight group rhythmic imitation tasks, according to six categories of analysis: visual contact, body movement, type of production, music interaction, vocal aspect, and leadership. Also, categories were comparing across time (Minute 1 vs Minute 2 vs Minute 3).

Statistical analysis showed greater social interaction among the participants in improvisation groups than in rhythmic imitation groups, in both age ranges (young and older samples). The improvisation group established more visual contact with other partners, moved more freely, showed greater whole-group involvement in the musical production, displayed more instances of successive production, talked more during the performance and shows a greater number of participants acted as guides for the music production than the imitation group ($p < .001$). When comparing the behavior over time, observations of the variables analyzed increased their frequencies ($p < .001$).

Discussion and conclusion

Music improvisation have been recognized as self-organizing performances emerging from the collective actions and interactions of the entire group (Sawyer, 2008; Siljamäki, 2022). From an ecological perspective, musical improvisation is considered a social act itself, which involves the personal contribution of two or more persons—each responding musically to the others—creating music spontaneously in real time (MacDonald & Wilson, 2014).

Our results show that elements of non-verbal communication and interaction would emerge more frequently during an improvisation - understood into the music therapy setting- than an imitation task. We found that the improvisers exhibited greater social involvement when we proposed “creating something musical as a group”.

The present study provides knowledge about the nature of human social interactions through music improvisation analysis. Different theories about social interaction, like enactivism (De Jaegher et al., 2010), could offer alternative explanation for understanding the processes of interaction and creation during music therapy improvisation. This will be considered in future studies.

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Visualizing the comparison of three versions of Brahm's《variations and Fugue on a Theme》

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Background

Current research on musical performance mostly uses scientific means and shows a diverse interdisciplinary nature. For example, most of these studies use technical means including graphical analysis, computer statistical data analysis, and musical program analysis to quantify and measure performance parameters, which shows the empirical perspective of music performance study. Based on literature review, I find that Brahmn's involves less research on version comparisons. Therefore, I included three pianists' performance (Gerhard Opitz, Yefim Bronfman, Haochen Zhang) of this musical work in this study and chose visualization as a means to depict the subtle performance nuances that are difficult to perceive aurally.

Aims

In this study, I conducted a comparison between three different audiovisual versions of Brahms' music and adopted visualisation as a means of comparison through three aspects--tempo, intensity and performance gesture. Through visualization, I classified different styles of music performance and filtered out the audiovisual versions that more closely resemble Brahms' musical style. This study aims to provide some theoretical support for pianists in music performance practice

Main contribution

1. Tempo visualization: On the macro level, there is local homogeneity and overall variability in the tempo layout of the three pianists. On the micro level, Opitz's performance is characterised by strong gradations and natural transitions within the phrases, while Bronfman's performance shows exaggerated stretching of note time values; Haochen zhang's performance is characterised by smoothness and balance.
2. Intensity visualization: On the macro level, there is a local homogeneity and an overall difference in the intensity layout of the three pianists. On the micro level, I found that Haochen Zhang has a balanced intensity control within the phrases, while Opitz has a layered and dynamic intensity treatment; Bronfman has a delicate and highly gradual intensity treatment with a strong lyricism.
3. Musical gesture visualization: All three pianists have certain commonalities in their seating posture, facial expressions used to convey musical emotion, and body movements during performance. However, the use of body movements and the interpretation of accents shows unique individuality.

Discussion and conclusions

Based on the analysis and visualization of three performance features (tempo, intensity and performance gesture), the three versions of music performance were finally classified into the following performance styles: "Spirited and Vigorous - Opitz", "Delicate and Tense - -Zhang Haochen" and "Bronfman". Based on my knowledge of Brahms' musical style, visualization and performance analysis, and the three pianists' musical learning experience and relationship

with their teachers, this study finally conclude that Opitz's performance is closer to Brahms' musical style and compositional intentions.

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The Use of Technologies for Creative Practice in The Art of Jùjú Music

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Background in Philosophy (Musical Aesthetics)

Jùjú music is a genre that originated in Nigeria in the 1920s [1] and developed as a complex blend of traditional African rhythms with a range of talking drums and Western instruments such as guitar, drum set, and synthesizer. [2] Currently, the genre is faced by the challenge of reducing performance personnel without compromising its aesthetic values, especially in regions where the genre is less popular. The large number of musicians required to produce the culturally relevant sound can be a logistical and financial burden for performers and event organisers alike. It can be challenging to find enough skilled musicians to form a full Jùjú band, particularly in the places where the genre is not well known. With the rise of modern technology, musicians have used electronic instruments and computerised systems to replace human performers in studio recordings of Jùjú performances, which has raised questions about the impact of technology on the authenticity and cultural value of the genre. For instance, digital audio processing tools have been used to enhance the sound of live instruments, such as the guitar and human voice. By using tools like reverb, delay, and distortion, musicians have created rich, textured sounds that capture the essence of Jùjú music while still sounding fresh and modern, but these culturally acceptable applications have not reduced the number of live performance personnel which is a crucial goal of my research.

Aims

As a practitioner-scholar, my aim is to explore the innovative use of available technologies including AI for Jùjú music mediation with a focus on the interactivity of performance with virtual talking drums drawing on the tradition of interactive linguistic and verbal communication between the drums and humans in a communal performance. A traditional trait of the genre is embedded in improvisation and spontaneity of performance which generates cultural responses from the audience as a big part of the whole Jùjú culture. My research seeks to generate new knowledge that can be of great benefit to Nigerian music pedagogy around preservation of the Jùjú genre while increasing its accessibility and inspiring further innovation to facilitate interdisciplinary learning.

Main contribution

This paper follows the progress of a research project that began with the creative utilisation of conventional "arranger" technology to mediate the performance of Jùjú music. The project has evolved into an ongoing investigation of Ableton tools with the aim of producing a collaborative human and machine learning performance, inspired by the Proto software developed by Hendon in 2019 [3] and the Voyager software created by Lewis in 2000. [4] The study will explore the potential of using Ableton tools to create a performance that involves both human and machine learning that engages tools such as MIDI mapping and sequencing to create a parallel performance where the machine and human performer interacts. This would enable a new form of collaborative Jùjú music rendition, where the human performer and machine generate and respond to each other's musical ideas in real-time, creating a unique and dynamic non-hierarchical performance. Greater inspiration for this idea comes from the work of Lewis (2000) on the Voyager.

Discussion and conclusion

Jùjú music is often played at social events such as weddings, funerals, as well as other ceremonial parties, and political events. It is known for its intricate melodies, harmonies, and rhythms; The concept of riffs, repetition, and appropriation (Monson, 1999) [5] is heavily present in its composition with a rich blend of global musical influences which created the hybrid style that reflects the tradition of Yorùbá musicultural heritage in a complex negotiation of 2-way borrowing and appropriation of global musical trends. Jùjú music of the Yorùbás is a perfect example of how musical practices can be understood and explored within the broader context of globalisation and cultural exchange. Jùjú musicians have used technology in a way that complements and enhances human performance, rather than replacing it altogether. For example, electronic drum pads and sequencers have been used to add layers of percussion to live drumming, while still allowing for the ad-libbing and impulsive response that is a hallmark of Jùjú music. However, contemporary production tools such as Ableton have made provisions for advanced innovative use of these applications in a more friendly and versatile way that is rendering the old mode of use obsolete in a modern, cost-effective and economical setting. While technology has been used to replace human performers in studio recordings, my focus is on the exploration of innovative ways to cut a large number of live Jùjú performance personnel to the barest minimum by focusing on the technical mediation of the talking drums in live performances. By studying the use of Ableton tools for the creation of collaborative human and machine learning performance, this research seeks to generate new knowledge to benefit Nigerian music pedagogy and the preservation of the Jùjú genre while increasing its accessibility and inspiring further innovation. The potential of this approach is to facilitate interdisciplinary learning and ensure that Jùjú music remains a genre of great pedagogical, cultural, and historical benefit.

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Creativity at University Music Composition's course

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Abstract

This paper summarizes the work carried out in music composition creativity during the last 17 years of my time as professor of Composition in the Art Department of the public National University of La Plata, Argentina.

Considering creativity is a complex subject, to find ways to approach a course on Composition -where the main content is to write original music with freedom- is not an easy task. A strategy commonly used to tackle this problem is to assume that students already have an inherent creative ability. However, this may not to be the most suitable approach, especially for students who still haven't discovered their creative assets. From this standpoint, different tools were used to discover, understand and enhance creativity, both as a general concept and specifically in music, for regular composition course students.

In order to stimulate creativity through mechanisms that go beyond the common characteristics of the subject, a special environment was developed. It was particularly important to conceive the class' dynamic as an exchange, both between the professor and the students and among the students themselves. At the same time, the environment must allow to blend knowledge coming from the formal education previously received and students' own knowledge and experience.

Out of the resources used from the beginning, discussion around topics related to Music Composition and creation in general were central relevant. Also matters related to regional and local cultural issues emerged altogether with other such as identity, belonging, decolonialism, and many aspects around aesthetics, style and musical genre. According to experience, this practice is essential and remain as a theoretical layer throughout the course with different levels of relevance depending on the subject.

Another noteworthy activity is the creation of short music pieces in a short period of time focused on two aspects: on the one hand the cultural and musical background that belongs to each person, both as an individual and as part of a group, and on the other hand elements that may seem strange to each person due to their low exposure to them. These creation activities aim at identifying and recognizing one's own creative characteristics while promoting the discovery of hidden ones. At the same time, it allows a way to detect the abilities and concerns of the group and the individual.

On the other hand, for the main musical creations carried out during the course, the goal is to find in each case tools that go beyond the musical, stylistic and technical elements commonly used when teaching composition. Under this scheme, it is important to consider the interdisciplinary and transmedia interaction, as well as the interference in the result that may /be found due to /come from the use of technology during the creation process.

The work developed shows different issues. On the one hand, the processes that help to understand individual's creativity. For example, the importance of considering the notion of elaboration and the criteria for continuous adjustment of what is being produced, allowing not only identification but adaptation and redesign of intentions and results as well. This point is related to the primary idea of carrying out the entire creation process with a critical spirit, in addition to linking it to the aforementioned issues of debate. On the other hand, it shows that the response to proposals varies between groups according to different variables. The most significant ones are: the participant's cultural and musical background, the one acquired during musical training, the type of activity carried out in the music field, the actual sociopolitical environment, the one existing at the moment when participants were in High School, and the degree of heterogeneity of all these aspects within the group. These characteristics led to our conviction that flexible diagnostic and motivational tools need to be taylor-made in order to trigger creativity in the musical composition process. Experience showed that the proposed methods achieved relatively homogeneous results across students.

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Exploring the joint construction of interpretation in chamber music rehearsal

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Current studies on musical cognition, considers musical experience as embodied, multimodal and inserted in a mind-body-environment complex (Valles & Milomes, 2021) in which different types of interactions occur. Also, musicians interact with the score and stylistic conventions that define their practice. The construction of musical interpretation in chamber music implies more than "playing the score" or the adaptation to a musical style. The elements of a musical interpretation arise in the interaction between musicians and their musical environment. This dynamic exchange implies a series of mutual adaptations necessary to achieve shared musical results and creative processes. It also implies adaptation and interaction with the style context of chamber music, that shapes the rehearsal and its dynamics in a determined way, where individual and collective are in constant interrelation (Schiavio & Benedek, 2020).

Aims

The aim of this study was to inquire about the experience of the musicians during the process of co-creation of a chamber music performance.

Methods

Four chamber duets formed by advanced music students (clarinet-piano and singer-piano) volunteered to participate. Each musician was given a fragment of a chamber music piece two weeks in advance. During the study they were asked to play their parts individually, followed by a 30-minute rehearsal of the piece. The performance was recorded on video and audio. After rehearsal, semi-structured interviews were conducted. A content analysis was carried out to identify significant fragments in relation to interaction between musicians. After the delimitation of analysis units, a coding was carried out in which categories were assigned to the data.

Results

Two main categories were found:

Interactive processes during rehearsal: This main category is related to mutual adjustment, creation of joint musical agreements and general involvement in the musical task. It includes the following sub-categories:

Making agreements: refers to the musical agreements made throughout the construction of the joint interpretation of the piece.

Clarinettist: *"If we want to have contrast or continuity, we have to come to an agreement. If we do not agree, we will do different things".*

(Duet 2)

Joint musical analysis: Refers to the musical analysis carried out by the musicians from which they define interpretive strategies.

Singer: "*And it also depends on your voice range, I am a rather lyrical soprano, so I am going to reach a G with an intensity that another soprano is not capable of."*

Pianist: *"That changes how I play."*

(Duet 3)

Musical adaptation to the other: Refers to mutual adaptation, listening to the other, being modified by them and by their musical ideas during rehearsal.

Pianist: *"I think that when I played alone I was colder, thinking about playing the right chords, and not so much about musical discourse. When I started listening to her, naturally the commas, the air, began to appear. And that seems to be the beauty of teamwork, which does not have to do with talking much, it's like: oh."*

(Duet 4)

Interaction progression: This main category is related to the construction of the musical bond with the partner throughout rehearsal. It refers to the construction of a mutual understanding that results in musical fluency and a growing level of comfort playing together. It includes the following sub-categories:

Mutual musical understanding: It refers to understanding and anticipating the musical ideas of their partner.

Pianist: *"As we played, I could more or less anticipate what he was playing. Listening and understanding each other a little more as we were playing*."

(Duet 1)

Mutual trust: It is a growing state of mutual comfort that musicians refer reaching as the rehearsal progresses.

Singer: *"It turned out very well for me. Of course at the beginning, until we got a little more confident… but in general we felt really good. With time that feeling was increasing…"*

(Duet 4)

Common knowledge: It refers to a common corpus of knowledge about musical style, practice and approach to working together.

Singer: *"Beyond not having played together, we share a choir in which I worked, so what he said about the lyrics…he knows me in that sense."*

(Duet 3)

Musical fluency: It refers to the feeling that music develops fluidly and without problems.

Pianist: *"At first it's like I'm listening and seeing the music. Then everything starts to flow perfectly, which happened to us a couple of times in the middle of rehearsal. I thought: it would be great if they recorded this."*

(Duet 4)

Discussion

Chamber music rehearsal is constituted as an interactive process in which the emerging categories of analysis coexist in time. However, the primacy of some categories is observed in different moments of rehearsal. In the first moments, interactions are oriented to generate the first musical agreements regarding the coordination of their individual parts and the first interpretative decisions.

The *interaction progression* category appears mostly related to an advanced instance of rehearsal in which expressive decisions are mainly worked on jointly, where a state of being with the other has been built based on mutual trust, understanding and anticipation of musical ideas. This mutual understanding is built throughout the rehearsal.

The emerging categories of analysis were found in all duets, and they appear to a greater or lesser extent depending on the interaction style of each duet. Although rehearsal work is framed within the contextual and stylistic characteristics of chamber music, dynamics within rehearsal can differ depending on how performers address the co-constructed process of creative activity.

Thus, interaction in chamber music rehearsal is presented as a process in which different instances of joint production coexist. This process appears to be structured around the progressive construction of a musical bond between musicians that allows them to co-create a musical interpretation.

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Conventionalist Approaches to Literature and Literary Creation

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Background

The problems of indiscernibles are foundational to many conventionalist and non-conventionalist approaches to literature. Originally introduced by Arthur Danto to analyze visual arts, that problem theoretically works as an argument against realist aesthetic theories (Danto, 1964, 1973, 1974, 1981; Dickie 1984), even those on literature (Lamarque 2000a, 2000b, 2010, 2014, 2019; McGregor 2015, 2015, 2016; Olsen 2005). Two objects visually indistinguishable can be one an artwork, the other a 'mere' thing. So, it is not visually decidable if Brillo boxes are or not works. Since their artistic nature is visually undecidable, aesthetic properties are not intrinsic. The same can be said of literature. Noam Chomsky's famous 'Colourless green ideas sleep furiously' (Chomsky 2002) is a non-sense sentence as well as a verse in 'Coiled Alizarine' by John Hollander: 'Curiously deep, the slumber of crimson thoughts:/ While breathless, in stodgy viridian, / Colorless green ideas sleep furiously' (Hollander 1971). Nobody would reject the meaningful character of the verse; however, what one means there by 'meaningful' has nothing to do with semantics. Of course, semantics is involved in recalling our everyday experiences through at least vague representational ideas of, for example, 'viridian,' 'thoughts,' 'green,' etc. However, again, the aesthetic properties of the poem are not reducible to the semantic information. What we do when we read counts then for conventionalist approaches as a source to explain literature. Conceived as practice, literature, according to the advocates of institutionalism, cannot be properly understood empirically. For example, Peter Lamarque has discussed psychoanalysis's role in literary criticism, arguing against the psychoanalytic claims of explaining literary interpretation and creation (Lamarque 1996). Similar criticism has been settled on the experimental psychology of literature, particularly the psychology of emotions (Lamarque 2012). Conventionalism then seems, firstly, to insist on answering metacritical questions (on the nature of literary interpretations) and, secondly, to call into question the empirical possibilities of explaining literature (either interpretation or creation) as if there were not any contributions to literary creation.

Aims

This contribution aims to revisit and assess, firstly, what the conventionalist approaches to literature have said about literary creation and, secondly, their critical points of view on the scopes and limits of psychology when used to literary appreciation.

Main contribution

to expand and discuss the conventionalist theories of literature from their conclusions on literary interpretation to literary creation. These theories have emphasized mostly the study of literary interpretation, letting a bit aside the research on literary creation. So, this contribution tries to amend that lacuna, inferring then that literary creation is not an exclusive research object of empirical sciences.

Discussion and conclusion

the conventionalist approach to literature also can theoretically contribute to explaining the literary creation since authors are ex post facto readers of their own aesthetic explorations. So,

those criteria employed by critics are involved in aesthetic creation. A *mimetic aspect* of literature selects the general themes and experiences to be literally perspectived. That mimetic aspect consists of the interest in literature that human beings experience (Lamarque and Olsen 2002). However, because the literary interest is not reducible to general thematic interest, the literary explorations of those themes are their reorganization through literary principles of aesthetic appreciation, i.e., identity under description, function (and purpose) of (described) details, opacity of described details, and thematic concreteness. Finally, literary creation implies how a literary author recognizes human themes for literary exploration, which is an object of empirical research (either historic or experimental), and it entails the implementation of each aesthetic principle employed in turning those themes into literary materials.

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Systematically exploring the social experience of live and digital concerts

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Background and aims
Following the proliferation of digital presentations of music, which burgeoned during the COVID-19 pandemic, we sought to compare the social experience of live and digital concerts, and to explore whether a social experience can be facilitated or enhanced by manipulating certain parameters of the digital mode.

Methods
The musical stimulus for this research was a classical chamber music concert including repertoire by Ludwig van Beethoven (op. 104), Brett Dean ("Epitaphs") and Johannes Brahms (op. 111). These works were performed by a string quintet and the live performance (n = 140) was professionally recorded and used as the stimulus in the digital variations of the study. These included the full concert presented on-demand (n = 133), a shorter version of the concert on-demand (n = 143), the concert presented with social interaction facilitation (n = 107), and an on-demand stream of the concert with a pre-talk from Brett Dean, the composer (n = 144). Participants were allocated to one of the digital conditions based on their interest and engagement with previous digital concerts.

Results
The results suggest the social experience of a live concert is significantly greater than that of an on-demand digital presentation of the same concert, particularly the amount of attention paid to other audience members and the satisfaction in being part of the audience reported by participants. In addition to this, the social setting facilitated a more social experience than other digital settings, based on the self-reported data. Analysis showed that participants who reported high levels of bonding and solidarity with the rest of the audience experienced a significant increase in positive activation and valence, and a significant decrease in negative affect, captured with the Positive Activation, Negative Activation, Valence short scale. Those who rated their satisfaction at being a part of the audience as higher experienced a significant increase in positive activation and a significant increase in valence. Finally, participants who paid more attention to other members of the audience experienced a significant increase in negative activation.

Discussion and conclusion
The results suggest the social experience of a live concert is significantly greater than that of an on-demand digital presentation of the same concert, particularly the amount of attention paid to other audience members and the satisfaction in being part of the audience reported by participants. In addition to this, the social setting facilitated a more social experience than other digital settings, based on the self-reported data. Analysis showed that participants who reported high levels of bonding and solidarity with the rest of the audience experienced a significant increase in positive activation and valence, and a significant decrease in negative affect, captured with the Positive Activation, Negative Activation, Valence short scale. Those who

rated their satisfaction at being a part of the audience as higher experienced a significant increase in positive activation and a significant increase in valence. Finally, participants who paid more attention to other members of the audience experienced a significant increase in negative activation.

Optimized musical coordinations applied to collective musical creativity

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Background

In the unpublished text Física de la Música (Revoredo 2006), an analysis methodology for music scores and transcriptions is proposed which allows the study of musical perception in structures. In this methodology of musical analysis, a comparative arrangement of references distributed according to similarities is proposed, and their structural behavior is studied simultaneously and successively in the musical sections. These structural arrangements show that the references are systematically arranged towards diversity, and this is evident in transcendental melodies and rhythms, where the varied combination of a few perceptive references is evident. This tendency toward a systematic diverse combination of references is what is defined as the optimization of perceptual information. Since 2006, this concept of optimization has focused on achieving musical arrangements in improvisations and collective musical collaborations, through the implementation of musical creativity techniques, induced in workshops and in live musical creativity socializations. Musical creativity techniques focus on achieving musical coordination in collective sections, according to the principles of optimized arrangement of sound references. In their first induction, the first four basic creativity techniques were implemented with 93.5% of the total 400 participants, asking them to combine musical resources common to their instrumental practice or singing in modal creations and in binary time. 60% of the participants exclusively practiced these 4 techniques from the first session, and 33.5% advanced to more advanced techniques with other forms of optimized coordination and in managing perceptual time in improvisation to induce group changes.

Aims

The object of the exhibition is to present the results of the inductions of collective musical creativity, initially showing the diversity of groups in which the experience was carried out, and later evaluating the 1142 recorded audios of collective creations during the period 2006–2018.

Methods and results

It will be reviewed how the concepts of optimization allow the design of basic creative techniques. The SPECS system (Jordanous 2012), has been proposed to start the study with a guided listening to the creativity audios induced in the first sessions. A linguistic evaluation of 30 surveys to workshop participants carried out between 2008 and 2013 is included, using the 14 keys to define creativity suggested by Jordanous (2012, p. 118–120), of the results, the positive emotional evaluation, the progressive work in group, and the achievement of objectives. We also use Rhodes' (1961) scheme of the "four P's", Person (input), Process, Product, and Press (environment), to study the creative induction.

Discussion and conclusion

In the entry or input, we have many different contributions of musical styles from the participants, of which Rock (14.2%), Classical (19.1%), Alternative (fusion of the previous two, 56.3%), and also Baroque (3.1%) stand out using period resources, and Vocal (creativity with voices, 3.3%). Instrumentalists and singers, academics and popular, self-taught, amateurs

and professionals, minors (15%), and adults (85%) have participated. The 400 participants have left 1142 classified and evaluated audio recordings. The "process" of creativity is governed by creative techniques that enhance coordination to optimize group structuring. They were generally applied in directed improvisations, or else by building the sections consecutively with revision when the participants were children, amateur performers, or in vocal creations. There are successful results of the first session techniques that show their potential when applied to groups of amateur musicians with basic proposals or in large groups in improvisations with skilled musicians. On the other hand, the recurring participants progressed in creative techniques, leaving records of more complex improvisations and more varied coordination.

In the "product" of the induced creativity system, we can find several characteristics following the contributions of Pease et al. (2001) regarding the evaluation of creative systems. We consider it a "measure of transformation" that improvisations have been able to transform from elementary coordinations to complex performances incorporating the public or musicalization of brief stories. A "measure of complexity" is the Creative Orchestra ensemble improvising and imitating the academic concert form. The Creative Orchestra emerged between 2012 and 2016 as the union of various workshops groups, with 10 and up to 24 musicians who improvised in live performance incorporating contributions from the public. As a "measure of surprise," we consider the ability of the group to continue coordinated activities even when they leave the group's direction. A "quality measure" is proposed to evaluate the musical arrangement achieved (considering coordination and execution), resulting in 12% very well achieved, 70% well achieved, and 18% regularly achieved. Also, an "artistic" quality can be identified in the creativity, expressing spontaneity and deep emotions through music. Considering that almost all of the participants have no experience in composition (92%), it is positive the achievement of well-formed music creation (82%) that the musical creations are pleasant and different from each other. The creative techniques demonstrate the potential to make music arrangements through coordinations in music collectives.

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*Titles of flash talks are marked in purple.

Is 432Hz an internet 'gimmick'? Comparing the effect of 432Hz music vs. 440Hz music on physiological and emotional responses

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Background

Music is based on sound which is produced by the vibration of an object, and its frequency is measured by Hertz (i.e. Hz). Different frequencies produce different tones, which are perceived as different timbres and sensations of sound. At present, the international standard we use for tuning is A=440Hz, which was agreed by the British Standards Institute at an international conference in September 1939. This was accepted by the International Organisation for Standardisation in 1953 and is still used today. However, the debate on this pitch standard has never stopped. In recent years, there has been a musical revolution on the internet standing for view of 432Hz music. Before the introduction of the international pitch standard, the frequency range of a1 was roughly limited to 400-450Hz, and A=432Hz had a place in the history of music, and there were many different opinions on whether the pitch standard should remain at 440Hz or be changed to 432Hz. Do different tuning standards have an impact on human's physiological and emotional responses? These questions are of interest to researchers and listeners alike.

Aims

An experimental study was conducted to investigate:1.Whether there were significant changes in physiological indicators in the experimental group listening to different frequencies (440Hz vs. 432Hz) .2.Whether there were significant differences in the degree of emotional perception in the experimental group listening to different frequencies (440Hz vs. 432Hz).

Methods and results

A 3x 2 experimental design was used, including three style of music and two frequency groups. The three types of music were classical, jazz and pop music, with two frequency groups of 440Hz and 432Hz. The subjects were divided into two groups (Group A and Group B), one group listened to three pieces of music of different musical styles at 440Hz and the other group listened to three pieces of music of different musical styles at 432Hz. The subjects were not told how which Hz they were hearing. The dependent variables were self-reported emotions and physiological measures (blood pressure, heart rate). The electronic equipment used consisted of a mobile phone and a wireless Bluetooth headset, with the software Audacity for tuning 432Hz music to 440Hz and the music software QQ music for sequential playing on the mobile phone. Both groups listening to the music in the same order and same volume.

Discussion and Conclusion

432Hz music may not be just an internet "gimmick". Our research has discovered that 432Hz music has a significant effect on decreasing systolic blood pressure, whereas 440Hz music does not have a notable physiological effect. 432Hz music is more effective than 440Hz music in decreasing systolic blood pressure. Therefore, listening to 432Hz therapeutic music is a good choice when you want to calm your mind and adjust your mood. Although our research has found some positive effects of 432Hz music, it doesn't necessarily mean that 432Hz is better than 440Hz.432Hz music has gained widespread attention and recognition on the Internet, but

some exaggerated claims have been made. It is necessary to approach this rationally and not take unscientific statements as facts. Additionally, the study on 432Hz music remains in its early stages, and much remains unknown in this field. Subsequently, further in-depth research is warranted.We need to conduct systematic analysis of 432Hz music in terms of phenomenology, psychology, and the brain sciences, with an emphasis on substantial research.We need to determine whether 432Hz music has universality when it comes to auditory, physiological, and psychological effects on humans and whether these effects are short or long-lasting. We must also consider different genres of music, as well as different groups of listeners, and design more comprehensive experimental approaches to conduct accurate scientific research on 432Hz music.

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Animalezas Sonoras - Collaborative Composition Workshop for Children

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Abstract

Animalezas Sonoras is a research project that seeks to know the educational scope of a methodology of musical initiation for children from 3 to 5 years old, focused on the stimulation of the imaginative. The teaching method arose from a previous project of musical creation/education, from which the *Guía de Juegos para Pequeños Compositores* (Games Guide for Little Composers) was designed, being a workbook with musical composition exercises that introduces children to sound experimentation; It was observed that through collaborative composition and the use of new non-traditional methodologies, it is possible to increase the development of creative skills in musical language, and this could enhance the creativity of children, which can help them to strengthen their self-esteem, their problem-solving ability and their teamwork skills. For the development of the present project, three phases of work will be carried out; each of them focused on the development of activities related to management, the implementation of composition workshops with infants, as well as the evaluation of the educational process. The research method will be based on a quantitative-qualitative approach, applicable through instruments such as participatory observation, as well as pretest and posttest.

Background

Musical initiation in Mexico, at least in professional music schools, has been worked mainly from a conservative approach, based on repetition and memorization activities through which they are prepared mainly to be instrumental technicians. This can hinder the development of creativity, as it does not provide them with the necessary tools for the development of creative independence through imagination. It is possible that conventional music education as it is conceived today is not the most adequate form for the development of imagination, because by considering the subject of composition in isolation, it has not sought to generate material that develops the imaginative capacities of students. In this regard, an alternative methodology could be to teach them to write their own music, since being able to express ourselves with our own words can help us to have our own personality and ideas.

Aims

The objective of *Animalezas Sonoras* is to carry out a collaborative composition workshop aimed at children from 3 to 6 years of age, through the implementation of a musical initiation methodology from a constructivist perspective, with the intention of generating active participation, promoting of creativity and motivation of imagination in the musical field, from sensory-perceptive stimulation.

Method and results

For the development of this project, three phases of work were carried out. Each of them focused on the development of activities related to management, the implementation of the workshops and the evaluation of the results obtained. For the first phase, the space was managed

and the population to be served was located. Subsequently, a creativity evaluation test and a pilot test of the sessions were developed to define the final didactic plan that integrated, in turn, the previously designed composition exercises. Finally, the session evaluation rubric was obtained.

Discussion and Conclusions

It can be concluded that the focus on collaborative composition and the use of new non-traditional methodologies contribute to the strengthening of infants' self-esteem, the possibility of expressing themselves musically and actively participating in the creation of musical compositions gives them a sense of accomplishment and confidence in their abilities and improves problem-solving and teamwork skills with participation in musical composition workshops that seek to promote the development of problem-solving and teamwork skills in infants. Collaboration in the creation of compositions requires children to exchange ideas, listen to and respect each other's opinions, which fosters their ability to collaborate and solve creative challenges together. Overall, the *Animalezas Sonoras* project found that a music initiation methodology focused on stimulating imaginative and collaborative composition and the use of new, non-traditional methodologies can be effective in enhancing the development of creative musical language skills in infants aged 3 to 5 years. Moreover, additional benefits were observed in terms of strengthening self-esteem, problem solving and teamwork skills. Since the implementation of the *Animalezas Sonoras* project, more than 100 workshops have been held in countries such as Mexico, Ecuador and the United States, to mention a few, in addition to collaborating with the Universidad Indina, the University of New Mexico, UNAM and the Intercultural Indigenous University of Michoacán. With these workshops, more than 1,500 children have been attended, with whom collective concerts and work logs have been created. In addition, this workshop has resulted in the "Guía de Juegos para Pequeños Compositores", of which a thousand printed copies have already been distributed. This guide is presented in workbook format and includes musical composition exercises that aim to initiate children in musical initiation, based on sound experimentation, through the development of imagination and the promotion of creativity.

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Creativity rituals

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Throughout history, many artists have used altered states of consciousness to awaken and aid their creative processes. In Brazil, where ayahuasca is legalized in a ritual context and has been expanded into urban areas (LABATE, 2005), artistic residency rituals have been organized for this creative awakening. In the so-called "Collective Art Encounters", professional artists, amateurs and even those who don't define themselves as artists come together to create under the influence of ayahuasca. The reports of some participants point to greater freedom, "a decrease in the superego at the time of creation" - in the words of one participant - and a decrease in the fear of making mistakes. It is interesting to note that these qualitative notes are corroborated by neuroscience studies, which show that the DMT present in ayahuasca acted in the brain by decreasing inhibitory and restrictive functions, leaving its functioning more entropic and rich in information (TIMMERMANN et al, 2023).

With the aim of investigating the effects of psychedelics on creation processes, this project intends to test the hypothesis that so-called "master plants" such as ayahuasca can increase the creativity of frequent users. In a dialogue between psychology, anthropology, ethnomusicology, neuroscience and aesthetics, this transdisciplinary study is focused on the artistic creation and performance - be it visual, musical, literary - which is born under the effect of ayahuasca, sananga and other medicines from the native peoples, which have become popular in recent decades and have become an area of interest in academia due to their therapeutic and aesthetic potential (CARNEIRO, 2005).

With this in mind, this ongoing study intends to apply creativity tests to investigate the correlation between ayahuasca and creativity in participants of rituals of neoshamanism artistic residencies in the Serra Sagrada community, located in Minas Gerais - Brazil; comparing with data from a test group to observe the influence of consumption of this psychedelic beverage on creative behaviors. In order to do so, we carried out a survey of the existing studies in this field (ARONOV, 2019; ISZÁJ et al, 2016; KIRAGA et al, 2021; PERKINS, 2021; SHANON, 2000) and noted that the creativity tests generally used to measure the correlation between creativity and psychedelics (Picture Test Concept- PTC; Torrence Test of Creative Thinking - TTCT; etc.), are very similar IQ tests and, although they are able to measure the "inspirational", "divergent thinking" and "problem solving" aspect, they do not cover the "realizational" aspect of creativity (BATEY, 2007). We can note that during the last 100 years of studies in this field, creativity has been treated as the "prodigal stepbrother to research on intelligence" (BATEY, 2007, p.12) In this sense, it seems to us that this type of test considers that creativity has an alleged objectivity based on Western and Eurocentric culture. On the contrary, we believe that creativity may have a cultural dimension, and that these tests would need to be adapted to cover the cases of original cultures, for example. As Batey said in his important study on everyday creativity, the idea of "creativity as an original product of an individual is a predominantly Western perception" (BATEY, 2007, p.11). In another direction, there has been considerable interest in the situational factors that promote or inhibit creativity at the level of the individual and his environment. Here, creativity in the individual is seen as the result of a complex

interaction between the person and the environment, which ultimately leads to a creative product.

Thinking about the specific conditions of an artist residency context with psychedelic ayahuasca, this study will replicate the creativity test that we deem most appropriate, the "Biographical Inventory of Creative Behaviors" (BATEY, 2007), a questionnaire where each creative activity is worth one point, such as painting a picture, writing a poem, creating a garden, a theory, a composition or a cooking recipe, in a total of 34 activities. The questionnaires will be applied in two groups, the first, the test group of people who use ayahuasca and the other, the control group, of people who have never used it. The same questionnaire will be applied three times, baseline and twice more with three month intervals to measure differences in creative behaviors in correlation with the use of ayahuasca. Afterwards, data will be crossed to verify the difference between subjects who use and do not use ayahuasca. With this, we hope to measure the relashioship of the beverage with the creative behaviors of frequent users and test the hypothesis that the use of ayahuasca combined with ritualistic experiences increases creative behaviors.

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*Titles of flash talks are marked in purple.

Creative processes and multimodal relationships in the production of music videos with artificial intelligence

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Background

The growth of solutions applied to the production of multimedia videos with artificial intelligence (AI) has presented new ethical, cultural, and creative challenges for artists involved with music and image. Generative diffusion models conditioned to text have gained much attention for their performance in generating high-fidelity images from text. Consequently, these models have produced new problems in the production of poetics and techniques for the relationship between music and image. Most artists and producers face difficulties in using AI (SHIN, C.; JEONG, H, 2021) in their creative work. Obtaining high-quality images in relation to creative musical narratives has become a game of trial and error, with a wide experimental approach and not exactly predictable (BRACK, et al., 2023). Surprisingly, the synchronization of image and sound has become one of the most complex tasks in this new technological vanguard of audiovisual production.

Aims

The objective of this study is to investigate the problems of the creative process in the production of music videos using AI technologies, with a focus on multimodality and the creation of audiovisual poetics. This study was conducted in two stages: 1) literature review and 2) empirical study.

Main contribution

The study contributes to the methodological, ethical, and conceptual reflection base on creative activities with video, music, and image based on AI.

Discussion and conclusion

The integration of multisensory perceptions generates a more comprehensive understanding through the synchronization between the image frame rates with the sound metric, considering the temporal aspects in the intervals of the music lyrics. In addition, we highlight that the narrative based on the lyrics can be a relevant creative process for the development of the script.

Sources of artistic inspiration: An analytical framework to investigate their selection and influence

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Background

According to Duarte and Konstantinidi (2022), there does not exist investigation on the criteria composers use to select their inspirational sources. In fact, these authors and, apparently, Duchesneau (1986, as cited by Duarte and Konstantinidi, 2022) have essentially categorised the sources in their studies. Katz (2012/2016) also studied what was inspired and, like Katz and Gardner (2011/2012), recounts how some inspirational sources appeared in the processes or the composers' journeys. But an analysis of these aspects was out of the scope of these studies.

Aims

I sought to bridge this literature gap in a retrospective self-study on the inspirational sources of all the pieces I had written. I could do so, because I have reliable sources of information on the facts or that allow me to corroborate most of my memories, and therefore minimise biased results due to memory-related inaccuracies. To contribute with more than solely knowledge on my own processes, I developed an analytical framework that may be employed by other researchers in similar studies. As Schiavio et al. (2022) note, the fact that the units of analysis for the study of musical composition remain "seemingly ineffable", allows for the generation of "novel taxonomies of factors, experiences, and concepts" to help explain the generation of musical ideas (pp. 306–307).

Methods

Based on the relevant definitions of "to inspire" and "inspiration" in the dictionary of Lisbon's Academy of Sciences (Academia das Ciências de Lisboa, 2001a, 2001b), I contemplated as sources of inspiration the factors that made me consider writing the pieces (for me, the processes began in the moment this happened); motivated me to carry the processes forward; and led me to ideas for the processes (which then influenced my writing or decisions).

To collect data, I wrote an account for each piece (Torres, 2023a). Through descriptions of the inspirational sources and the available sources of information (my memory and sources from my archive), and through auto-ethnographic commentaries, I sought to answer for each source of inspiration the following questions:

1. How did it appear in the process?
2. How and when did it appear in my journey?
3. What did it inspire?

Regarding the latter question, influenced by Katz (2012/2016), I also looked at the way the inspired ideas manifest in the work; and, influenced by Roels (2014) – who self-studied the influence of his own theories and short verbal ideas for new compositions on selected processes –, I sought to identify the ideas that had been abandoned in other processes. I wrote in my native language because this is the language in which I reflected during the processes, and I can best express myself. I cited the sources of information from my archive in square brackets and listed them in tables in an appendix. When I recurred to my memory, I always mentioned it in the

text. I also gave an overview of the biographical context under which the processes occurred and the context that preceded them.

To arrive at the analytical framework, I extracted from the accounts quotations that objectively answer each research question or contain related information, organising the material in a spreadsheet per process and source of inspiration and noting down the aspects with which that information is concerned. The framework was structured around the research questions and these aspects.

Results

The framework deals the research questions, as well as whether a source had already been considered in a process and led to a musical work or content thereof; why a source appeared in the process and why in the way it did; the context in which a source appeared in the creator's journey or associated to the way it appeared; and the reason for the inspiration (Torres, 2023b).

Discussion and Conclusion

The framework is not based on specific data, for which it is independent from the study's main limitation: possibly biased results due to memory-related inaccuracies. But some aspects were included because I found them in my own processes, which is a limitation. Nevertheless, all aspects are possible in creative processes of different kinds of work. Therefore, the framework is not limited to studies in musical composition.

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*Titles of flash talks are marked in purple.

Instrumental embodiment in flute playing

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Background

The concept of music embodiment has been used in different fields of music research to describe how musicians learn, how they relate to the music and their instruments, and how they use their bodies to mediate with the environment. Through the embodied approach, the individual is seen as a whole unity, in which the cartesian separation between body and mind is replaced by a more integrated view of human reality. The origin of the concept of embodiment is rooted in Merleau-Ponty's philosophy, which assigns to the body the main role of making sense of the world. In his conception, the awareness of body schema allows us to develop a "sense of ownership" that makes us conscious of our actions (Gallagher, 2014, p. 13).

Jaques Dalcroze (2000), the creator of the teaching music method called "Eurythmics", was the first to translate the idea of embodiment into music practice, stressing the importance of the movement and physical experience of space in the acquisition of music skills.

In the last few decades, a new interest in a more integrated approach to music practice has grown also among musicians and researchers. The idea of the cognitive process as a product of the mind that makes sense of the world through an active sensorimotor process, like stressed by Evan Thompson (2007), has progressively gained relevance. This idea is also supported by Arnie Cox (2017), who affirms that the understanding of musical elements is realized thanks to the mediation of all the senses and that the process of learning music is achieved thanks to the deliberate imitation of a gesture, which can be a motor action or motor imagery.

Aims

Music embodiment is quickly earning resonance in performance-related fields, but it still lacks a substantial investigation in instrumental practice. I aim to analyze flute practice verifying if and how the embodied approach can help the performers to solve instrumental problems. In particular, the assumption that we learn through imitation of movements and related imagery opens the discussion to many considerations, first of all, the possibility to devise a practice routine informed by a more integrated approach involving tactile feelings, eye control, and performing movement awareness.

Main Contribution

The first way to understand how an embodied approach can be applied to flute practice is to acknowledge that a big portion of the mechanisms behind the flute sound's production happens inside the body, and are largely unconscious, such as the breathing mechanism and sound emission. An example of completely embodied practice that is based on breathing and airflow control is singing, which indeed has been taken as a model for flute technique by many flute methods and teachers such as Galway (2006), Bernold (2016) and Debost, (2002). Analyzing how singing and flute have been compared in the most important flute methods and paralleling them through a physiological analysis of their breathing process and sound emission, I will investigate the validity of such parallel, eventually verifying if the flute practice can be considered an embodied practice per se and if and how bringing to awareness covert physiological processes can benefit flute practice.

According to Linda Kaastra (2022), instrumental practice is embodied when it is based on the awareness of the processes that might be normally unconscious. For Luc Nijs (2017), thanks to a process of assimilation of movements and postures that are specific to the instrument, the instrument becomes an extension of the musician's body. This process of instrumental incorporation consists of internalizing body schemata that include the gestures required by the specific instrument and their continuous refinement. I will start from here with the analysis of my practice, conducted through self-observation, notation and recording, to find ways to bring more awareness to my instrumental playing. In doing so, I will also take advantage of motor skills acquisition theories in sports, which have many common traits with musical training. (Sperl and Cañal-Bruland, 2020).

Discussion And Conclusion

To play an instrument requires the involvement and coordination of several physiological systems, such as neurological control, skeletal system, fine and extended motor control, and breath system. During the last few decades, a growing number of musicians and music educators have focused their investigation on the central role of bodily factors in music making, to the extent of identifying the body as a central factor of creativity and generator of knowledge (van der Schyff et al., 2022). This can be applied also to flute practicing, framing a practice model that makes explicit the unconscious processes behind sound production and that applies to flute gestures the benefit of movement awareness, thus benefitting the flutist of a wider understanding of his practice, and conscious use of technical tools to enrich their expressiveness in music making.

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*Titles of flash talks are marked in purple.

Creative strategies mobilized in monitoring collective musical practice: contributions from a case study with a chamber ensemble

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Background

Self-regulation consists of mobilizing thoughts, feelings and actions from the perspective of human agency, with a focus on achieving personal goals (Bandura, 2016). Based on the idea of socially shared regulation (Hadwin & Oshige, 2011), collective regulation represents a theoretical extension of self-regulation and comprises a set of performance planning, monitoring and evaluation strategies, mobilized to achieve collective goals and supported by socially-based cognitive, metacognitive and motivational processes (Veloso, 2022). Recent investigations have revealed the fruitful relationship between self-regulation processes and the use of creative strategies in music practice, teaching, and learning (Araújo *et al*., 2019; Veloso & Silva, 2021). In this study, we approach the development of skills for ensemble performance, considering the use of creative strategies – actions and cognitions employed to select, organize and integrate new musical-interpretative skills and knowledge aimed at solving problems – in monitoring collective musical practice.

Aims

This work is part of a larger study, in which the general objective was to investigate motivational and learning processes in chamber ensembles from the perspective of collective efficacy beliefs, social modeling and collective regulation. The specific objective that guided the study presented here was to verify the use of creative strategies in the preparation of musical performance in a chamber ensemble in the light of the collective regulation of musical practice.

Methods and results

The research that originated this work consisted of a hybrid approach, consisting of a qualitative-quantitative intersectional survey and an essentially qualitative descriptive case study. We present here only part of the results from the case study conducted with a professional Brass Quintet. Data collection involved the systematic observation and recording of two rehearsals, and conducting two semi-structured group interviews. Data analysis considered content analysis tools, with emphasis on categorical analysis by semantic similarity and data triangulation (Bardin, 2011).

Regarding monitoring in the planning of musical practice, the data revealed the use of organizational strategies (deliberate alternation between moments of systematic practice and moments of informal practice and rest; regularity in the organization and management of rehearsals; and the process-product relationship, with a focus on qualitative and creative variables of performance construction) and musical interpretation development (based on the sharing of interpretative-musical conceptions among ensemble members and on evaluative and instructional feedback supported by the use of synesthetic/imagery metaphors).

With regard to monitoring the practice, it was possible to verify the study by parts / part–whole strategies (study of excerpts suggested by certain musicians, in decision-making initiatives and collective problem solving) and time management, involving temporal distribution according to the characteristics of the tasks and the challenges faced in rehearsals. It was also possible to verify the variability of strategic procedures – the study of specific excerpts with varied instrumental configurations (aimed at solving problems through direct interaction between peers); tempo manipulation and deliberate use of the metronome; and actions based on proxy agency, characterized by alternating leadership between ensemble members throughout the rehearsal, enabling feedback of an informative, motivating, reinforcing and corrective nature.

In the light of metacognitive knowledge and experiences, it was possible to verify the use of metastrategies. Procedural metacognitive knowledge was identified in the resolution of problems involving the challenges of the tasks of preparing and maintaining the repertoire (practice regularity; study by parts / part–whole strategies; simulation of the recital), in the strategic establishment of the functions performed by the musicians and in the interactions gestures and sounds in musical performance. Finally, metacognitive experiences were especially related to self-questioning / thinking-aloud and verbalizing insights. Based on the verbalization of the strategies employed and personal performance assessments, it was possible to relate individual and collective study to overcoming challenges. From the metacognitive experiences also emerged a collective sense of achievement and accomplishment, particularly in situations in which epiphanically the musicians realized that they had achieved a performance goal (sustaining a tempo in a music with energetic rhythmic character at a fast tempo, for example); such perceptions were associated with positive emotional experiences, characteristic of motivational and creative processes in musical practice.

Discussion and conclusion

In the regulation of collective musical practice, monitoring enables the observation and management of strategies mobilized to solve problems and achieve goals. In this process, the observation of performance provides information for reviewing objectives, establishing standards of achievement and evaluation of the practice undertaken (Bandura, 2016).

The findings of this investigation enabled the association between monitoring practice and three categories of potentially creative strategies: (i) planning, (ii) conduction and (iii) evaluation of musical practice / meta-strategies (Jørgensen & Hallam, 2016). The results allowed reflections on the process-product relationship in the construction of ensemble performance; the strategic use of interpretative-musical metaphors; decision making and collective problem solving; the strategic variability of cognitive and metacognitive procedures; procedural metacognitive knowledge; self-questioning/thinking-aloud, verbalizing insights, epiphany, and positive emotional experiences as part of metacognitive experiences and creative processes in ensemble performance.

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*Titles of flash talks are marked in purple.

The multidimensional nature of experience in musical creativity: the need to revalue what can't be measured

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Background

Music creativity is generally assumed to result as a consequence of training in the auditory, technical and analytical aspects of music that combine with a certain amount of innate conditions, often referred to as "talent". This is rooted, in part, in the large influences that rationalism and positivism had on the western musicology, placing the focus of musical education on the aspects of music (i.e., *sound*) that can be measured by physical devices (Shifres, 2007). Noteworthy, the experience that arises in consciousness about emotions, sensory perceptions, body and inner state cannot be *directly* measured by any means. Though science can quantity many physiological, endocrine, neurological and behavioral correlates, the experience is only available to the person who experiences it. Yet, it is obviously necessary for the expression of musical skills and without it there wouldn't be any sense in creating any kind of art. Additionally, there are various aspects related to the personal background of the musician that might show a high impact on musical skills as well. This work aims at understanding the origin and nature of musical creative skills from a multidimensional perspective.

Aims

1. Shed light into the importance of addressing and developing the subjective aspects of music perception and cognition (how we *experience music*).
2. Revalue the importance of personal characteristics and skills that go beyond the ones usually appreciated in musical education (e.g., metacognition, ethical, psychological and philosophical background).
3. Reconsider the concept of "creative talent" and rethink our musical abilities from a multidimensional perspective.

To address these points, I conducted a 4-year metanalysis of scientific and musical literature (peer-reviewed journals and books). Additionally, I addressed them in formal and informal conversations with musicians and students.

Main contribution

From the present metanalysis it emerges that the musical experience in human consciousness can be represented by a hyperspace containing many dimensions. Below, I provide a summary with a brief explanation of the ones that are generally underappreciated (4 - 8):

1-3. Auditory, analytical and technical dimensions, respectively (all largely addressed in musical education).

4. Dimension of musical embodiment: It refers to the understanding of music through our physical *experience*, involving body awareness, movement and cognition through action (embodied music cognition, Leman and Maes, 2014).

5. Emotional dimension: it includes both our capacity of feeling emotions in our body and the development of awareness about what emotion/s the music generates in us (e.g., Zentner et al, 2008).

6. Interpersonal dimension: this refers to how we *experience* the interaction with others while playing together (Leman, 2010). Together, dimensions 4 - 6 are in line with a 4E understanding of musical cognition (van der Schyff et al., 2018).
7. Synesthetic dimension: this involves the experience of perceiving music through senses other than hearing, such as the spontaneous emergence of colors or abstract imagines in our minds (e.g., geometric forms, lines) and/or tactile sensations (e.g., as if the sound were "rough", "smooth" or "cold", Geleyev, 2007).
8. Dimension of non-abstract visual associations: this involves the experience of more defined visual representations about the emotional or descriptive meaning of the music (Scruton, 1997).
In addition, the following aspects of the personal background have significant effects on musical skills:
9. Metacognitive dimension: it refers to our capacity of organizing, monitoring, regulating and evaluating our learning and creative processes.
10. Psychological dimension: it contains aspects such us our learning goals (Goals Orientation Theory), implicit believes about the musical abilities and motivational strategies, among many others.
11. Philosophical dimension: this involves asking ourselves questions such as: why do I play or create music? For whom do I play or create music? (Weintraub, 2016).
12. Ethical dimension: it involves asking ourselves about the values that shape our musical activities and projects and the direction we should take as artists.
13. Spiritual dimension: this involves the sense of connecting with a higher-order consciousness of any kind while playing or creating music.

Altogether, creativity and musical expertise are likely to be fostered when this hyperspace is developed in a balanced way.

Discussion and conclusion

Musical creative skills are clearly influenced by how musicians experience subjective phenomena that appear in consciousness during their musical activities. These include the experience of emotions, embodiment and synesthesia, among others. In addition, musical creativity is highly-influenced by metacognitive skills and by how musicians approach their activities from the psychological, ethical, philosophical and spiritual perspectives. Many differences in the creative abilities often attributed to innate "talent" become much clearer when we assess the abilities of musicians to approach their musical activities from this multidimensional perspective. According to the present analysis, musicians who manage to develop a more balanced approach to their "experience of music", and actively cultivate some of the previously-mentioned aspects of the personal background, are likely to express larger creative and musical skills in general. Altogether, a balanced and multidimensional way of approaching music frequently leads to a feeling of "immersion" and commitment. We should develop a more holistic way of appreciating the origin and nature of musical abilities, as related to a complex matrix involving multiple subjective phenomena emerging in consciousness and skills that extend far beyond "music" into our personal lives.

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Exploring the Link between Mania and Creativity: The Role of Creative Practices in Recovery from Bipolar Disorder

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Background

My review of the literature reveals an established connection between the mania experienced in Bipolar Disorder (BD) and creativity, legitimizing a connection previously only referenced anecdotally. However, it also highlights the lack of understanding of the nature of creativity as it relates to BD, and insufficient research into pharmaceutical effects on creativity, specifically for lithium, the most used drug to treat BD. Heightened creativity is valued by many who have it as a positive aspect of a mental illness that is often debilitating. This mania-linked creativity has influenced many artists that history reveres as brilliant. Mania may enhance creativity by increasing cognitive flexibility, which allows individuals to generate a greater number of creative ideas. Mania may also increase motivation and persistence, which can facilitate the creative process. Additionally, individuals with bipolar disorder may be more likely to pursue careers in creative fields, which could contribute to the observed link between mania and creativity. There is a threshold of useful mania, and that once that threshold is met, creative output begins to drop. People experiencing small amounts of mania finish projects they have started, often leading them to more creative success. The heightened self-perception found in bipolar disorder can contribute to intrinsic motivation of personal goal pursuit, a function that can be abnormally regulated in bipolar disorder. Therefore, people who experience these symptoms at a minimal level experience higher success in creative pursuit. Individuals with full-blown mania will often be too psychotic to focus and utilize their heightened abilities, giving the appearance that they are less creative. Manic individuals often experience euphoria or claim to have an understanding that no-one else can see. Having a creative outlet can be a tremendous relief.

Aims

After reviewing the literature and investigating current creatively-oriented treatment plans for BD, I offer recommendations for interdisciplinary collaboration in establishing treatment plans for BD that value creativity as an essential component of recovery.

Main contribution

The connection between creativity and bipolar disorder (BD) has the potential to enhance therapeutic interventions for mental disorders. Creativity can provide patients with BD a sense of value and self-expression. Current treatment for BD mainly focuses on symptom management, but a personalized approach that recognizes patients' creative interests and needs can improve patient compliance and satisfaction. Therefore, I offer specific recommendations to the field outlined below in three categories: Expanding our historical understanding, conducting interdisciplinary research, and increasing positive experiences. Expand historical understanding of the connection of mania and creativity and value the stories of our past by creating a reference database of collected works across disciplines related to mania and creativity (ex. Academic papers, interviews, historical documents, and art by individuals experiencing mania), searching archival sources and manuscripts for historical experiences of manic driven inspiration and creativity, writing a thesaurus for historical terms related to mania,

Bipolar Disorder, mental illness, and creativity. Conduct interdisciplinary research on mania and creativity through the International Arts and Mind Lab using the Impact Thinking model to interrogate the interactions between current pharmaceutical approaches to BD and creativity, to develop a better understanding of the nature of creative thought during mania, and to develop accessible, practical, evidence-based, creativity-oriented treatment options for BD Increase positive experiences for individuals going through treatment for BD by challenging the current approach of mental illnesses treatment to allow individuals to value positive aspects of their symptoms, reorienting treatment for BD to a wholistic approach around a patient's needs and capabilities rather than around treating symptoms, and designing improved individualized treatment plans that value creativity as an essential component of recovery from BD

Discussion and conclusion

Researching the link between bipolar disorder (BD) and creativity, will lead to improved treatment plans that value creativity as an essential component of recovery. Patients with BD often view their mania as part of their personality and fear medication will diminish their creativity, particularly in creative fields. If successful treatment of BD includes suppressing creativity, many individuals may not comply with their treatment plans. Therefore, incorporating creativity into treatment plans may increase adherence to treatment. Such treatment plans would meet a client where they are, viewing their innate creative drive as a tool to be utilized rather than a symptom to be suppressed. With this dramatic shift, human artistic culture, often driven by those among us teetering on grey lines between inspiration and mania, will both grow and flourish.

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The Role of Coping Strategies, Music Experience, and Gender in Predicting Music Performance Anxiety in the Context of Chinese Music Performers: A replication study

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Background

Music performance anxiety (MPA) is an anxious music performance experience due to underlying biological and/or psychological vulnerabilities and/or specific anxiety-conditioning experiences (Kenny, 2009a). It can be found from the definition that the structure of MPA is complicated, which also leads to complicated influence factors on the level of MPA (Kenny, 2011).

Some definitions of the study are as follows. Music experience can consist of the aspects of music training, performance experience, musical ability, and others. Instead of looking at the way to cope with MPA, this study focused on the variable of coping strategies, which is the cognitive and behavioural ability to deal with certain requirements in difficult situations (Lazarus & Folkman, 1984).

Biasutti and Concina (2014) investigated the aspect of coping strategies and music experience in predicting MPA in the context of Italian musicians. The main result showed that the weekly practice time, experience, avoidance strategy, and social support strategy explained approximately 30% of the variability which can be observed in the MPA scores (Biasutti & Concina, 2014).

Results of some previous research showed that some coping strategies are related to the level of MPA and can be predictors of it (Coşkun-Şentürk & Çırakoğlu, 2017). On the aspect of music experience and gender, the relationship between music experience, gender, and the level of MPA was unstable in previous research as the results changed a lot in different situations (Sârbescu and Dorgo, 2013; Biasutti & Concina, 2014; Nusseck et al., 2015).

Aims

This study aimed to replicate and broaden a previous study (Biasutti & Concina, 2014). To be detailed, the goals were to investigate the relationship between coping strategies and the level of MPA, music experience and MPA, as well as gender and MPA in the context of Chinese musicians. By doing the study in the context of Chinese musicians, this replication study tried to fill the research gap. At the same time, Chinese musicians can be aware of the phenomenon of MPA and get some information about it.

Method and results

The study has been formally approved by the University of York School of Arts and Creative Technologies Ethics Committee.

A total of 151 participants (N=151) were included in the final analyzing process (seven professional musicians, 44 amateur musicians, and 100 music students). They were asked to complete the consent form online before starting the study. Three questionnaires in Chinese

version were used by translating two close-ended standardized questionnaires: Kenny Music Performance Anxiety Inventory (K-MPAI) and Coping Orientation to Problems Experienced Inventory-Brief (Brief-COPE), as well as another questionnaire measuring lifetime musical experience: The Edinburgh Lifetime Musical Experience Questionnaire (ELMEQ) (Carver, 1997; Kenny et al., 2004; Okely et al., 2021).

Results showed that humour, religion, using emotional support, using instrumental support, self-distraction, denial, venting, behavioural disengagement, and self-blame factors of Brief COPE and music background significantly predict MPA. No relationship was found between gender and MPA. A model showed that MPA was predicted by six factors of coping strategies from Brief-COPE (humour, venting, self-blame, using emotional support, self-distraction, and behavioural disengagement) and music background ($F(7,143) = 21.142$, $p = .000$, $R2 = .51$, $R2adjusted = .49$).

Discussion and conclusion

The relationships among coping strategies, music experience, gender and MPA in the Chinese context were investigated in this replication study. The result is different from the original study, and practice time was not found to be a significant predictor of the level of MPA. The limitation can be related to the irregular distribution of gender, music background, the first instrument, and other aspects of the participants. At the same time, the gender and music background of the samples did not show good distribution, which can be taken into consideration in future studies.

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The Development of the Music Emotion Recognition Test for Teenagers

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Background

Existing musical emotion recognition ability tests are mainly designed for adults to evaluate whether they can consistently recognise the expressed musical emotions through listening (MacGregor & Müllensiefen, 2019; MacGregor et al., 2023; Vieillard et al., 2008). The lack of musical emotion recognition tests with different recognition levels of stimuli verified for measuring the ability of teenage participants is addressed in this study. The new test aims to measure the ability of teenagers (12-18 years) to recognise the emotion expressed in a piece of music.

Methods

Four emotions were chosen (Happy, Fear, Peaceful and Sad), including 40 music pieces composed by Vieillard and colleagues' study (2008). Based on the findings on the relationship between music features and emotions (Eerola et al., 2013), this study employed stimuli in which four music parameters were manipulated (tempo, register, dynamics, and timbre) to produce 3 levels of recognising. Each participant listened to 40 music excerpts from the total 120 stimuli. They were asked to select the emotion category (Happy, Fear, Peaceful, Sad and Other) and to rate the valence and arousal levels. Data collection also includes the reaction time for each stimulus.

Results

There are 370 valid responses involved in the analyses. The General Linear Mixed Model (GLMM) show that the emotion category has the highest effect on the prediction of correct recognised probability. The pairwise contrast suggests that the performances of the four emotions are significantly different. Most of the emotion categories show weak correlations; in the factor analysis, only two components are extracted with peaceful as a single component. However, the explained variance of the two components is 68.26% which is insufficient for the whole model. The selection criteria are to keep the middle-ranged difficulty levels and the proper valence-arousal ratings.

Discussion

It can be found that emotions in music could have different ranges of features (Bresin & Friberg, 2011), and the changes in music features may affect the difficulty of recognition. As the correlations are all very weak, it can be proposed that teenagers might have different abilities in recognising different emotion categories and that it is possible to provide a test for the recognition of different emotions separately. However, the test reliability and validity need to be further analysed.

Conclusion

This study attempted to develop a musical emotion recognition test for teenagers with which the students can evaluate their abilities in recognising different emotions in music.

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