



Welcome to 'Music is Good'

Stephen Martin

Newport Fiddle and Folk Club

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NEEFC
NEEFC



What is music?

- “Musicking” (Christopher Small, N.Z.)
- Sounds
- Ears
- Nerves
- BRAINS
 - Frequencies to pitches
 - Volume changes to rhythms
 - Recognition, categorisation
 - Cultural preferences



Daniel Levitin showing Sting his cerebellum. Credit: Owen Egan

What does the 1960s Beatles hit "Girl" have in common with Astor Piazzolla's evocative tango composition "Libertango"?

“Prestige” music



“Functional” music



We all know that ‘Music is good’

- On ABC TV this week:
 - The Choir of Hard Knocks on 10th anniversary tour
 - PhD candidate James Richmond runs a drumming circle for Vietnam Vets



Choir of Hard Knocks artistic director Jonathon Welch leads a rehearsal



PHOTO: Veterans groups say early intervention is important in treating PTSD. (ABC News: James Hancock)

But can music perform miracles?



Sonata for two pianos (K448)

- The ‘Mozart Effect’
 - ‘Music and spatial task performance’ Nature Vol 365, 14 October 1993
 - Frances Rauscher, Gordon Shaw and Katherine Ky from University of California, Irvine
 - The ‘Mozart Effect’ spawned an industry, which lives on to this day...



★ Products



The Mozart Effect: How Music Makes You Smarter



Have you ever noticed how your favorite music can make you feel better? Well, new research studies now show how music can make you smarter too!

Scientists at Stanford University, in California, have recently revealed a molecular basis for the Mozart Effect, but not other music. Dr. Rauscher and her colleague H. Li, a geneticist, have discovered that rats, like humans, perform better on learning and memory tests after listening to a specific Mozart sonata.

A book called *The Mozart Effect* by Don Campbell, has condensed the world's research on all the beneficial effects of certain types of music.

Some of the hundreds of benefits of the Mozart Effect are:

- ★ Improves test scores
- ★ Cuts learning time
- ★ Calms hyperactive children and adults
- ★ Reduces errors
- ★ Improves creativity and clarity
- ★ Heals the body faster
- ★ Integrates both sides of the brain for more efficient learning
- ★ Raises IQ scores 9 points (research done at University of California, Irvine)

Study Reveals How Music Makes You Smarter

But wait, there's more...



The screenshot shows a web browser window with the URL abcnews.go.com/Technology/story?id=3213324&page=1. The page features the ABC News logo and a navigation menu with categories: Election, U.S., World, Entertainment, Health, Tech, and a search bar. The main article title is "The Moozart Effect" by Rebecca Lee, dated May 25, 2007. It includes social sharing buttons for Facebook and Twitter, and a share count of 88. The article text discusses a dairy farm in Spain where classical music is used to improve milk production.

The Moozart Effect

By REBECCA LEE • May 25, 2007

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88 SHARES

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On Hans Pieter Sieber's Priegola dairy farm in Villanueva del Pardillo, Spain, the secret to success is not some newfangled technology or machine. Nor is it a time-tested technique or process handed down from generation to generation. Rather it is the dulcet, layered tones of classical music.

And not just any music.

Sieber exposes his herd of approximately 700 heifers to the famous chords, crescendos and cadences of Austrian composer Wolfgang Amadeus Mozart.

"It only happens with Mozart, and, although it was discovered by monks in Brittany, the idea is being used mainly in Israel," said the younger Sieber of the Mozart effect. "We, in fact, have specialists come over from Israel to explain to us new concepts of production. And it was them that told us to use Mozart."

How miraculous is the Mozart Effect?

- The Mozart Effect ‘article’ was ‘Scientific Correspondence’, not a reviewed article
- Used a ‘spatial skills’ component of an IQ test, effect lasted 10 – 15 minutes
- Thompson et al.(2001) - due to mental arousal of the Mozart listening group?
- The Mozart Effect industry continues to thrive...

- Footnote: Jenkins (2001) did cite improvements for
 - Temporary relief of epilepsy
 - Rats performance at negotiating a maze
 - Children performing temporo-spatial skills after Mozart and Beetho



The Great Debate...



The Great Debate...

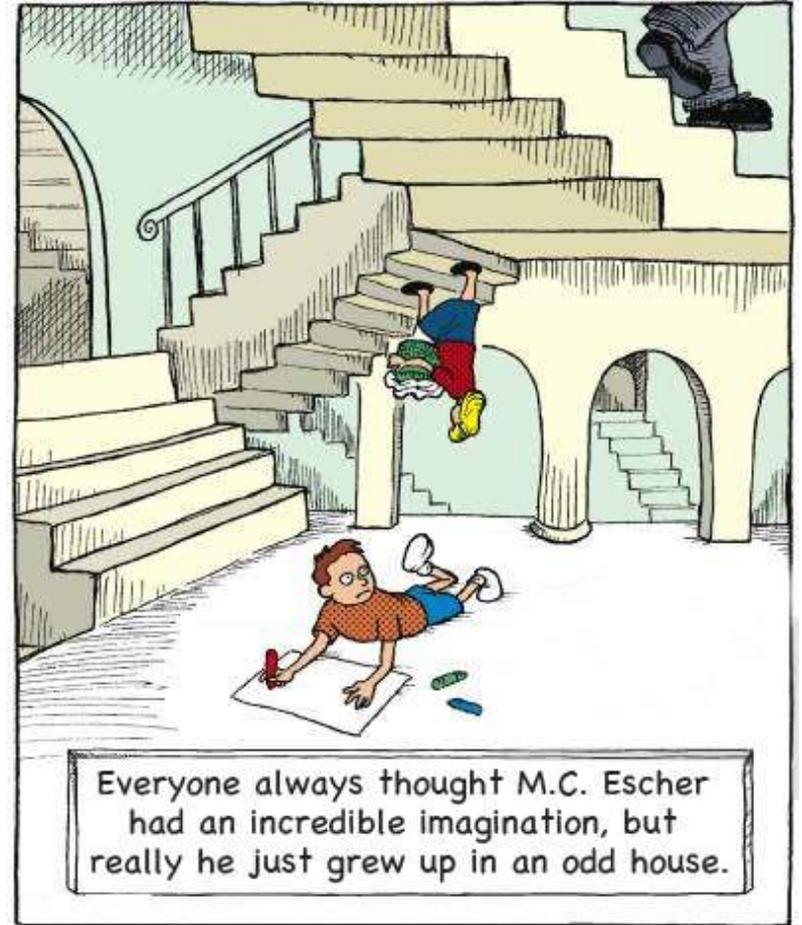


The Great Debate...



Nature

vs.



Nurture

Humans are musical



- Pearce *et al*, 2015
 - “singing found in all human societies”
 - “singing is a universal human behavioural capacity”
- Peretz, 2006
 - Throughout human history and across all cultures, individuals have produced and enjoyed music (Merriam, 1964). Music has emerged spontaneously and in parallel in all known human societies.”

Embrace Of The Serpent (El Abrazo De La Serpiente) 2016



“At one point Evan extracts an old gramophone from his luggage and plays a scratchy record of Haydn's “The Creation”, which Karamakate absorbs with pleasure. It's a meeting point between two world views, two cosmologies.”



Musical Development in Infancy

- Jacinta Calabro is the author of Chapter 2 ('Musical Development in Infancy') in 'Lifelong Engagement with Music', a 2012 book edited by N.S.Rickard and Prof K.McFerran.
- Jacinta provides summaries at the end of each stage which I have further reduced to:

Prenatal Hearing

- Infant can hear from as early as 16 weeks gestational age
- Can hear her mother's voice the most clearly
- Allows prenatal infant to become familiar with parents' voices / other sounds from external environment
- Allows prenatal infant to recognise parents and habituate more readily to sound environment post-birth



Birth to 3 months

- Mothers intuitively use Infant Directed Speech/Singing when engaging with their infant
- Infants listen longer to ID Singing than ID Speech - has a calming, engaging effect
- Lullabies are preferred musical genre
- Respond emotionally & cognitively to the melodic contour of ID speech/singing
 - Rising contours engage interest
 - Falling contours are calming
 - Static contours maintain homeostasis
 - Brief, staccato contours express warning or disapproval
- Passive listening to music - likely to experience a change in mood and
- Prefer music to be predictable & repetitive, regular rhythm, using real instruments



3 - 6 months



- Up to 6 months are “super” listeners - perceive rhythm, melodic contour, frequency ratios, phrasing and harmonies similarly to adults
- 4-6 month can even detect small pitch, language and scale changes which adults cannot
- Western infants are already familiar with Western scale structures and prefer these consonant sounds over dissonant sounds
- Mothers start to engage in more reciprocal vocalisation as infants begin to engage in exploratory vocal play
- Across cultures the infant enjoys playing small instruments, tickling rhymes/chants, and action songs with repetitive movements

6 – 12 months

- Are increasingly responsive to the affective (emotional) content in music
- By 12 months, lose the ability to discriminate non-native language & music unless ongoing exposure provided
- As the infant develops, specific musical elements are processed in different regions of the brain
- Infant directed singing reduces stress hormone in infant and induces calm and relaxation for the



18 Months - 3 Years

- Perception of Music ...By around 12 months of age, the infant has almost the same music perception skills as adults so there are few new perceptive skills noted during this period.



Music in our genes?

- Pearce et al (2015) state that “Singing is found in all human societies and can be performed to some extent by the vast majority of humans: singing is a universal human behavioural capacity, and this implies that it could have arisen as an evolutionary adaptation”
- Launay (2015) writes that “From the perspective of evolutionary psychology music can be seen as problematic. Despite its ubiquity there is still no clearly agreed function in terms of improving the fitness of the species. Is it therefore fairer to judge it as ‘auditory cheesecake’ rather than attributing it with any specific purpose?”

Music in our genes?

- According to Darwin's Theory of Natural Selection, there should be one or more advantages for music to be carried down in human genes. Peretz offers two proposed evolutionary explanations;
 - “Darwin (1871) proposed that music served to attract sexual partners.”



How does music promote group cohesion?



The Icebreaker Effect

- Study by Pearce *et al* 2015 from Oxford
- Compared subjects in newly formed adult education classes run by the “Workers Education Association”
 - Singing
 - Craft
 - Creative writing



Pearce *et al* – “Icebreaker Effect” Study

- Compared the singing to the non-singing groups
- 84 singers, 51 non-singers, aged between 18 and 83
- The study was over a seven months period
- Measured *before & after* the class at 1, 3, and 7 months:
 - Subjects self-rated their closeness to the class (IOS scale)
 - Subjects rated their positive and negative affect (PANAS)
 - Volunteer subjects took “blood-pressure cuff” measurements

Pearce *et al* – “Icebreaker Effect” Study

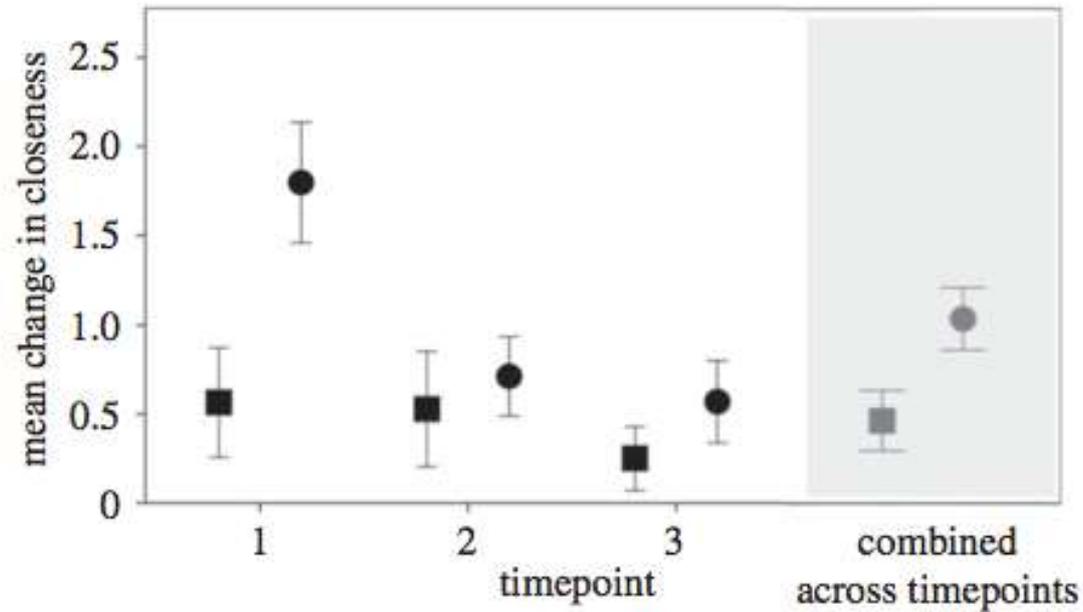


Figure 1. Mean change in closeness for singers (circles) and non-singers (squares), both separately across the three timepoints and pooled across the three timepoints (shaded grey box). Means are shown ± 2 s.e.

Pearce *et al* – “Icebreaker Effect” Study

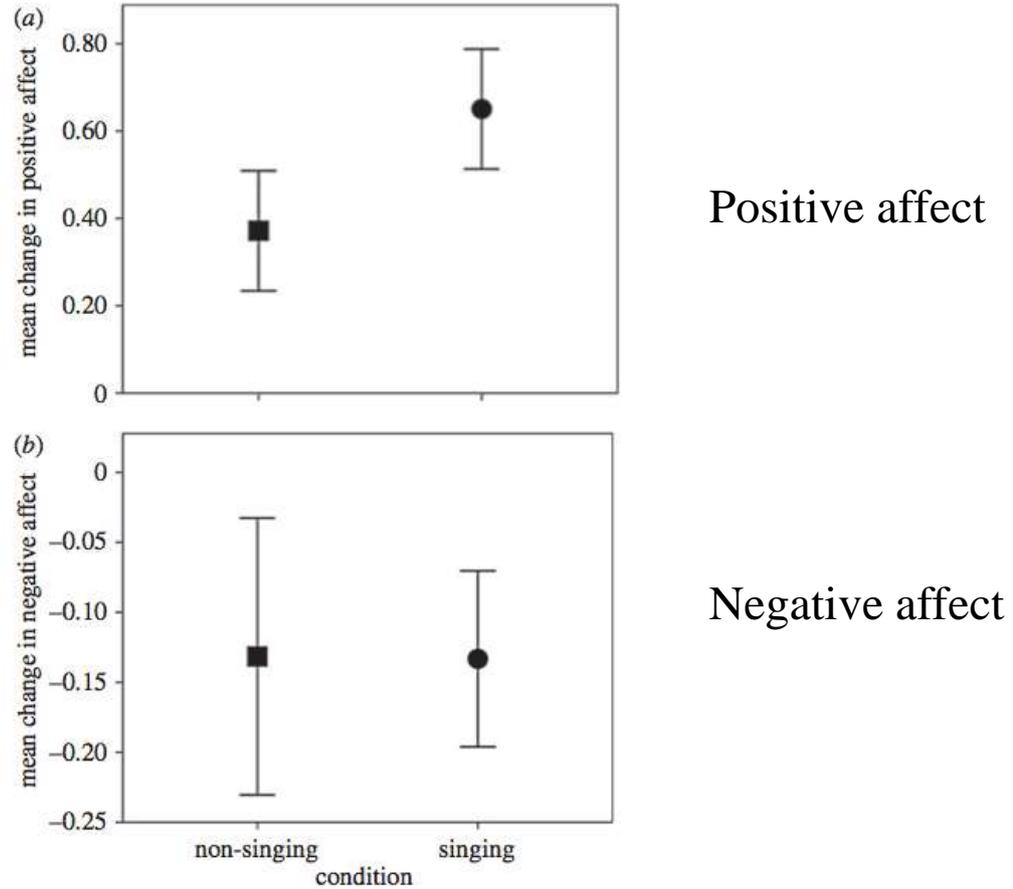
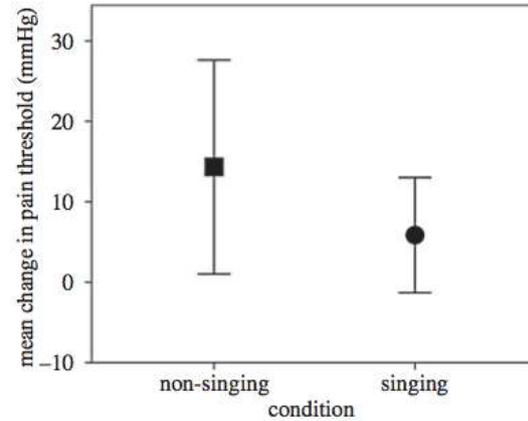


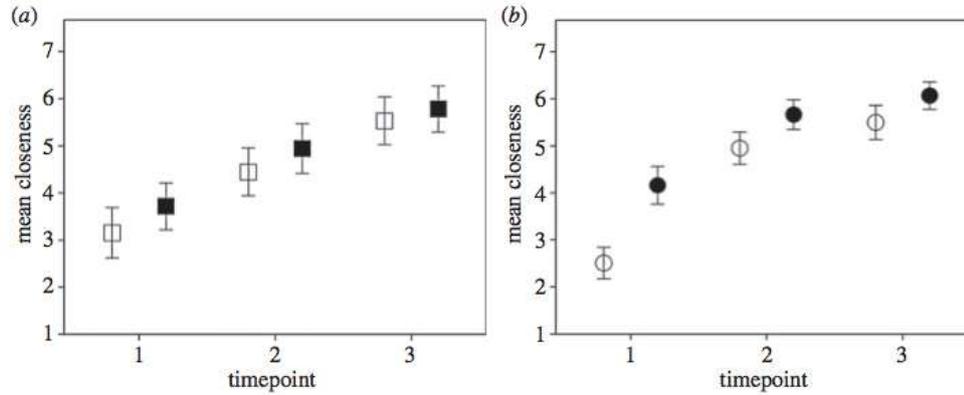
Figure 2. Mean change in (a) positive and (b) negative affect for singers (circles) and non-singers (squares), pooled across timepoints. Means are shown ± 2 s.e.

Pearce *et al* – “Icebreaker Effect” Study



Pain thresholds

Figure 3. Mean change in pain thresholds for singers (circles) and non-singers (squares), pooled across timepoints. Means are shown ± 2 s.e.



Closeness

Figure 4. (a) Mean closeness scores before (open squares) and after (filled squares) class for non-singers across the three timepoints and (b) mean closeness scores before (open circles) and after (filled circles) class for singers across the three timepoints. Means are shown ± 2 s.e.

Pearce *et al* – “Icebreaker Effect” Study

- Singing group members:
 - Greater increase in closeness to their group
 - Greater increase in positive affect
- Singing and non-singing group members:
 - Decrease in negative affect
 - Increase in pain threshold (~ endorphin release)
 - Similar closeness to group after seven months
- Singing group became more close in the first session – “broke the ice” quickly



Singing and social bonding: changes in connectivity and pain threshold as a function of group size”

- Study by Weinstein *et al* (Goldsmith University of London and others) in 2015
- Question: does the icebreaker effect apply to much larger groups?
- Members of ten choirs (20 – 80 singers) around London combine once a year into a “megachoir” of 232 singers.
- How does feeling of belonging “scale up” from the sub-choirs to the megachoir?
- Connectivity, *IOS* and *PANAS* measured before and after rehearsals. Volunteers took “blood pressure cuff” tests.

Weinstein *et al* - Singing and social bonding

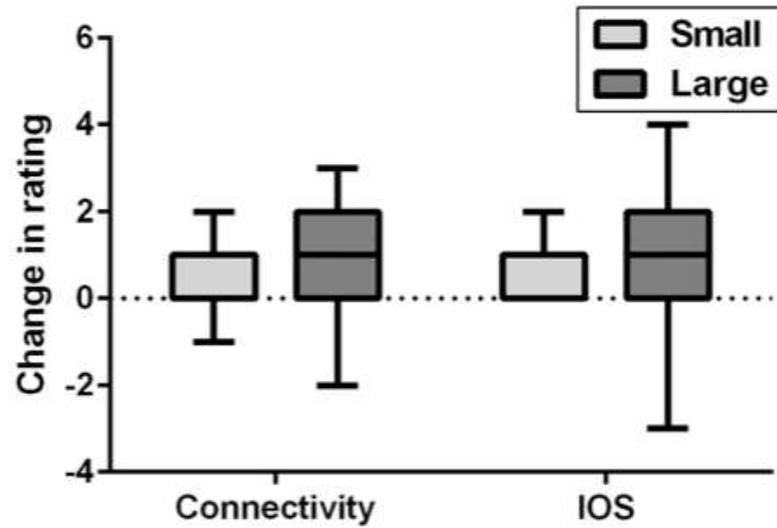


Fig. 1. Tukey boxplot showing change in IOS and connectivity ratings following singing in small and large choir conditions.

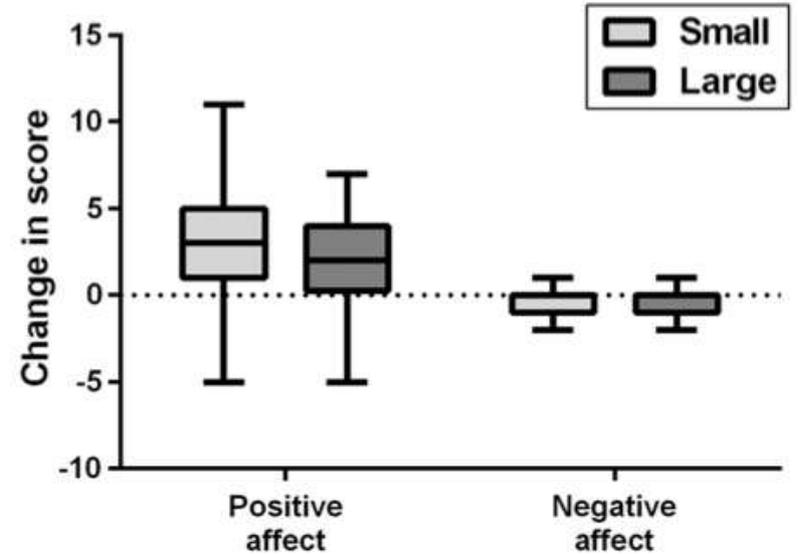


Fig. 2. Tukey boxplot showing change in positive and negative affect, as measured by PANAS scale, following singing in small and large choir conditions.

Weinstein *et al* - Singing and social bonding

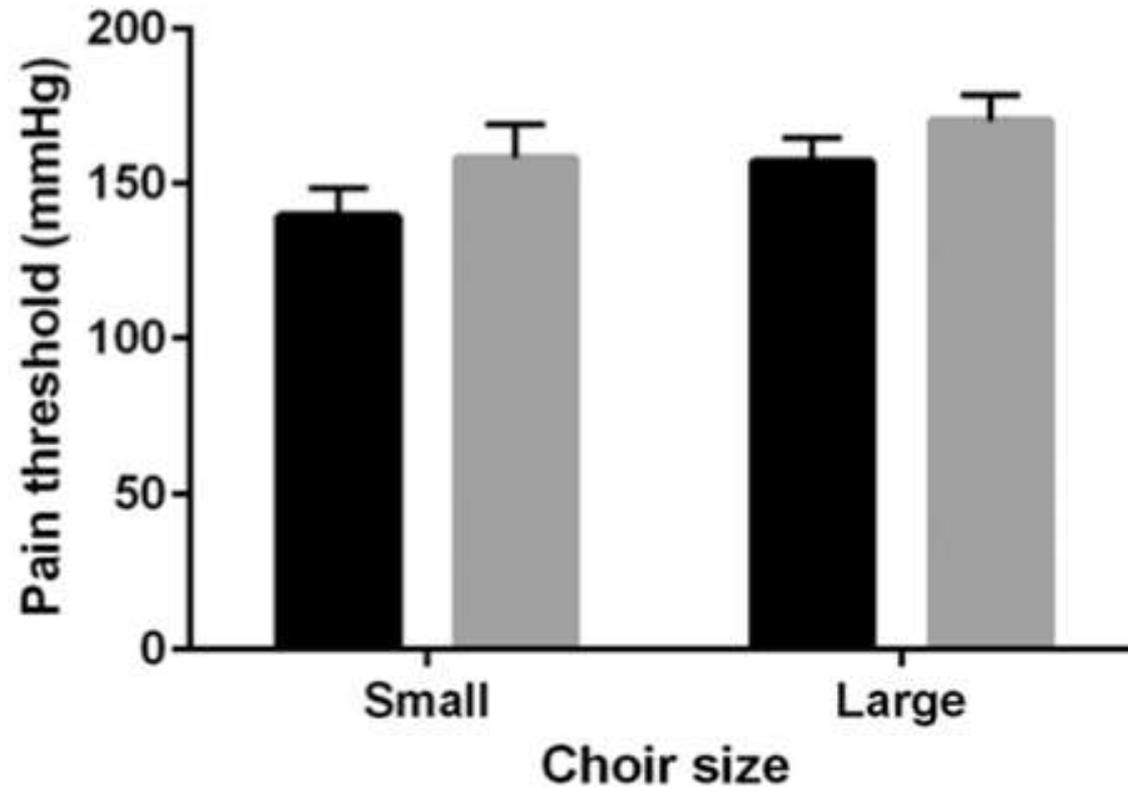


Fig. 3. Pain thresholds before (black bar) and after (grey bar) singing in small and large choir conditions.

Weinstein *et al* - Singing and social bonding

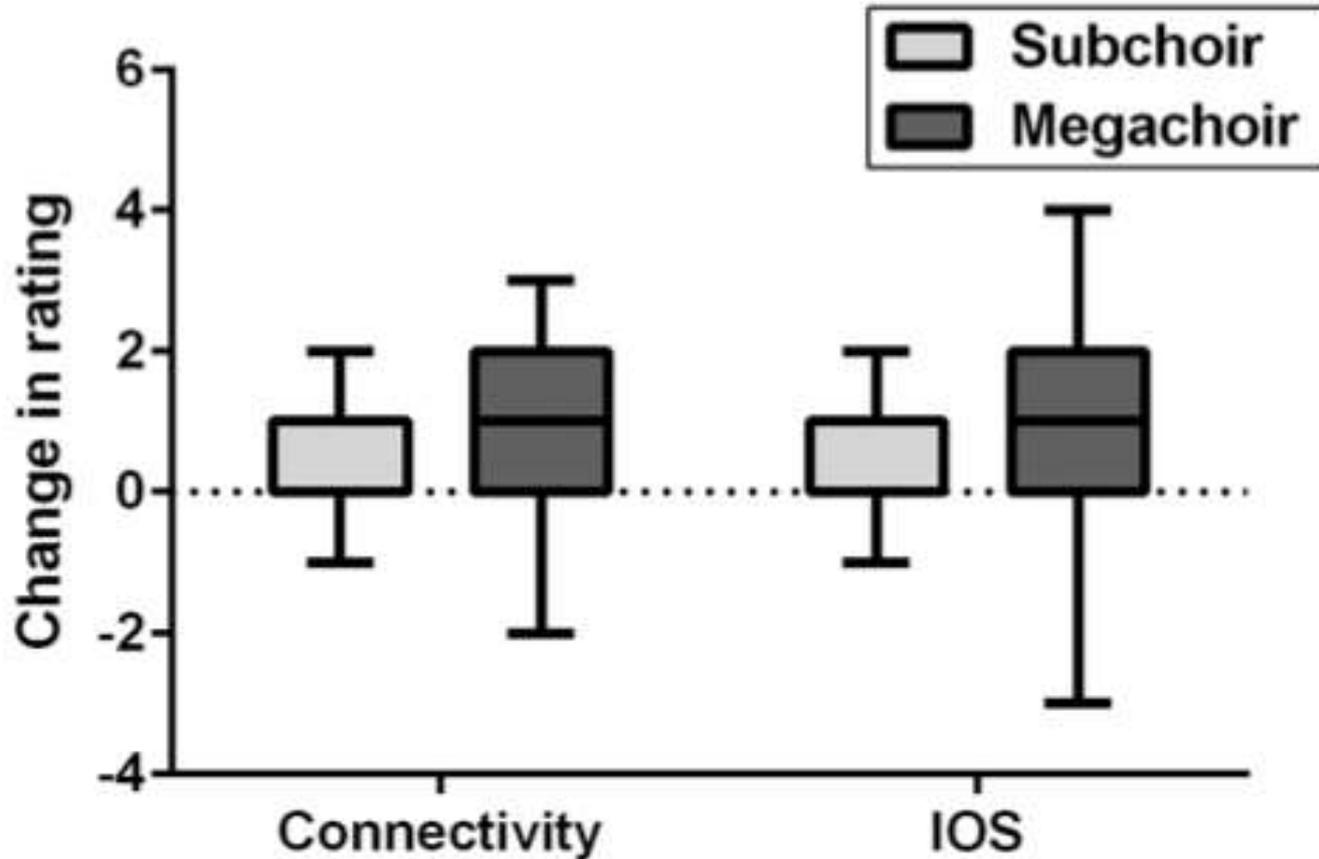


Fig. 4. Tukey boxplot showing change in IOS and connectivity ratings made with reference to the subchoir and megachoir.

Singing and social bonding: changes in connectivity and pain threshold as a function of group size”

- The sub-choirs started with a higher initial level of social bonding.
- The megachoir experienced a greater change in social bonding levels.
- Supported previous findings that communal singing increases:
 - Positivity
 - Social bonding
 - Pain thresholds
- Communal singing a very effective way to bond large groups of people quickly

Music, empathy and cultural understanding

- Review article by Clarke *et al* from Oxford and Exeter Unis
- Empathy is defined by the OED as:
 - “a. Psychol. and Aesthetics. The quality or power of projecting one’s personality into or mentally identifying oneself with an object of contemplation, and so fully understanding or appreciating it.
 - b. orig. Psychol. The ability to understand and appreciate another person’s feelings, experience, etc.”
- Interesting examples
 - West-Eastern Divan Orchestra – brings together Israeli and Palestinian musicians
 - UNICEF appointment of musicians as “goodwill ambassadors”
 - Bob Geldof projects – Live Aid and Live 8

Music, empathy and cultural understanding

- Barack Obama mentioned an “empathy deficit” as a significant social issue.
- “ [empathy]...figures prominently in discussions of social and mental health”
- “These diverse research strands all point to the crucial role that musicking plays in people’s lives, to its socially binding capacities, and to the insights that it can afford.”
- “some theories of the evolutionary significance of music highlight the importance of music’s empathy-promoting aspects, suggesting that a fundamental adaptive characteristic of music is its capacity to promote group cohesion and affiliation”

Music, empathy and cultural understanding

- Triggers of empathy?
 - Personality trait – baseline empathy
 - “Mirror” neurons
 - Oxytocin and endogenous opioids
 - Synchronised behaviour
- Musical empathy
 - Identify with the emotions of live performers
 - Identify with the music e.g. sad music can be seen as empathising with a sad listener

Music, empathy and cultural understanding

- Portuguese study of 200+ 11 - 12 y.o. children separated into two groups – 20 sessions of either Portuguese or “dark skin” Cape Verde music, lyrics and musician bios...



Music, empathy and cultural understanding

- Cape Verde study group had significant reduction in “anti dark-skin” prejudice.
- The effect had persisted 2 years after the study.



Music, empathy and cultural understanding

- Clarke *et al* report the authors' own study, submitted for publication – “Music listening evokes implicit affiliation”
 - 61 Adults in two groups listened individually to either Indian or West African popular music
 - Subjects then completed “Implicit Association Test” and “Interpersonal Reactivity Index”
 - Study showed stronger association between positive words and Indian faces for Indian group, likewise for West African group
 - Effect was greater for subjects with stronger empathy “trait”

Music, empathy and cultural understanding

“From the most neuroscientifically reductionist approach (e.g. a 'fundamentalist' mirror neuron perspective) to the position of Smith or Stokes, a capacity to feel the situation of another underpins the inter-subjective character of empathy/fellow-feeling/sympathy. And arguably it is in this respect that music has 'special properties' – properties of enactment, of synchronization and entrainment in situations ranging from a single individual alone with their music (the solitary headphone listener 'lost in music') to massively social contexts (pop festivals, simulcasts) where enormous numbers of people can participate in collective, synchronized, embodied engagement. As others have pointed out, music is a uniquely widespread, emotionally and physically engaging, social, participatory and fluidly communicative cultural achievement – a powerful cultural niche that affords extraordinary possibilities for participants, and which both complements and in certain respects surpasses those other global cultural achievements in which human beings participate (language, religion, visual culture, craft). There is little, perhaps, to be gained by attempting to set any one of these up on a uniquely high pedestal – but equally it is important not to flatten the terrain by failing to recognize music's particular combination of affordances in this rich cultural mix: cognitive and emotional complexity, solitary to mass-social engagement, compelling embodiment, floating intentionality, synchronization/entrainment, flexible mimicry, temporal and ambient character, and digital-analog (or categorical-continuous) mix.”

(I could not have said it better myself!- S.M.)

Launay's comment on Clarke *et al*

Jacques Launay reminds us that “There is now evidence that even in the modern world there is a significant effect of our social bonds on health and longevity, suggesting that our hominid ancestors might have relied heavily on their social network for survival. If music has the capacity to encourage the formation of these social bonds it could form a powerful tool in the success of our species.”

Educating Amateurs: New Technologies and Models to Enhance Music Participation in Western Societies

- Neil McLachlan contributes this chapter to ‘Lifelong Engagement with Music’, (N.S.Rickard and Prof K.McFerran, editors).
- Describes use of ‘tuned percussion’, especially Balinese Gamelan which features rhythmic cycles above melody.
- Learning occurs by participation, “all attempts at learning and participation are accepted”
- Instruments do not require advanced motor skills
- Culture where participation is foremost

How does the NFFC fit in?



How does the NFFC fit in?

- Promotes social bonding through music participation
 - Performing
 - Joining in
 - Listening / clapping / toe-tapping
- Provides encouragement for performers of all levels
- Welcomes music from various cultures, which promotes inter-cultural empathy
- Emphasis on “functional music”, but provides opportunities for “prestige music” participation and access
- Offers healthy activities for mind and body

THE great Divide — The HAVEs and the HAVE-NOTS

Those who HAVE
a TWINKLE in
their eye



THOSE WHO HAVE Run
off with the GIPSIES
AND DANCED RAPTUREDLY
AND FEASTED AND SLEPT
IN THEIR ARMS and still
have sweet memory
OF IT.



Those who HAVE
NOT got a twinkle
in their eye.



THOSE
WHO
HAVE
NOT.



Those who have sung
in the moonlight in
a forest glade with
tears of happiness
upon their cheeks



AND JUST REPEATING,
Those who HAVE
a twinkle in
their eye.



THOSE
WHO HAVE
NOT.



Those who
HAVE NOT.



Leunig

Stop Press...

- Carvalho *et al* 2016 “Music Influences Hedonic and Taste Ratings in Beer”, published in *Frontiers in Psychology*
- “The research presented here focuses on the influence of background music on the beer-tasting experience.”
- “In general, the beer-tasting experience was rated as more enjoyable with music than when the tasting was conducted in silence.”

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