



n° 201 – 04 June 2015

[Int J Neurosci](#) 2015 May 22:1-21

**Improvement of spontaneous language in stroke patients with chronic aphasia treated with music therapy: a randomized controlled trial**

[Raglio A, Oasi O, Gianotti M, Rossi A, Goulene K, Stramba-Badiale M](#)

Department of Public Health, Experimental and Forensic Medicine, University of Pavia, Via Boezio 24, Pavia 27100, Italy

The aim of this research is to evaluate the effects of active music therapy (MT) based on free-improvisation (relational approach) in addition to speech language therapy (SLT) compared to speech language therapy alone (communicative-pragmatic approach, PACE) in stroke patients with chronic aphasia. The experimental group (n = 10) was randomized to 30 MT individual sessions over 15 weeks in addition to 30 SLT individual sessions while the control group (n = 10) was randomized to only 30 SLT sessions in the same period. Psychological and speech language assessment were made before (T0) and after (T1) treatments. The study shows a significant improvement in spontaneous speech in the experimental group (Aachener Aphasia subtest:  $p = 0.020$ ; Cohen's  $d = 0.35$ ); the 50% of the experimental group showed also an improvement in vitality scores of Short Form Health Survey (chi squared 4.114;  $p = 0.043$ ). The current trial highlights the possibility that the combined use of MT and SLT can lead to a better result in the rehabilitation of aphasia than SLT alone.

*Lo scopo di questa ricerca era di valutare gli effetti della musicoterapia (MT) basata sull'improvvisazione (approccio relazionale) in aggiunta alla terapia del linguaggio (SLT), comparata con la sola terapia del linguaggio (approccio pragmatico comunicativo PACE) nei pazienti affetti da ictus che presentano afasia cronica. Un gruppo sperimentale di 10 soggetti è stato assegnato casualmente a 30 sessioni di MT individuali in un periodo di 15 settimane, in aggiunta a 30 sessioni individuali di SLT, mentre il gruppo di controllo (10 pazienti) veniva randomizzato alle sole 30 sessioni di SLT nello stesso periodo. La valutazione psicologica e di linguaggio veniva effettuata prima (T0) e dopo i trattamenti (T1). Lo studio mostra un miglioramento spontaneo del linguaggio nel gruppo sperimentale (Aachener Aphasia subtest:  $p = 0.020$ ; Cohen's  $d = 0.35$ ). Il 50% del gruppo sperimentale presentava anche un miglioramento del test di vitalità Short Form Health Survey (chi squared 4.114;  $p = 0.043$ ). Questo studio evidenzia la possibilità che l'uso combinato di MT e SLT possa condurre a risultati migliori nella riabilitazione dall'afasia rispetto alla sola SLT.*

Conscious Cogn 2015 May 12;35:66-77

## **Tunes stuck in your brain: the frequency and affective evaluation of involuntary musical imagery correlate with cortical structure**

**Farrugia N<sup>1</sup>, Jakubowski K<sup>1,2</sup>, Cusack R<sup>3</sup>, Stewart L<sup>1</sup>**

1 Goldsmiths, University of London, New Cross, London SE14 6NW, UK; 2 Medical Research Council, Cognition and Brain Sciences Unit, Cambridge CB2 7EF, UK; 3 Brain and Mind Institute, Western University, London, Ontario N6A 5B7, Canada.

[n.farrugia@gold.ac.uk](mailto:n.farrugia@gold.ac.uk)

Recent years have seen a growing interest in the neuroscience of spontaneous cognition. One form of such cognition is involuntary musical imagery (INMI), the non-pathological and everyday experience of having music in one's head, in the absence of an external stimulus. In this study, aspects of INMI, including frequency and affective evaluation, were measured by self-report in 44 subjects and related to variation in brain structure in these individuals. Frequency of INMI was related to cortical thickness in regions of right frontal and temporal cortices as well as the anterior cingulate and left angular gyrus. Affective aspects of INMI, namely the extent to which subjects wished to suppress INMI or considered them helpful, were related to gray matter volume in right temporopolar and parahippocampal cortices respectively. These results provide the first evidence that INMI is a common internal experience recruiting brain networks involved in perception, emotions, memory and spontaneous thoughts.

*Gli ultimi anni hanno visto un crescente interesse nelle neuroscienze della cognizione spontanea. Un esempio di tale cognizione è l'immaginazione musicale involontaria (INMI), l'esperienza comune e non patologica di avere la musica in mente, in assenza di uno stimolo esterno. In questo studio, gli aspetti della INMI, inclusa la frequenza e la valutazione affettiva, sono stati misurati in 44 soggetti con self-report e correlazioni con una variazione nella struttura cerebrale. La frequenza delle INMI è stata messa in relazione allo spessore corticale nelle regioni delle corteccie temporali e del giro cingolato anteriore, oltre che del giro angolare sinistro. Gli aspetti affettivi della INMI, ovvero la misura in cui i soggetti desideravano sopprimere la INMI o la consideravano utile, sono stati messi in relazione con il volume della materia grigia rispettivamente nelle corteccie temporo-polare o paraippocampale destre. Questi risultati forniscono la prima evidenza che l'INMI è una esperienza interna comune che recluta i network neurali coinvolti nella percezione, nell'emozione, nella memoria e nel pensiero spontaneo.*

Behav Brain Res 2015 May 21. pii: S0166-4328(15)00355-1

## **Music training improves speech-in-noise perception: longitudinal evidence from a community-based music program**

**Slater J<sup>1,2</sup>, Skoe E<sup>1</sup>, Strait DL<sup>1</sup>, O'Connell S<sup>1</sup>, Thompson E<sup>1,2</sup>, Kraus N<sup>1,2,3</sup>**

1 Auditory Neuroscience Laboratory, Northwestern University, Evanston, Illinois USA; 2 Department of Communication Sciences, Northwestern University, Evanston, Illinois USA; 3 Department of Neurobiology and Physiology & Department of Otolaryngology, Northwestern University, Evanston, Illinois USA. [nkraus@northwestern.edu](mailto:nkraus@northwestern.edu)

Music training may strengthen auditory skills that help children not only in musical performance but in everyday communication. Comparisons of musicians and non-musicians across the lifespan have provided some evidence for a "musician advantage" in understanding speech in noise, although reports have had mixed outcomes. Controlled longitudinal studies are essential to disentangle effects of training from pre-existing differences, and to determine how much music training is necessary to confer benefits. We followed a cohort of elementary school children for two years, assessing their ability to perceive speech in noise before and after musical training. After an initial assessment, participants were randomly assigned to one of two groups: one group began music training right away and completed two years of training, while the second group waited a year and then received one year of music training. Outcomes provide the first longitudinal evidence that speech-in-noise perception improves after two years of group music training. The children were enrolled in an established and successful community-based music program and followed the standard curriculum, therefore these

findings provide an important link between laboratory-based research and real-world assessment of the impact of music training on everyday communication skills.

*L'istruzione musicale può migliorare le abilità uditive che aiutano i bambini non solo nella performance musicale, ma anche nella comunicazione di tutti i giorni. Il paragone tra i musicisti e i non musicisti nel corso della vita ha fornito alcune prove di un vantaggio dei musicisti nel comprendere il linguaggio nel rumore di fondo, sebbene siano stati riportati risultati contrastanti. Sono necessari studi controllati longitudinali per distinguere il vantaggio del training musicale rispetto a differenze pre-esistenti, e per determinare quanto training musicale sia necessario per conferire gli effetti positivi. Gli Autori hanno seguito una coorte di bambini delle elementari per due anni, valutando la loro capacità di distinguere il linguaggio nel rumore di fondo prima e dopo il training musicale. Dopo una valutazione iniziale, i partecipanti venivano assegnati in maniera casuale a uno di due gruppi: un gruppo cominciava il training musicale direttamente e lo completava dopo due anni, mentre il secondo gruppo riceveva il training solo dalla fine del primo anno in poi. I risultati mostrano la prima evidenza sperimentale che la percezione del parlato nel rumore di fondo migliora dopo due anni di training musicale. I bambini erano stati arruolati in un programma musicale comunitario stabile e seguivano il curriculum standard, per cui questi risultati forniscono un legame importante tra la ricerca di laboratorio e la valutazione nel mondo reale dell'impatto del training musicale sulle capacità comunicative di ogni giorno.*

## Complement Ther Clin Pract 2015 May 12. pii: S1744-3881(15)00043-2 **Combination of music with lifestyle modification versus lifestyle modification alone on blood pressure reduction - A randomized controlled trial**

**Kunikullaya KU<sup>1</sup>, Goturu J<sup>1</sup>, Muradi V<sup>1</sup>, Hukkeri PA<sup>1</sup>, Kunnivil R<sup>2</sup>,  
Doreswamy V<sup>1</sup>, Prakash VS<sup>3</sup>, Murthy NS<sup>4</sup>**

1 Department of Physiology, MS Ramaiah Medical College and Group of Hospitals, Bangalore, Karnataka, India; 2 Department of Community Medicine, MS Ramaiah Medical College and Group of Hospitals, Bangalore, Karnataka, India; 3 Department of Cardiology, MS Ramaiah Medical College and Group of Hospitals, Bangalore, Karnataka, India; 4 Department of Division of Research and Patents, Gokula Education Foundation, Bangalore, Karnataka, India. [kirthanaku@gmail.com](mailto:kirthanaku@gmail.com)

To evaluate the change in blood pressure (BP) after 3 months of music intervention combined with lifestyle modifications, in comparison with conventional lifestyle modifications. A Prospective randomized control trial was conducted on hundred prehypertensives or stage I hypertensives who were randomly divided into two groups (n = 50 each). Both the groups were given lifestyle modifications while one had added music intervention (raga bhimpalas) for 3 months. Main outcome measures were 24 h ambulatory BP monitoring, stress levels, and biomarkers of hypertension. Mean (SD) of diastolic BP (DBP) pre and post intervention were overall = 85.1(6.8) and 83(8.7){P = 0.004}, awake = 87.7(7.6) and 85.9(9.2){P = 0.021}. Regression analysis showed association between diastolic BP change and post-intervention stress score in the music intervention group. Significant change in BP was seen among those who were prehypertensives prior to intervention. Music decreased DBP and when used as an adjunct benefitted subjects with initial BP in prehypertension range.

*Lo studio ha lo scopo di valutare i cambiamenti nella pressione sanguigna (BP) dopo tre mesi di intervento musicale combinato a modifiche dello stile di vita, rispetto al solo intervento sullo stile di vita. Uno studio randomizzato prospettico è stato effettuato su 100 soggetti pre-ipertesi o allo stadio 1 di ipertensione, che sono stati divisi casualmente in due gruppi di 50. Entrambi i gruppi hanno dovuto modificare il loro stile di vita, mentre solo uno riceveva un intervento musicale (raga bhimpalas) per 3 mesi. Le misurazioni consistevano in un monitoraggio ambulatoriale per 24 ore della pressione arteriosa, del livello di stress e dei marker di ipertensione. La media della pressione diastolica pre e post intervento era = 85.1(6.8) e 83(8.7){P = 0.004}, al risveglio = 87.7(7.6) e 85.9(9.2){P = 0.021}. L'analisi di regressione mostra un'associazione tra il cambiamento della pressione diastolica e il punteggio del Test di stress post intervento nel gruppo che aveva ricevuto l'intervento musicale. Un cambiamento significativo nella BP è stato visto tra quelli che erano pre-ipertesi prima dell'intervento*

*musicale. La musica diminuiva la pressione diastolica media e, quando usata come una terapia aggiuntiva, aiutava i soggetti con pressione leggermente alterata.*

### **The Pierfranco and Luisa Mariani Foundation**

*Since its beginnings in 1985, the Mariani Foundation has established itself as a leading organization in the field of paediatric neurology by organizing a variety of advanced courses, providing research grants, and supporting specialized care. The Foundation works in close cooperation with major public healthcare institutions, complementing their scientific programs and other activities. In 2009 it became the first private entity in Italy to join the founding members of the Neurologic Institute "Carlo Besta" in Milan. In addition to its services, the Foundation aims, through its continuing medical education courses and its publishing program, to transmit the latest discoveries in the field of paediatric neurology so that they can be applied most effectively in treating or mitigating a large number of paediatric neurologic disorders.*

*In 2000, the Mariani Foundation has added a new and important dimension to its activities: fostering the study of the multiple links between the neurosciences and music. The positive results of this commitment have been exemplified in "The Neurosciences and Music" conferences, held in Venice (2002), Leipzig (2005), Montreal (2008), and Edinburgh (2011). The last congress was held in the spring 2014 in Dijon (France), in partnership with the Université de Bourgogne and its LEAD-Laboratoire d'Etude de l'Apprentissage et du Développement, a cognitive psychology lab whose research activity focuses on changes in information processing mechanisms during development. All these meetings have led to the publication of major volumes in the Annals of the New York Academy of Sciences. By providing the most recent information in these rapidly advancing neurologic fields, the Mariani Foundation intends to be a reliable and informative source for specialists and journalists in this new area of the neurosciences.*

"Neuromusic News"

Direttore responsabile Luisa Bonora

Pubblicazione periodica. Registrazione n. 318 Tribunale di Milano del 10-06-2011

Edited by Fondazione Mariani

Contributors: Luisa Lopez, Giuliano Avanzini, Maria Majno and Barbara Bernardini

Editorial coordinator: Renata Brizzi

For further information: [neuromusic@fondazione-mariani.org](mailto:neuromusic@fondazione-mariani.org)

### **Notice on privacy of personal information**

*"Neuromusic News", providing periodic updates on Neurosciences and Music, has been sent to you since you have registered to the Neuromusic Mailing List or because you have expressed an interest in this field (as a participant in our Neurosciences conference or through a request on the subject).*

*Your data is stored securely and will be handled confidentially. It will be used exclusively by the Mariani Foundation to communicate its own information and will not be passed on to third parties.*

*If you no longer wish to receive "Neuromusic News", please go to our website [www.fondazione-mariani.org](http://www.fondazione-mariani.org) and log in with your Username and Password, then access "My personal details" page and deselect the option "I agree to receive Neuromusic News".*