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**Music and mirror neurons: from motion to 'e' motion**

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The ability to create and enjoy music is a universal human trait and plays an important role in the daily life of most cultures. Music has a unique ability to trigger memories, awaken emotions and to intensify our social experiences. We do not need to be trained in music performance or appreciation to be able to reap its benefits—already as infants, we relate to it spontaneously and effortlessly. There has been a recent surge in neuroimaging investigations of the neural basis of musical experience, but the way in which the abstract shapes and patterns of musical sound can have such profound meaning to us remains elusive. Here we review recent neuroimaging evidence and suggest that music, like language, involves an intimate coupling between the perception and production of hierarchically organized sequential information, the structure of which has the ability to communicate meaning and emotion. We propose that these aspects of musical experience may be mediated by the human mirror neuron system.

*La capacità di creare e di apprezzare la musica è una caratteristica universale dell'uomo: neppure i bambini hanno bisogno di una specifica istruzione per apprezzarne il valore emozionale e i benefici. In questa review gli Autori esaminano i risultati più importanti nel campo dello studio della musica attraverso l'imaging funzionale, ipotizzando che la musica, come il linguaggio, implichi una stretta associazione tra la percezione e la produzione di informazioni sequenziali organizzate in modo strettamente gerarchico, la cui struttura riesce a comunicare significato ed emozioni. Gli Autori suggeriscono che queste funzioni siano mediate dal sistema dei neuroni specchio.*

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## Retrospective dream components and musical preferences

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Retrospective dream components endorsed on the KJP Dream Inventory were correlated with those on the Short Test of Musical Preference for 68 graduate students in counseling psychology (11 men). Among 40 correlations, 6 were significant between preferences for Heavy Metal and Dissociative avoidance dreams (.32), Dreaming that you are dreaming (.40), Dreaming that you have fallen unconscious or asleep (.41), Recurring pleasantness (.31), and Awakening abruptly from a dream (-.31); between preferences for Rap/Hip-Hop and Sexual dreams (.27); and between preferences for Jazz and Recurring pleasantness in dreams (.33). Subjects preferring Classical music reported a higher incidence of Dreams of flying (.33) and rated higher Discontentedness in dreams (-.26). The meaning of these low values awaits research based on personality inventories and full dream reports.

*Le componenti retrospettive dei sogni risultanti dal KJP Dream Inventory sono state correlate con i risultati dello Short Test for Musical Preference, utilizzando come soggetti di studio 68 studenti di psicologia. Tra le 40 correlazioni analizzate, 6 sono risultate statisticamente significative, nello specifico quella tra la musica Heavy Metal e i sogni di evitamento dissociativo, sognare di stare sognando, sognare di essere svenuto o addormentato, fare sogni piacevoli ricorrenti, o svegliarsi improvvisamente da un sogno. Altre correlazioni sono state individuate tra la preferenza per l'Hip-Hop/Rap e i sogni a sfondo sessuale, tra il Jazz e i sogni piacevoli ricorrenti, mentre i soggetti amanti della musica classica hanno riportato spesso di sognare di volare. Queste associazioni dovranno essere ulteriormente approfondite attraverso ricerche specifiche basate su test di personalità e rapporti completi sui sogni effettuati.*

**J Music Ther 2008 Fall**

### **The effect of music relaxation versus progressive muscular relaxation on insomnia in older people and their relationship to personality traits**

**Ziv N, Rotem T, Arnon Z, Haimov I**

A large percentage of older people suffer from chronic insomnia, affecting many aspects of life quality and well-being. Although insomnia is most often treated with medication, a growing number of studies demonstrate the efficiency of various relaxation techniques. The present study had three aims: first, to compare two relaxation techniques - music relaxation and progressive muscular relaxation - on various objective and subjective measures of sleep quality; second, to examine the effect of these techniques on anxiety and depression; and finally, to explore possible relationships between the efficiency of both techniques and personality variables. Fifteen older adults took part in the study. Following one week of base-line measurements of sleep quality, participants followed one week of music relaxation and one week of progressive muscular relaxation before going to sleep. Order of relaxation techniques was controlled. Results show music relaxation was more efficient in improving sleep. Sleep efficiency was higher after music relaxation than after progressive muscular relaxation. Moreover, anxiety was lower after music relaxation. Progressive muscular relaxation was related to deterioration of sleep quality on subjective measures. Beyond differences between the relaxation techniques, extraverts seemed to benefit more from both music and progressive muscular relaxation. The advantage of non-pharmacological means to treat insomnia, and the importance of taking individual differences into account are discussed.

*Un'ampia percentuale di pazienti anziani soffre di insonnia cronica, che ne condiziona pesantemente sia la qualità della vita che il benessere personale. Per ovviare a questo problema, in alternativa a interventi farmacologici, molti studi attestano la validità di trattamenti di rilassamento. Il presente studio compara 2 tecniche di rilassamento, quella attraverso la musica e quella attraverso il rilassamento muscolare progressivo, valutando oggettivamente alcuni parametri indicativi della qualità del sonno, ed esamina l'effetto di queste tecniche di rilassamento sullo stato di ansia e depressione, mettendo anche in relazione la loro efficacia con alcune variabili personali. La ricerca, effettuata su 15 volontari, ha messo in evidenza, in tutti gli aspetti considerati, la maggiore efficacia della tecnica di rilassamento con la musica rispetto a quella di rilassamento muscolare progressivo.*

*Gli Autori discutono i vantaggi della possibilità di trattare l'insonnia attraverso il rilassamento musicale e l'importanza di considerare le differenze individuali.*

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### **Expertise-dependent modulation of muscular and non-muscular torques in multi-joints arm movement during piano key stroke**

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The problem of skill-level-dependent modulation in the joint dynamics of multi-joint arm movements is addressed in this study using piano keystroke performed by expert and novice piano players. Using the measured kinematic and key-force data, the time varying net, gravitational, motion-dependent interaction (INT), key-reaction (REA), and muscular (MUS) torques at the shoulder, elbow, wrist, and metacarpophalangeal (MP) joints were computed using inverse dynamics techniques. INTs generated at the elbow and wrist joints, but not those at the MP joint, were greater for the experts as compared with the novices. REA at the MP joint, but not at the other joints, was less for the experts as compared with the novices. The MUSs at the MP, wrist, and elbow joints were smaller, and that at the shoulder joint was larger for the experts as compared with the novices. The experts also had a lesser inter-stroke variability of key striking force and key descending velocity as compared with the novices. These findings indicated that the relationship among the INT, REA, and MUS occurring at the joints of the upper-extremity differed between the expert and novice piano players, suggesting that the organization of multi-joint arm movement is modulated by long-term motor training toward facilitating both physiological efficiency and movement accuracy.

*Gli Autori esaminano il problema della dinamica del movimento nell'esecuzione al pianoforte, che tipicamente coinvolge numerose articolazioni contemporaneamente, analizzando le differenze tra professionisti e non. Dal vaglio di numerosi parametri è emerso, ad esempio, che le interazioni dipendenti dal movimento (INTs) generate a livello del gomito e del polso, ma non quelle generate a livello delle articolazioni metacarpofalangee, sono più intense nei pianisti esperti che nei principianti, così come altri parametri misurati. Globalmente i risultati dimostrano che le interazioni muscolari che avvengono all'estremità superiore del braccio differiscono tra i neofiti e i pianisti esperti, a dimostrazione che l'organizzazione del movimento complesso che coinvolge molteplici articolazioni viene modulata dall'allenamento continuativo, che facilita sia l'efficienza fisiologica sia l'accuratezza del movimento stesso.*

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

*During its almost twenty-five years of activity, by organizing a variety of advanced courses, providing research grants, and supporting specialized services, the Mariani Foundation has established itself as a leading organization in the field of paediatric neurology. The Foundation works in close cooperation with leading public health care institutions, in complementary capacity to theirs. Along with its institutional purposes, the Foundation has an additional mission: communicating the latest discoveries in the area, contributing to the spread of knowledge in the struggle against paediatric neurological diseases.*

*More recently, the Mariani Foundation has added a new important goal to its activities in training and research: fostering the study on the multiple links between "The Neurosciences and Music". The positive results of this commitment have been highlighted in the first two conferences held in Venice (2002) and Leipzig (2005). Both meetings have led to the publication of major volumes in the prestigious series "Annals of the New York Academy of Sciences". The last congress was held in June 2008 in Montreal, where the internationally renowned "BRAMS" institute is active and most influential through its research group. Currently, activities of information and promotion are strengthened through this newsletter and in the project of a website dedicated to "Neuromusic". Thereby, the Mariani Foundation intends to become a reference source for journalists and specialists in this new area of the neurosciences.*

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