Musical study challenges long-held view of left brain-right brain split

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(Medical Xpress) -- Ever been stuck in traffic when a feel-good song comes on the radio and suddenly your mood lightens?

Our emotions and feelings are typically associated with the right side of the brain. For example, processing the emotion in human facial expressions is done in the right hemisphere.

However, new Australian research is challenging the widely-held view that emotions and feelings are the domain of the right hemisphere only.

Dr. Sharpley Hsieh and colleagues from Neuroscience Research Australia (NeuRA) found that people with semantic dementia, a disease where parts of the left hemisphere are severely affected, have difficulty

recognising emotion in music.

These findings have exciting implications for our understanding of how music, language and emotions are handled by the brain.

“It’s known that processing whether a face is happy or sad is impaired in people who lose key regions of the right hemisphere, as happens in people with Alzheimer’s and semantic dementia”, says Dr. Hsieh.

“What we have now learnt from looking at people with semantic dementia is that understanding emotions in music involves key parts of the other side of the brain as well”, she says.

“Ours is the first study from patients with dementia to show that language-based areas of the brain, primarily on the left, are important for extracting emotional meaning from music. Our findings suggest that the brain considers melodies and speech to be similar and that overlapping parts of the brain are required for both”, says Hsieh.

This paper is published in the journal Neuropsychologia.

How was this study done?

• People with Alzheimer’s disease lose episodic memory (‘What did I do yesterday?’); people with semantic dementia lose semantic memory (‘What is a zebra?’).
• Dr. Hsieh studied people with Alzheimer’s disease, semantic dementia and healthy people without either disease. Participants were played new pieces of music and had to indicate whether the song was happy, sad, peaceful or scary.
• Images were then taken of the patients’ brains using MRI so that diseased parts of the brain could be compared statistically to the answers provided in the musical test.

• Patients with Alzheimer's and semantic dementia have problems deciding whether a human face looks happy or sad because the amygdala in the right hemisphere is diseased.
• Patients with semantic dementia have additional problems labelling whether a piece of music is happy or sad because the anterior temporal lobe in the left hemisphere is diseased.

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