Effect of aesthetic images in a population with mild cognitive decline: an EEg/fNirs study

Clemente, L.[1], La Rocca, M.[2] , del Pino Morales, AB.[3], Paparella, G.[1], Delussi, M.[1], Tancredi, G.[1], Ricci, K.[1], Procida, G.[1], Brunetti, A.[4], Bevilacqua, V.[4] and de Tommaso, M.[1]

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Introduction to Neuroaesthetics

Neuroaesthetics: The Cognitive Neuroscience of Aesthetic Experience

Marcus T. Pearce ✉, Dahlia W. Zaidel, [...], and Marcos Nadal (+4) View all authors and affiliations

Volu...

Current Opinion in Neurobiology
Volume 19, Issue 6, December 2009, Pages 682-687

ELSEVIER

Neuroaesthetics: a review

Di Dio Cinz

Consciousness and Cognition
Volume 17, Issue 3, September 2008, Pages 933-945

ELSEVIER

Influence of aesthetic perception on visual event-related potentials

Marina de Tommaso [a] ✉, Carla Pecoraro [a], Michele Sardaro [a], Claudia Serpino [a], Giulio Lancioni [b], Paolo Livrea [a]

Neuroaesthetic is derived from psychophysiology and cognitive neuroscience.

It explores the processes involved in the human capacity to experience and appreciate the beauty of artworks.

It involves the evaluation and discussion of three different levels of aesthetic experience:

➢ Perceptual
➢ Cognitive
➢ Emotional

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Neuroaesthetics in Neurological Conditions

BRIEF RESEARCH REPORT article

Front. Psychol., 07 January 2021
Sec. Neuropsychology
Volume 11 - 2020 | https://doi.org/10.3389/fpsyg.2020.611956

This article is part of the Research Topic
Neuropsychological and Cognitive-Behavioral Assessment of Neurodegenerative Disease and Rehabilitation Using New Technologies and Virtual Reality.

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The Michelangelo Effect: Art Improves the Performance in a Virtual Reality Task Developed for Upper Limb Neurorehabilitation

Marco Iosa[1,2]* Merve Aydin[1] Carolina Candelise[3] Natascia Coda[3]
Giovanni Morone[2] Gabriella Antonucci[1,2] Franco Marinozzi[3] Fabiano Bini
[3] Stefano Paolucci[2] Gaetano Tieri[2,4]

ORIGINAL RESEARCH article

Front. Psychol., 26 May 2022
Sec. Perception Science
Volume 13 - 2022 | https://doi.org/10.3389/fpsyg.2022.879833

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Elisabeth Kliem[1]* Michael Forster[2] Helmut Leder[2]

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The Michelangelo Effect: Art Improves the Performance in a Virtual Reality Task Developed for Upper Limb Neurorehabilitation

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[3]   Stefano Paolucci[2]   Gaetano Tieri[2,4]

Art can positively affect motor performance and the virtual reality task is a promising approach for rehabilitative purposes in the neurorehabilitation of stroke patients.

ORIGINAL RESEARCH article

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Elisabeth Kliem[1]*   Michael Forster[2]   Helmut Leder[2]

AD patients may have a somewhat preserved implicit valence system for negative compared to neutral or positive visual information, especially in the domain of aesthetics.

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Neuroaesthetics in early stages of dementia

Impaired aging is a condition similar to MCI (Mild Cognitive Impairment) which represents an intermediate stage between normal cognitive ageing and more severe dementia.

Conditions such as dementia or other neurodegenerative diseases can affect aesthetic perception. These disorders can alter the areas of the brain involved in visual perception and aesthetic evaluation
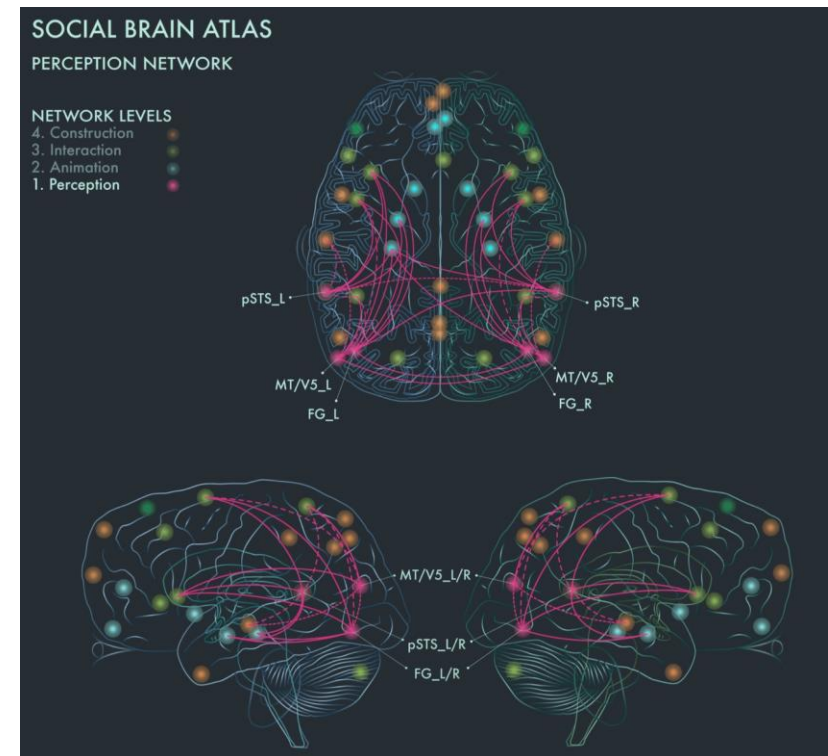
More Than Meets the Eye: Art Engages the Social Brain
Janneke E. P. van Leeuwen1,2*, Jeroen Boomgaard3, Danilo Bzdok4, Sebastian J. Crutch1 and Jason D. Warren1*

The Study

34 subjects > 65 years

17 Normal Aging (NA)
17 Impaired aging (IA)

Mini Mental State Examination (MMSE)
Scores: NA > 24
        IA 18 - 24

Full neuropsychological assessment:
- Memory
- Attention
- Executive functions
- Social cognition
- Cognitive reserve

EEG/fNirs recording

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EEG

fNirs

EEG/fNirs recording

EEG/fNirs

- 2 mins of resting state baseline
- 40 mins task
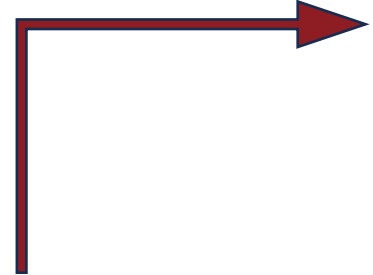
115 single-color frequent images
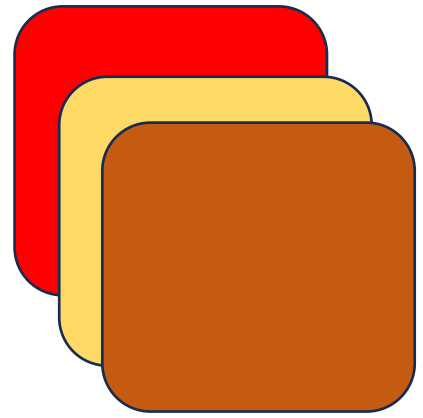
50 target images

1 2 3 4 5 6 7 ~~8~~ 9 10

Aesthetic appretiaction

Likert scale 1 to 10 (low = 1-4; neutral = 5-6; high = 7-10)

Neuropsychological results

		Statistic	p	
GDS	Student's t	1.2054	0.237	No differences
STAI_Y1	Student's t	-0.0281	0.978	No differences
STAI_Y2	Student's t	0.8575	0.398	
Span forward	Student's t	-0.9717	0.338	
Span backward	Student's t	-3.1282	0.004	Woking memory
Babcock_immediate	Student's t	-1.9008	0.066	
Babcock_Delayed	Student's t	-1.9031	0.066	
Corsi	Student's t	-2.4998	0.018	Visuospatial memory
Attentional matrices	Student's t	-4.0099	<.001	Attention
TMT-A	Student's t	2.1033	0.044	Attention
TMT-B	Student's t	2.2910	0.029	
Stroop time	Student's t	1.6829	0.102	
FAS	Student's t	-2.9154	0.007	
Clock	Student's t	-1.3125	0.199	
SET-GS	Student's t	-5.1345	<.001	Social cognition
cri_tot	Student's t	-3.1346	0.004	Cognitive reserve

Note. $H_a \mu_0 \neq \mu_1$

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EEG results

Controls dynamic
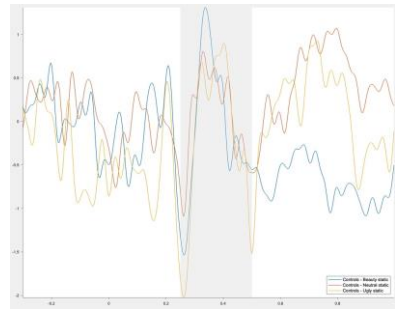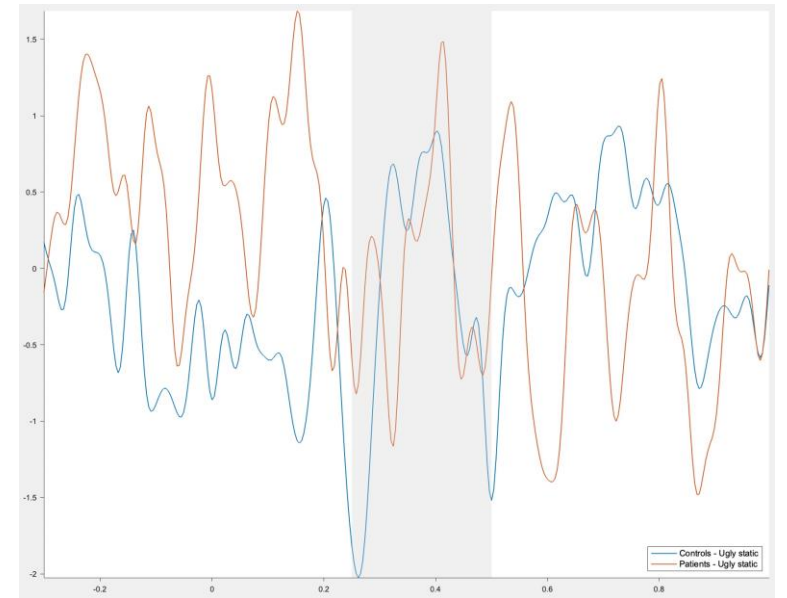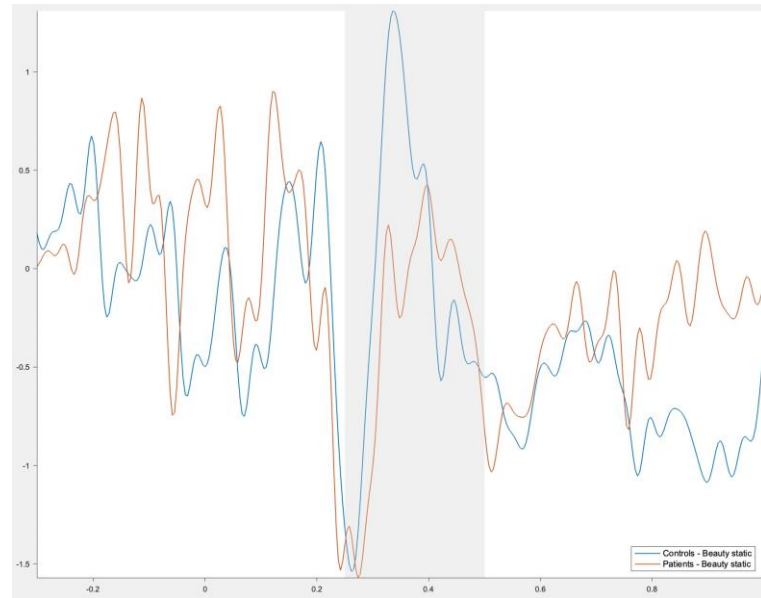

Patients dynamic
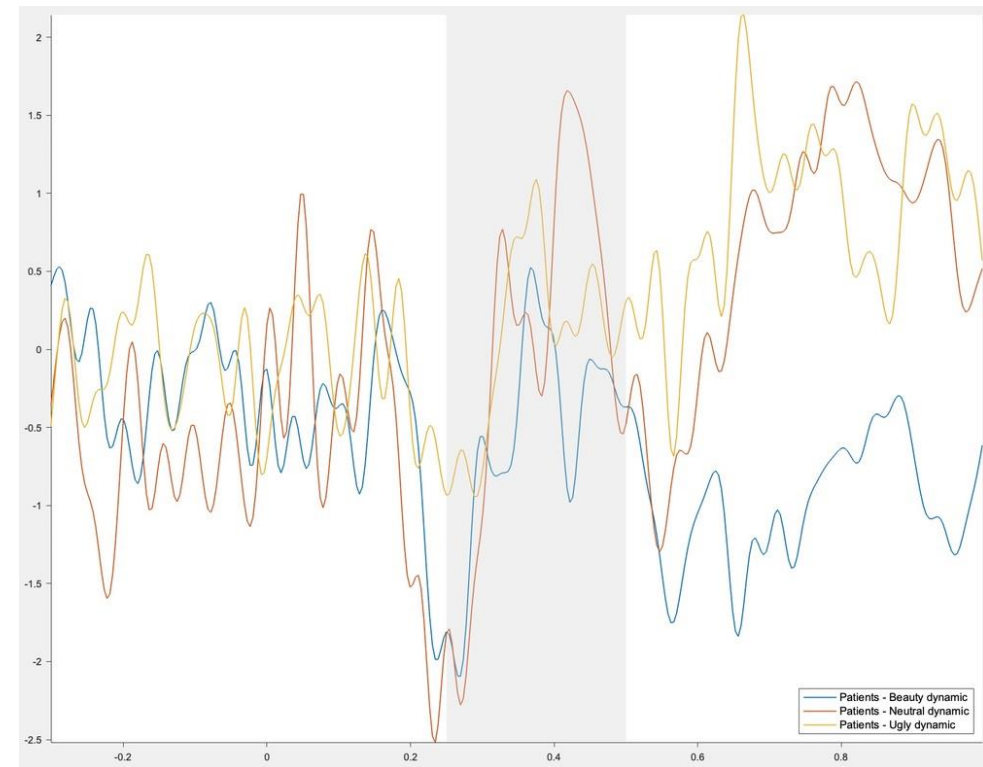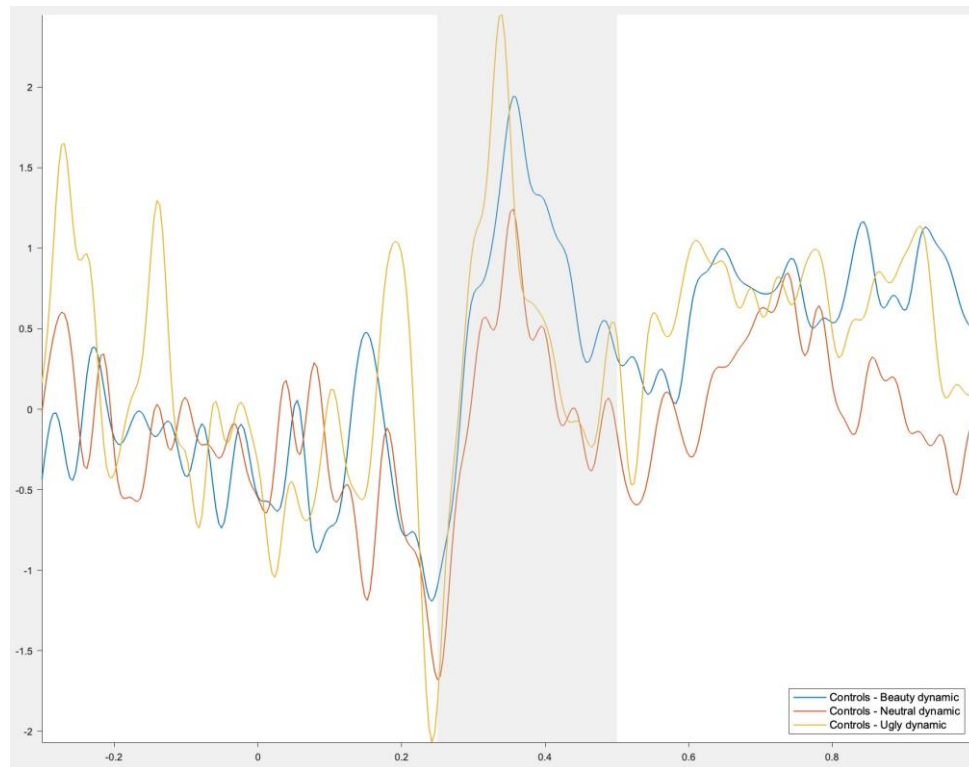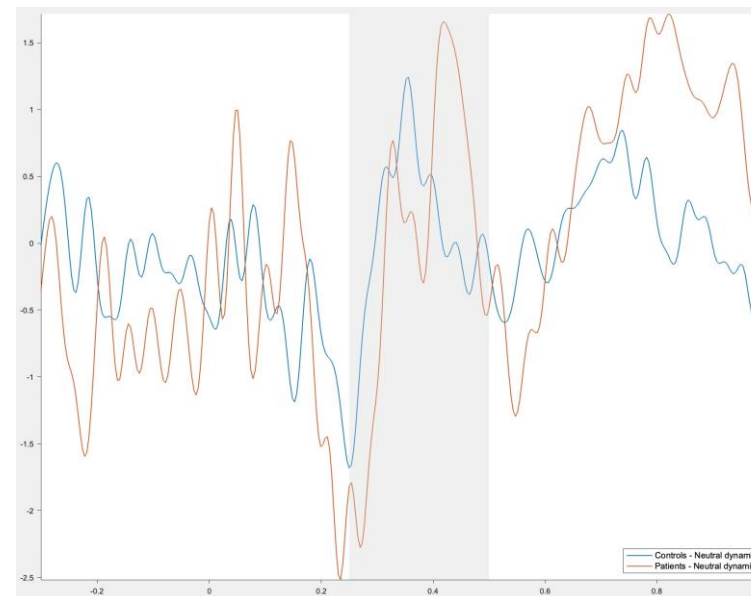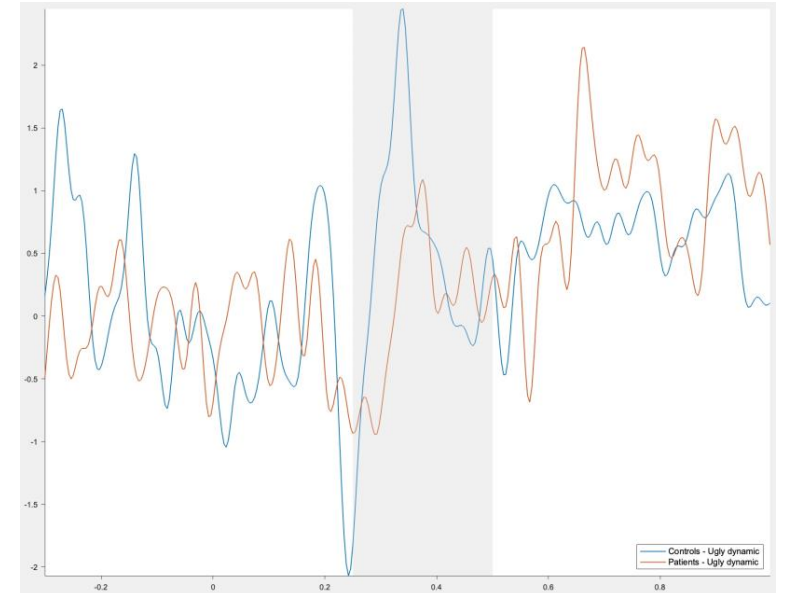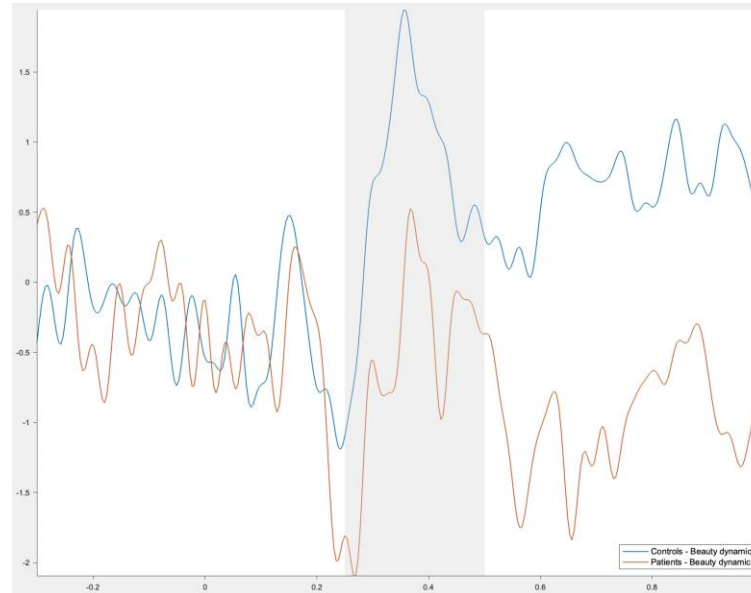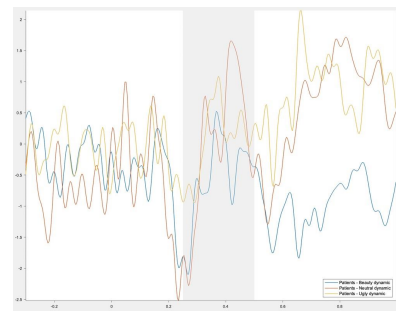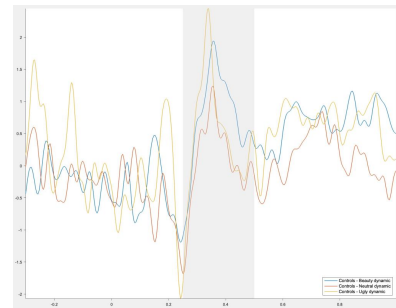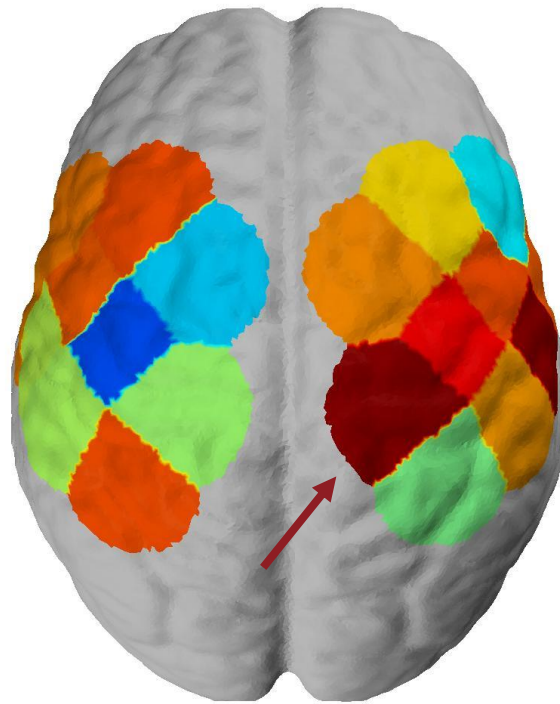
EEG results

EEG results
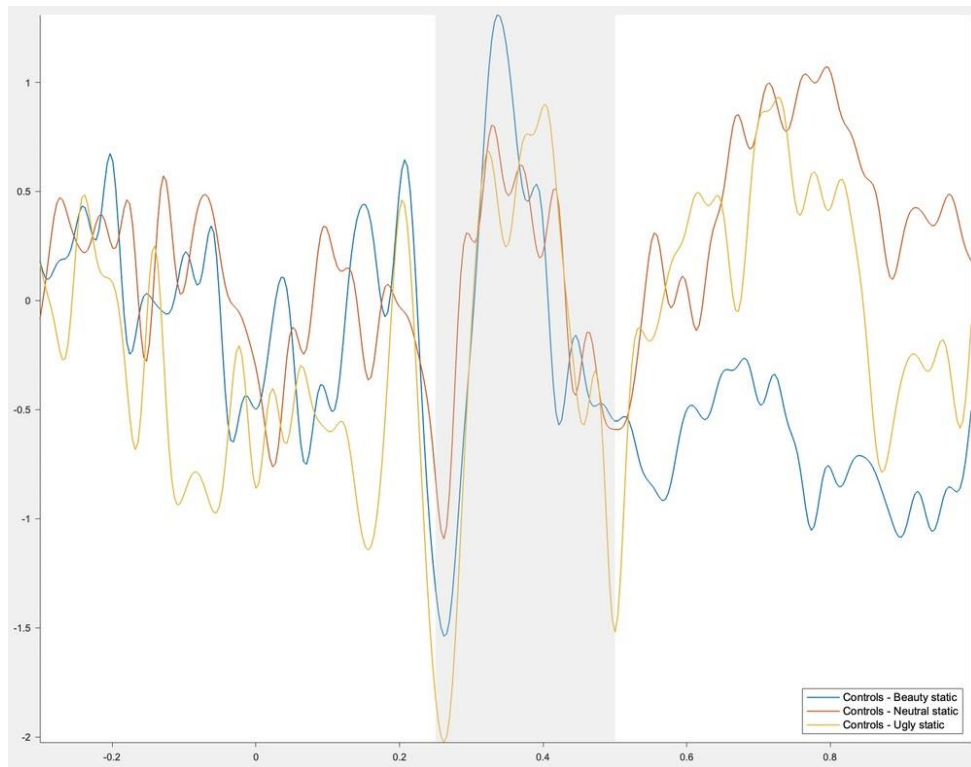
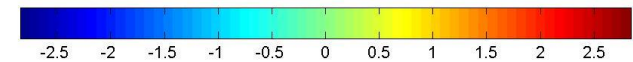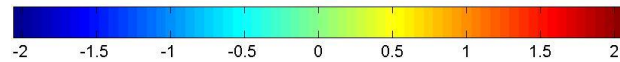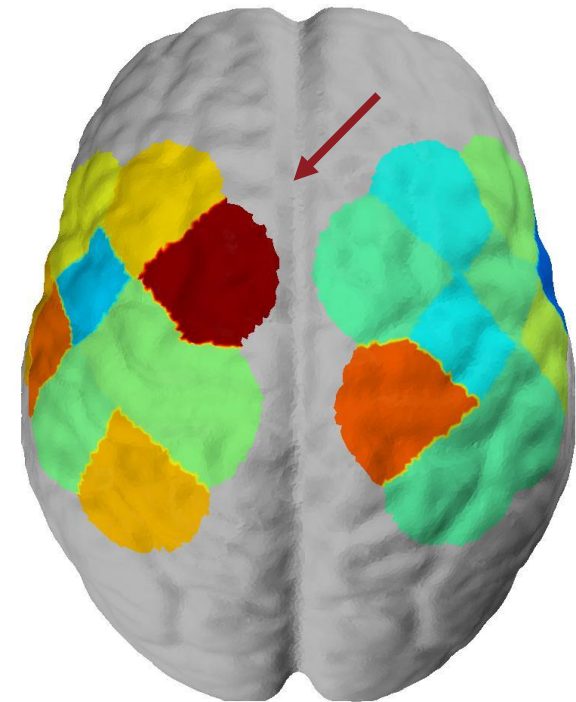Controls static
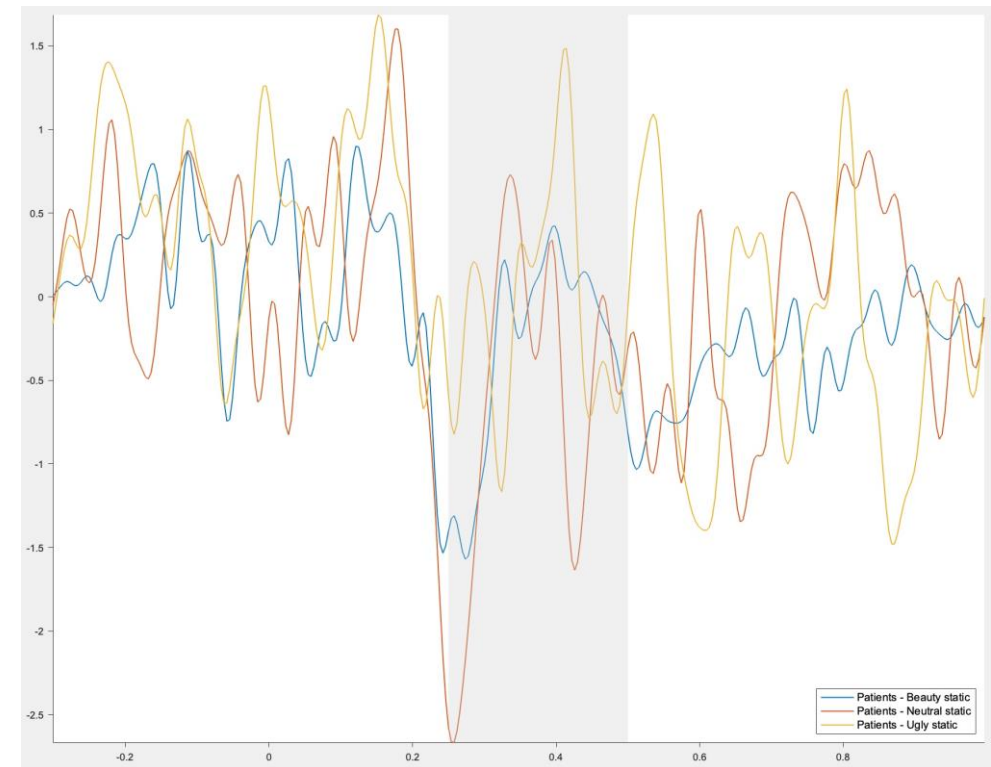
Patients static
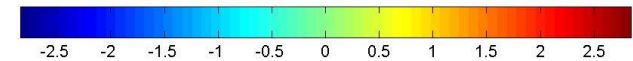
EEG results
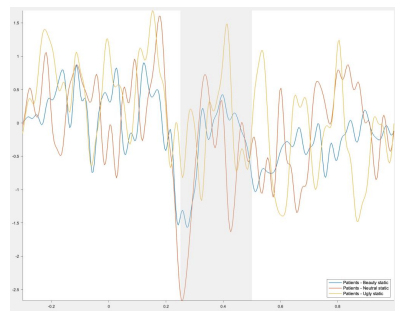
fNirs results
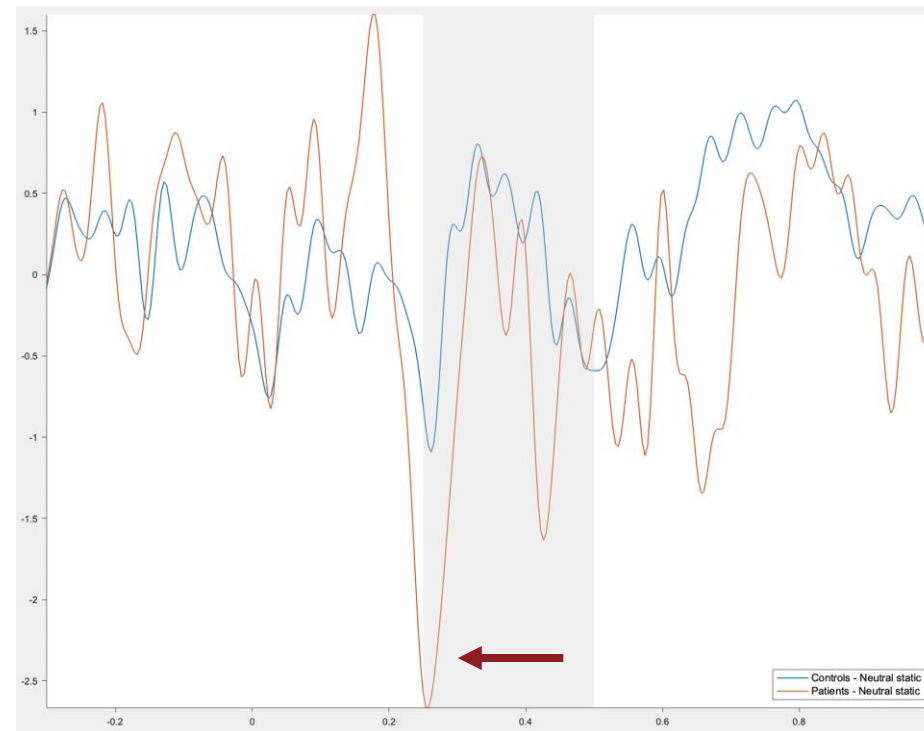
Neutral static

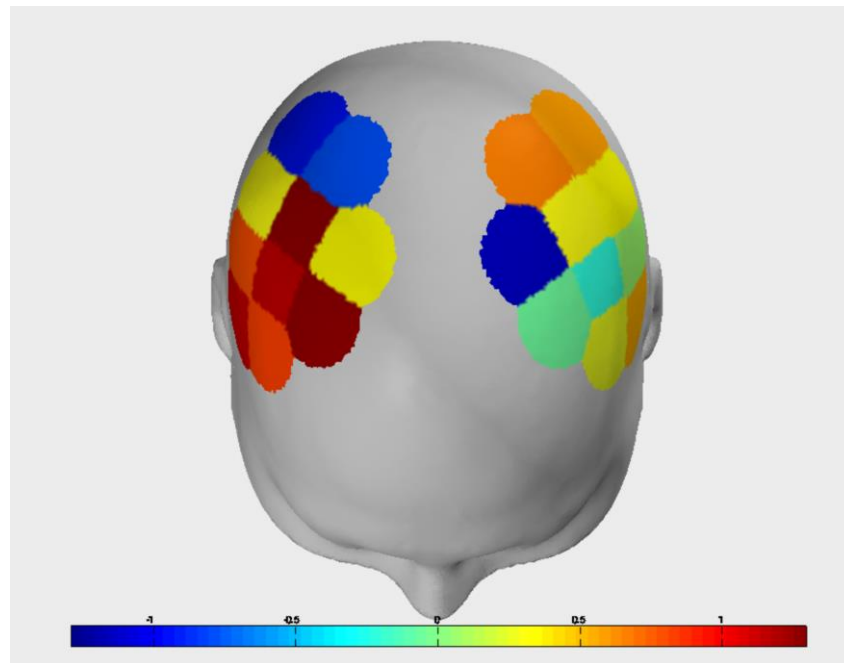Beauty static

fNirs results

Neutral static

Beauty static
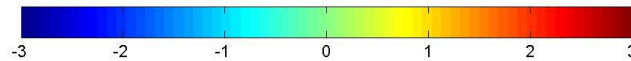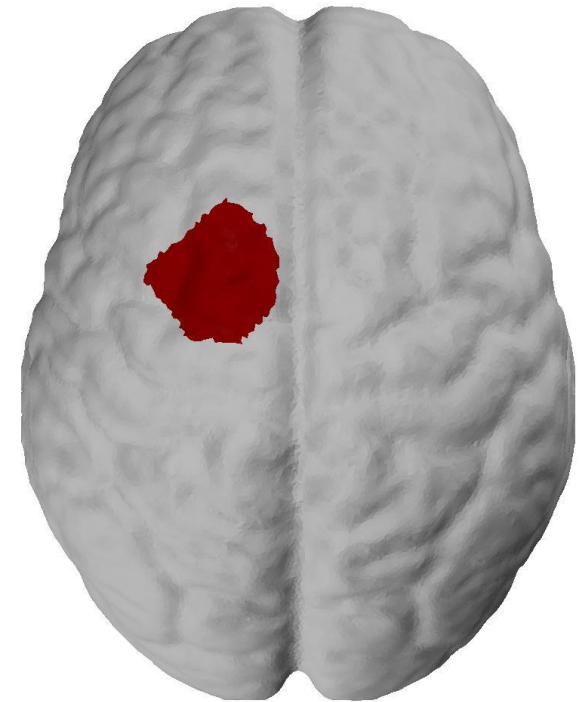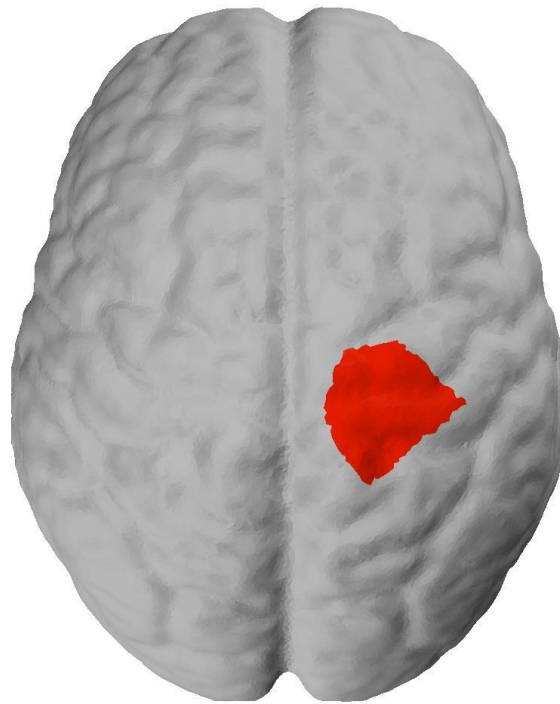
fNirs results

Neutral static

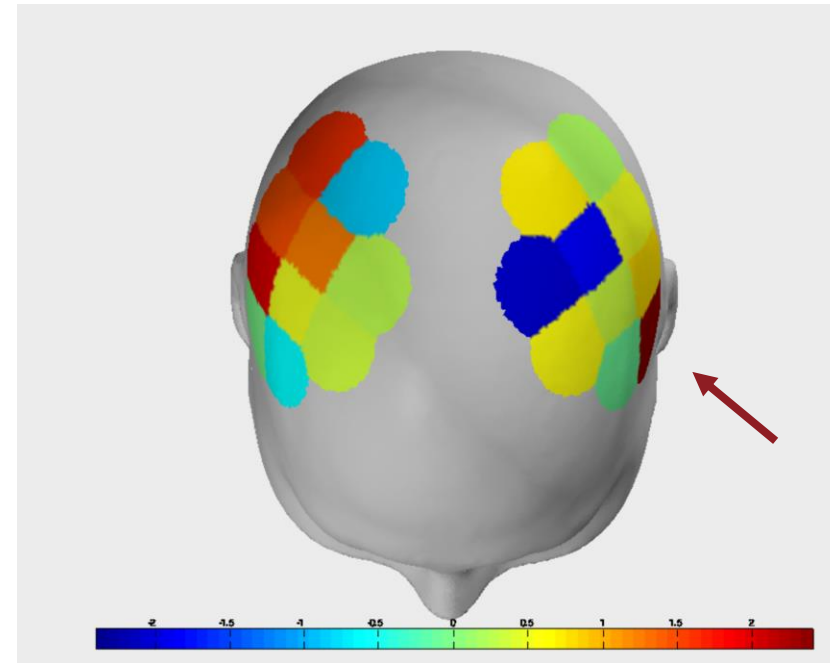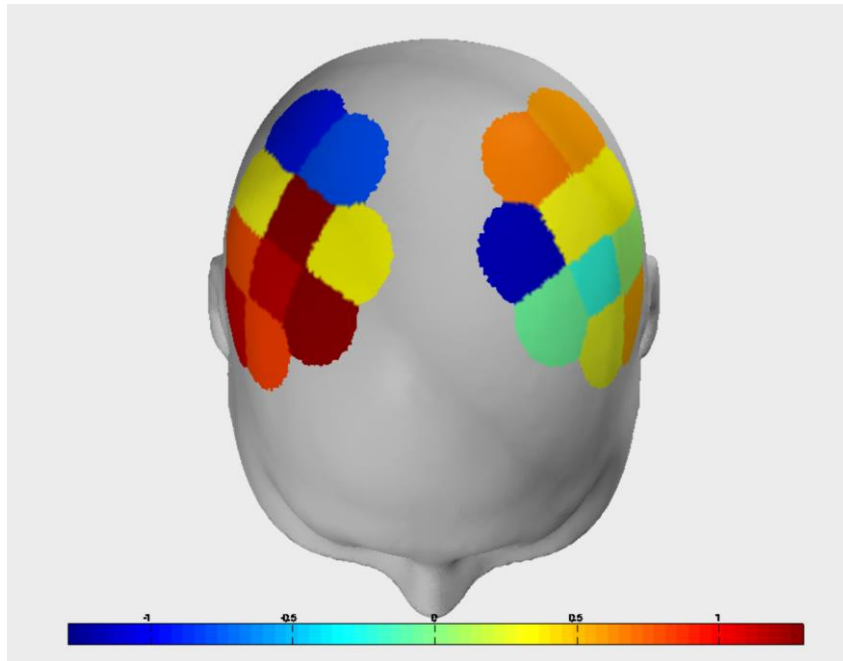# fNirs results

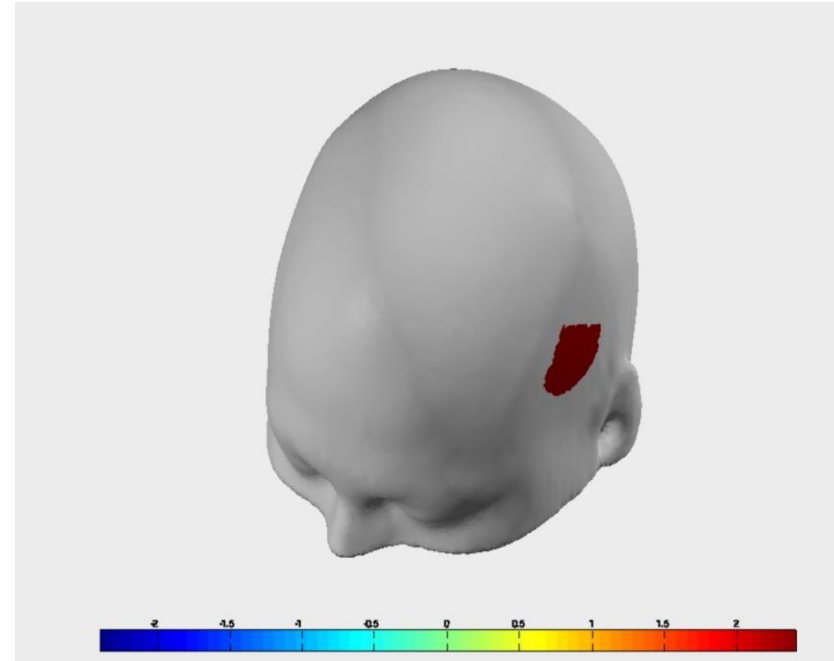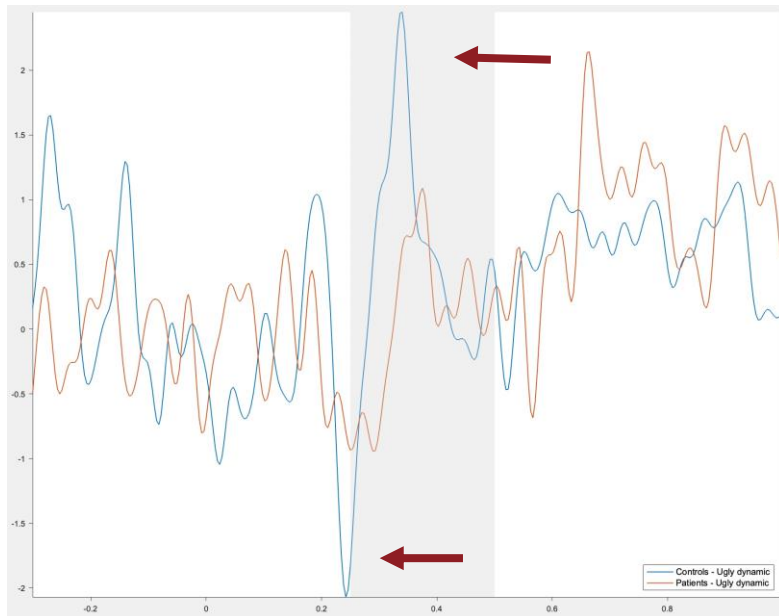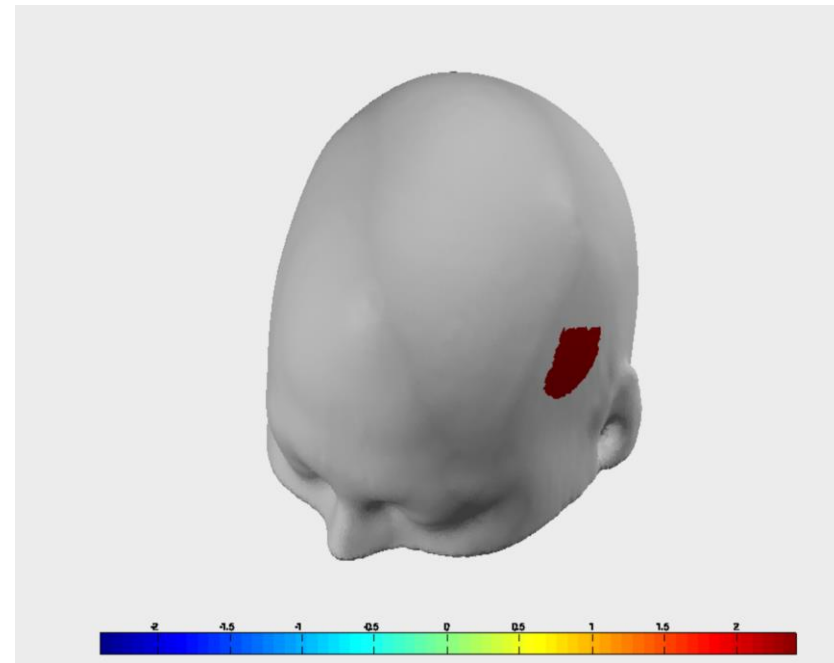Ugly static

Ugly dynamic

fNirs results

Ugly static

Ugly dynamic

fNirs results

Ugly dynamic

Future directions

- A more in-depth analysis of task variables could provide greater insight into the relationship between cognitive function and image processing.

- Create a connectivity map for both normal and impaired aging

- Set the ground for criteria for personalized rehabilitation programmes

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Thanks for the attention

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