# Expertise effects on Embodied Emotion of Facial Expressions: A study using Somatosensory Evoked Potentials

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## INTRODUCTION

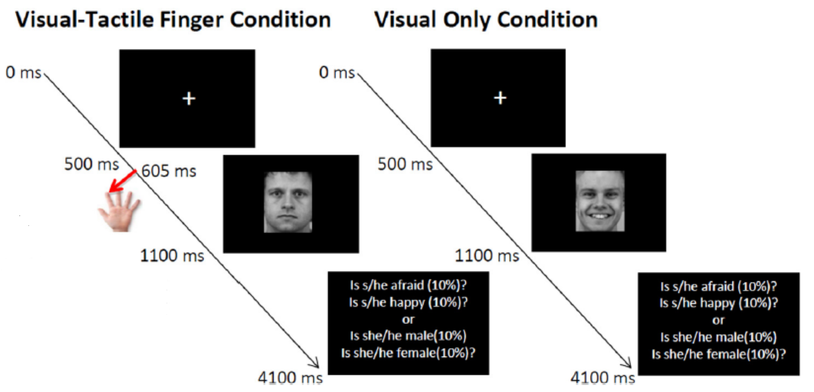
☺ Dance expertise modulates psychophysiological responses to affective body movements (1) and increases the visual and emotional sensitivity with familiar stimuli (2,3,4 & 5). Dancers have shown enhanced somatosensory abilities, body awareness and interoceptive abilities (6 &7).

☺ **Is this enhanced sensitivity domain-specific (i.e. dance moves) or generalised to everyday forms of emotional expressions (i.e. faces)?**

## METHODS

**2 groups**: 26 professional ballet **dancers** (22 females) and 26 **controls** (no prior dance experience)

**Task** (EEG): Emotion discrimination of facial expressions (**neutral/ afraid/ happy**) & gender recognition (male/ female) as a control task



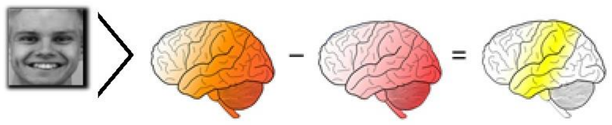

(Adapted from Sel et al., 2014)

**Visual- Tactile condition:** participants received a tactile stimulation on their left index finger 105" after the visual onset to evoke an SEP (enhanced neural activity at the SCx).

**Visual only condition:** participants performed the task without tactile stimulation (8, 9,10).

**The visual only condition was subtracted from the tactile condition**

**(SEPs & VEPs) – (VEPs) = SEPs only (VEP free)**

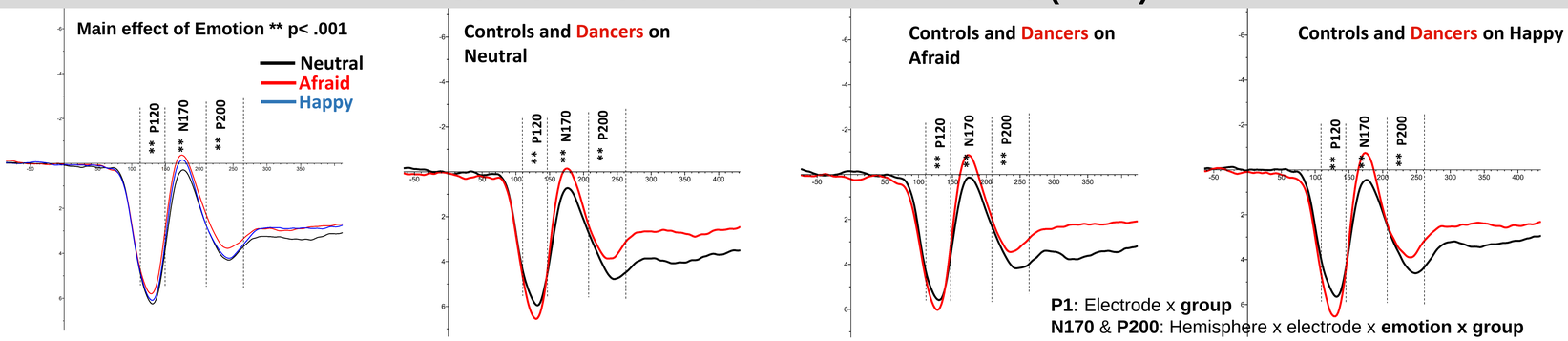


Galvez–Pol et al. (2018; 2020)

Subjective Measures**: Beck Depression Inventory, Toronto Alexithymia Scale,**

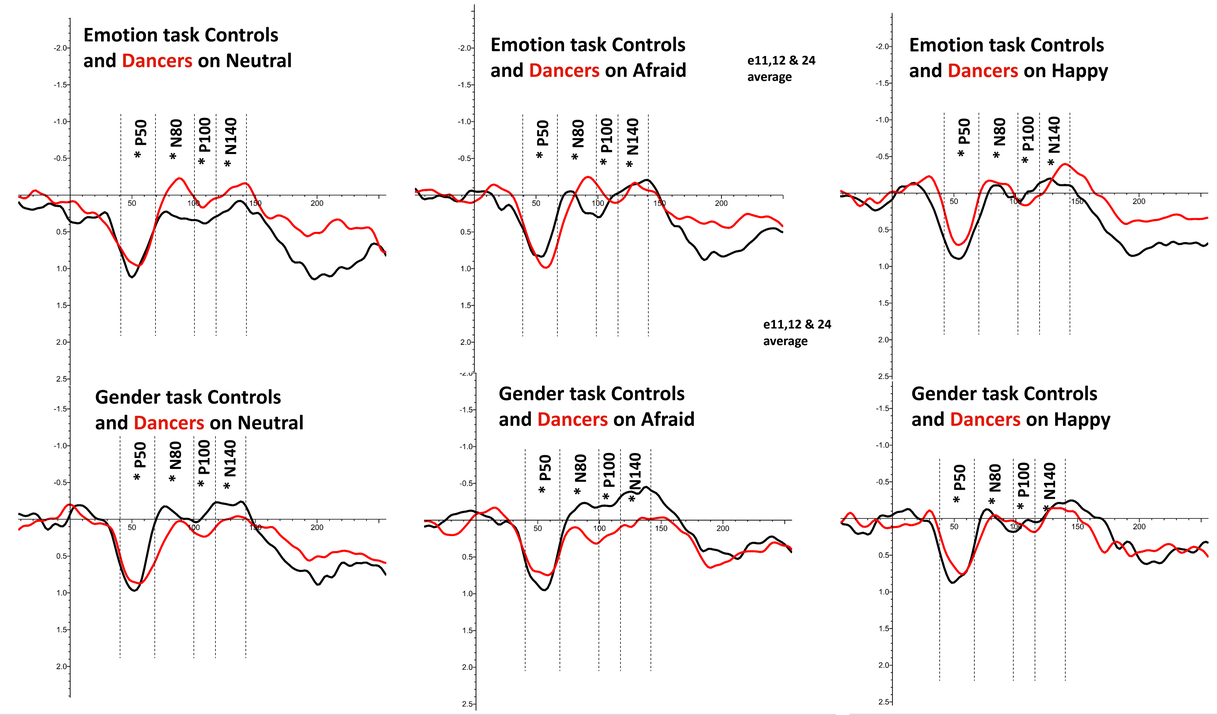
**State- Trait Anxiety Inventory,** Multidimensional Assessment of **Interoceptive Awareness** & 20-item **Prosopagnosia Index**

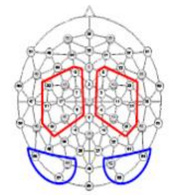
## RESULTS I: VISUAL EVOKED POTENTIALS (VEPs)




**P1:** Electrode x **group**
**N170** & **P200**: Hemisphere x electrode x **emotion x group**

## RESULTS II: SOMATOSENSORY EVOKED POTENTIALS (SEPs [VEP free])



**N80:**
**Main effect of Emotion * p< .05**
**P50:**
**emotion** x **group** x **h**emisphere x region
**N80 & P100**:
**emotion x group** x hemisphere x site
& **task** x **group** x hemisphere
**P100:**
**task x emotion x group** x hemi. x region
**N140:**
**Task x emotion x group** x region
**Task** x **emotion x group** x site

## DISCUSSION

☺ Dance expertise modulates early stages of visual processing of embodied emotion: Dancers show bilateral emotion processing while for controls emotion effect is lateralised (different emotion effects for right & left hemisphere)

☺ Expertise effect modulates even the pure somatosensory processing of embodied emotion with group differences on the emotion processing (Neutral/afraid/happy), on task effect & lateralisation.

☺ **This study provides supportive evidence for domain general expertise effect that expands to everyday forms of emotional expressions.**

## REFERENCES

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