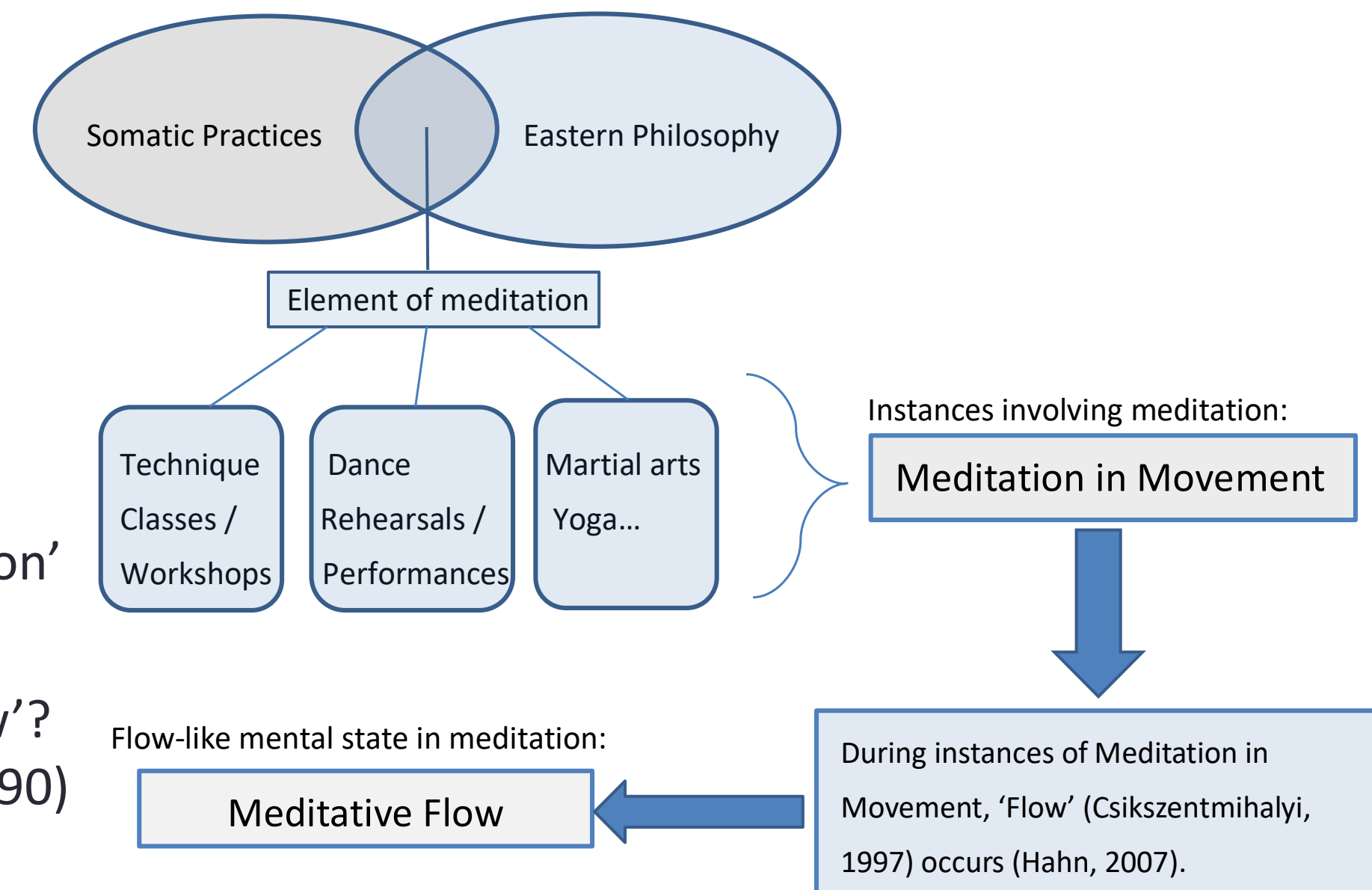


# Embodied Consciousness During Meditative Moving

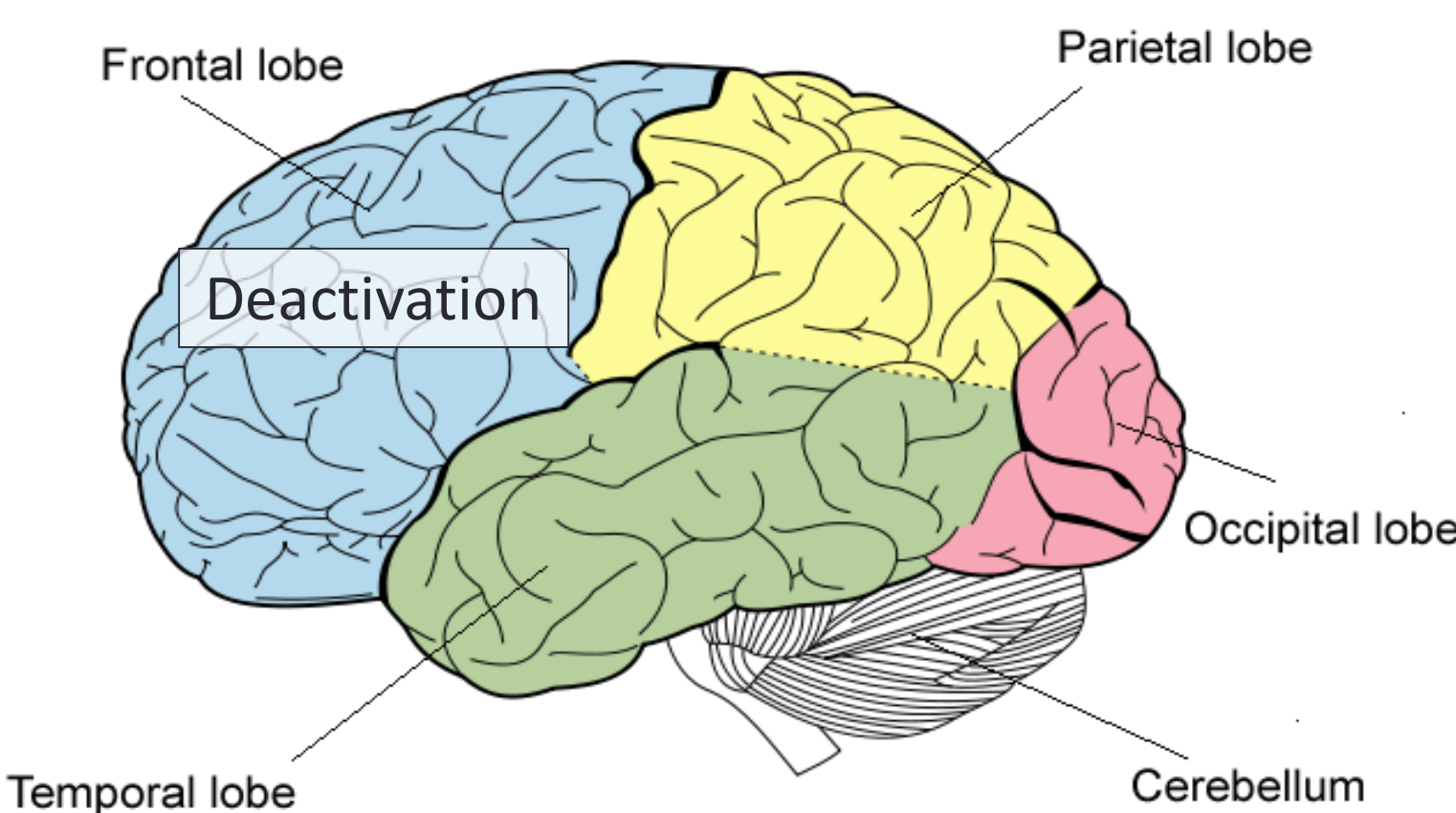
## BACKGROUND

### Dance context:

- Somatic practices: sensory awareness (Williamson, 2010)
- Roots in Eastern philosophy (Zen Buddhism)
- Element of 'meditation'
- Altered state of consciousness = 'Flow'? (Csikszentmihalyi, 1990)



## NEUROCOGNITIVE THEORIES



### During Flow...

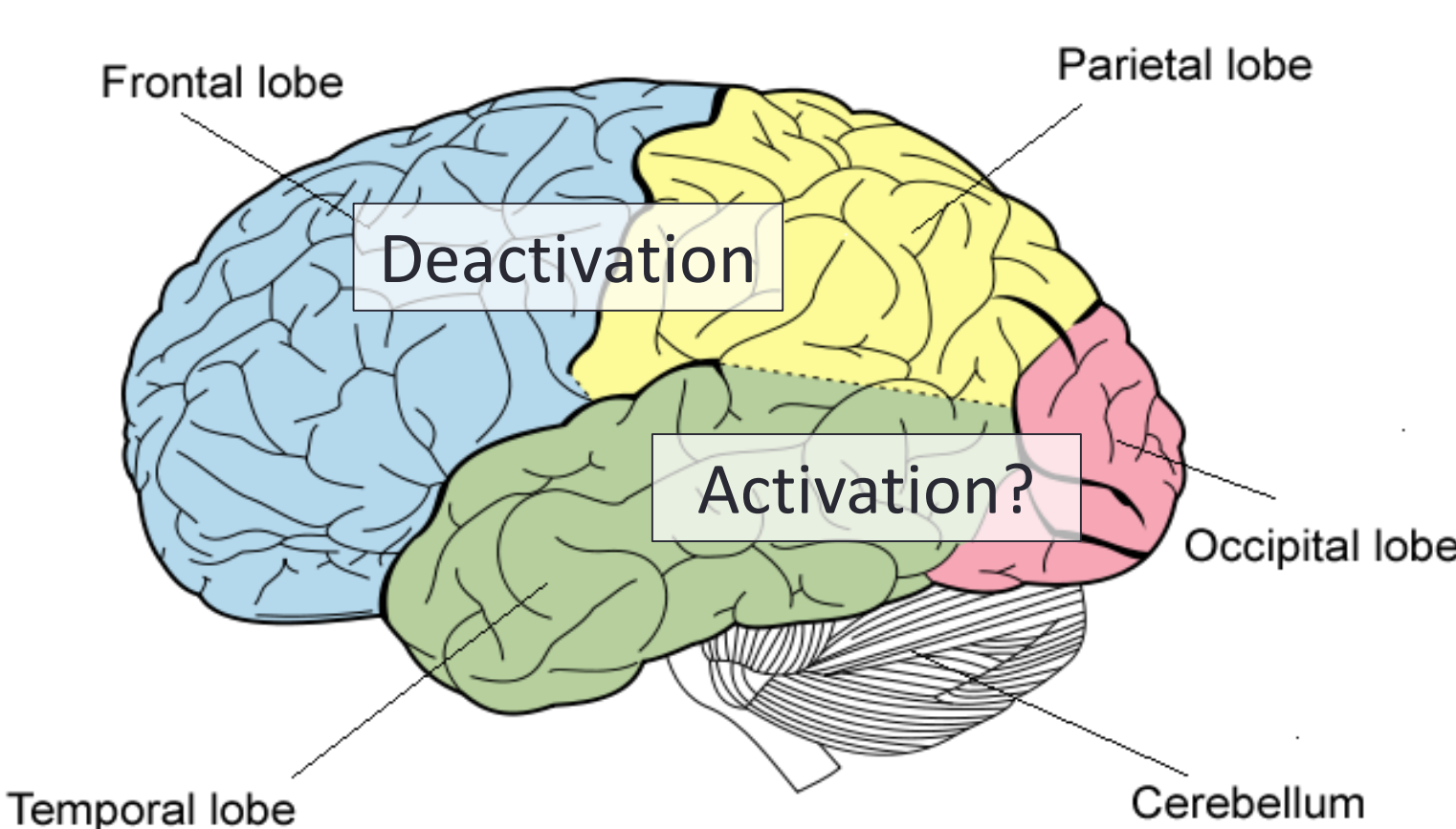
"Hypofrontality"

- Deactivation of areas in the frontal lobe
- No interference from explicit system
- Efficient, *implicit* processing (Dietrich, 2004)

### During meditation...

- "Self-less" state
- Three levels of 'self': releasing NS & ES
- Deepest level: no ownership, no 'self'
- *Non-egocentric* state (Dor-Ziderman, 2013)

Level of 'self'	Action in:
Narrative Self: Autobiographic, self-referential thoughts	Frontal regions
Minimal (Experiential) Self: Awareness of the 'I' experiencing the present moment	Parietal regions
"Self-less": No intentions / passing through moment-to-moment experience	Thalamic structures?



### During Meditative Flow...

"Allocentricism"

- Thalamic switch from *dorsal* to *ventral* pathway
- Enhanced activation in cerebellum?
- Enhanced **movement performance?** (Austin, 2010)

## OBJECTIVES

While neuroscience provides intriguing theories on the relationships between meditation, Flow, and consciousness, observing such phenomena within a movement context runs into difficulties, as methods of observing brain activity during movement is still underdeveloped. Here, the researcher asks:

- Can there be a way to contribute to these neuroscientific theories by examining what happens *outside* of the brain?
- Theories lead to the hypothesis that, during Meditative Flow, *movement performance* could enhance; can this hypothesis be proven?
- If the hypothesis is true, how can we *observe* changes in movement performance?
- Do audience members *recognise* this internal change, just by observing the movement performance?

## METHOD

### Participants

- 1 Mover: regularly practices meditative movement activities, and has experienced Meditative Flow during their practice.
- 3-5 Observers: has experienced Meditative Flow during their own movement practice, and is a regular spectator of dance and movement performances.

### Materials and procedures:

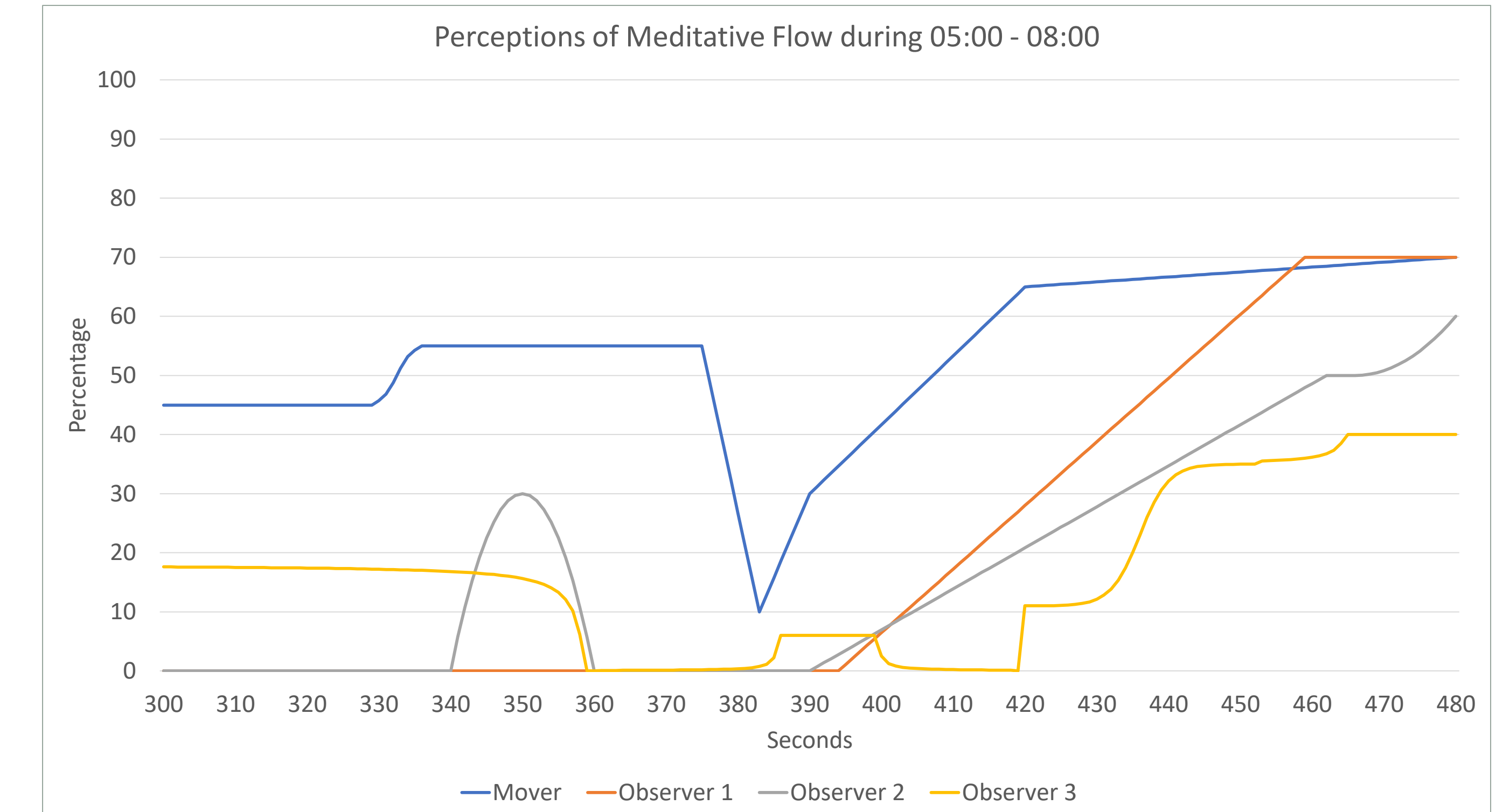
The mover performs a **20min. segment** of their own practice in a dance studio, while being observed by 3-5 people. The performance is documented through OBS Studio (Open Broadcast Software) as a **video** source for later discussion. As the observers watch, they operate a **mouse device** to measure their real-time perception of the performer's fluctuation of Meditative Flow. The device consists of a mouse on a straight 30cm rail which transmits a recording of the mouse movement (detects a minimum motion of 0.025 mm every 100 milliseconds) to an online data storage. The mouse recordings are visualised as a line graph, and shown alongside the documented footage.



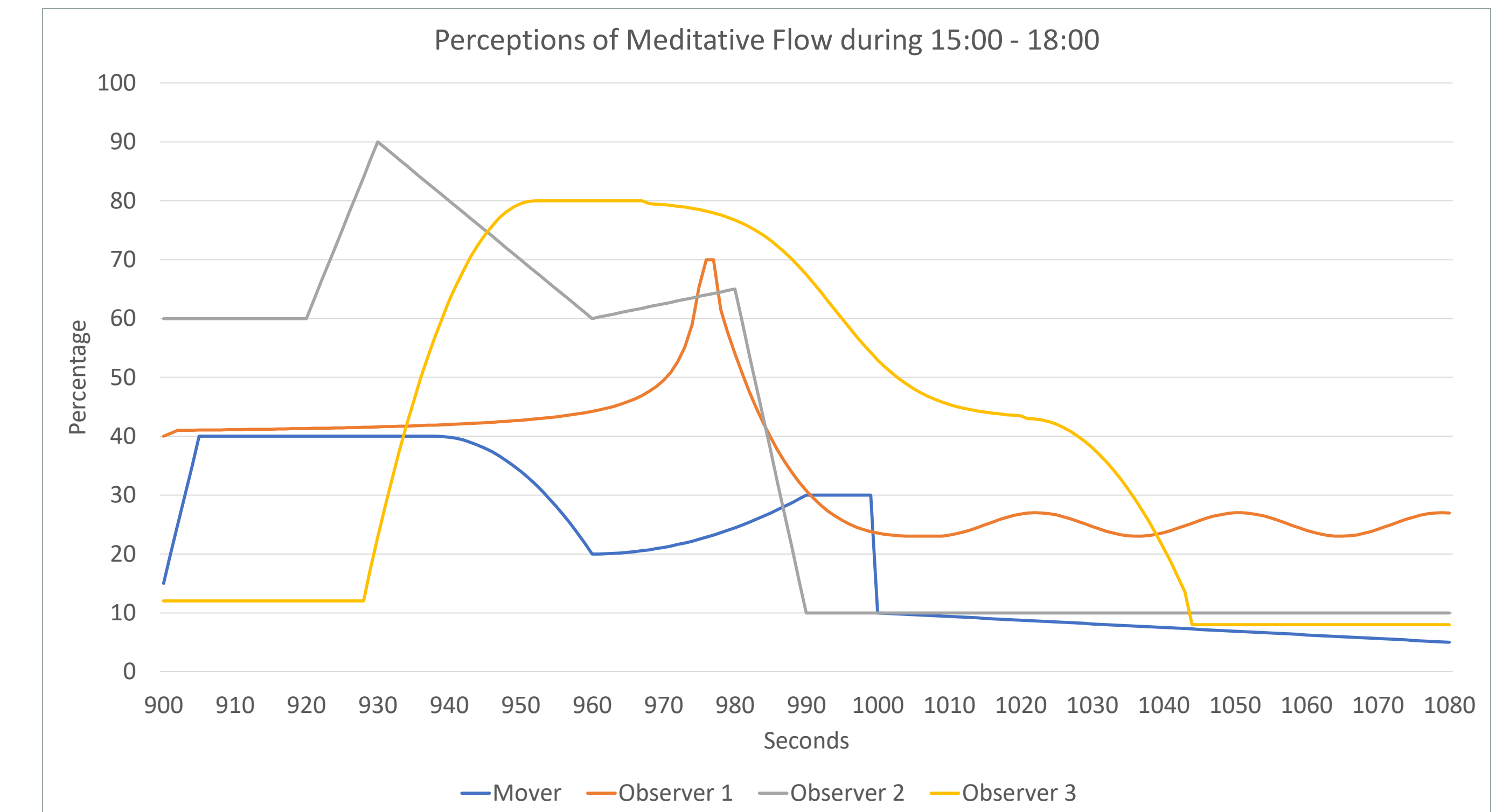
The recordings are used in the **reflective interview** process, as markers of the observers' real-time responses. During the interview, a drawn line graph is developed collaboratively between the researcher and participant, which is then manually transferred to a **digital medium** (Microsoft Excel). Both the mover's and the observers' perceived fluctuations of Meditative Flow are quantified and compared, in order to determine whether there are any relationships.

## PILOT RESULTS

• X axis = time / y axis = perceived level of Meditative Flow  
[ Data: 05:00 – 08:00 out of 20minutes (300 – 480sec. out of 1200sec.) ]



[ Data: 15:00 – 18:00 out of 20minutes (900-1080sec. out of 1200sec.) ]



### Patterns:

- Low / decrease during 300 – 380sec.
- High during 930 – 980sec.
- Rise during 380 – 480sec.
- Decrease / low during 980 – 1080sec.
- Rise during 900 – 930sec.

## REFERENCES

Williamson, A. (2010). Reflections and theoretical approaches to the study of spiritualities within the field of somatic movement dance education. *Journal of Dance & Somatic Practices*, 2(1), 35-61.

Hahn, T. (2007). *Sensational knowledge: Embodying culture through Japanese dance*. Wesleyan University Press.

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal performance*. NY: Cambridge University Press.

Dietrich, A. (2004). Neurocognitive mechanisms underlying the experience of flow. *Consciousness and Cognition*, 13(4), 746-761.

Dor-Ziderman, Y., Berkovich-Ohana, A., Glicksohn, J., & Goldstein, A. (2013). Mindfulness-induced selflessness: a MEG neurophenomenological study. *Frontiers in human neuroscience*, 7, 582.

Austin, J. H. (2010). The thalamic gateway: how the meditative training of attention evolves toward selfless transformations of consciousness. *Effortless Attention. A New Perspective in the Cognitive Science of Attention and Action*, 373-407.