

TSCN 20220024  
Taiwan

BACKGROUND

During the storm of heartbreak, the broken one can do nothing except remaining exposed, drenched, and miserable until it fades out. Listening music is an effective way to correct this imbalanced body state. In terms of music types, people in sad mood show mood-congruent musical preference relative to those in neutral mood. Such preference will decrease over time and gradually reach equivalent share of both sad and happy music. Clinically, music therapists provide music that matches their client's mood, and then gradually change the music to help the client shift to a different mood.

Our aim

In this study, we arranged songs into two contexts. For the congruent condition, there were five songs, moving from sad (2) to happy (3) ones, to be presented. For another condition, the five songs were all happy ones. During fMRI scanning, participants were asked to recollect the break-up event before and after music listening sessions of the two conditions. The differential neural effect of the two music suites would be expected.

METHOD

Participant inclusion criteria

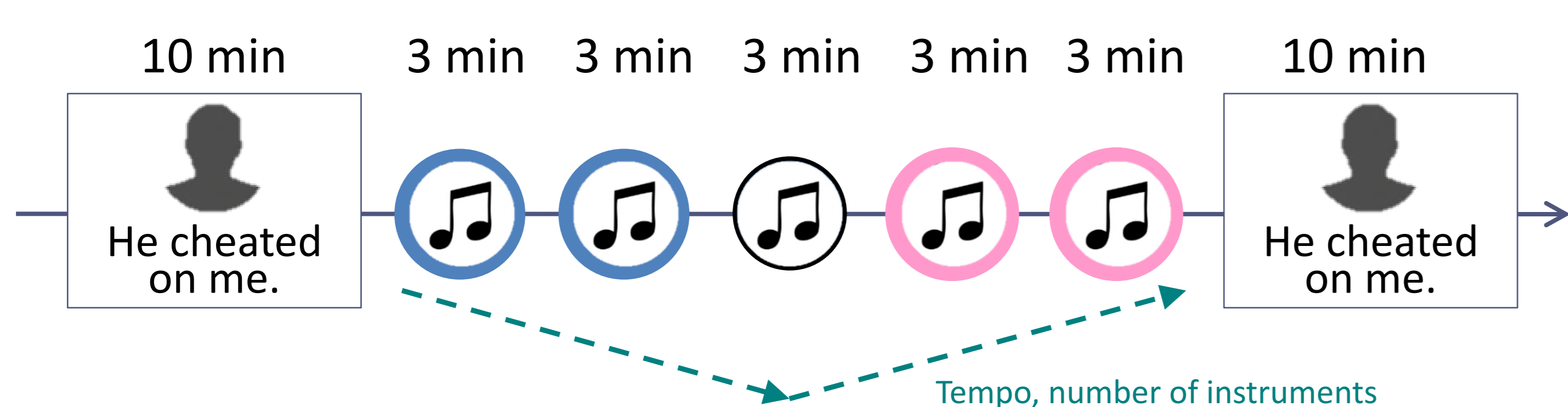
- 30 females who had experienced an unwanted romantic relationship break-up.
- aged 20 to 35 years old (M=25.23 years)
- This break-up experience was deeply hurt for them.
- Thinking about this experience again still created negative emotions.
- The Barcelona Music Reward Questionnaire (BMRQ) scores were larger than 65.

Questionnaires and physiological measures

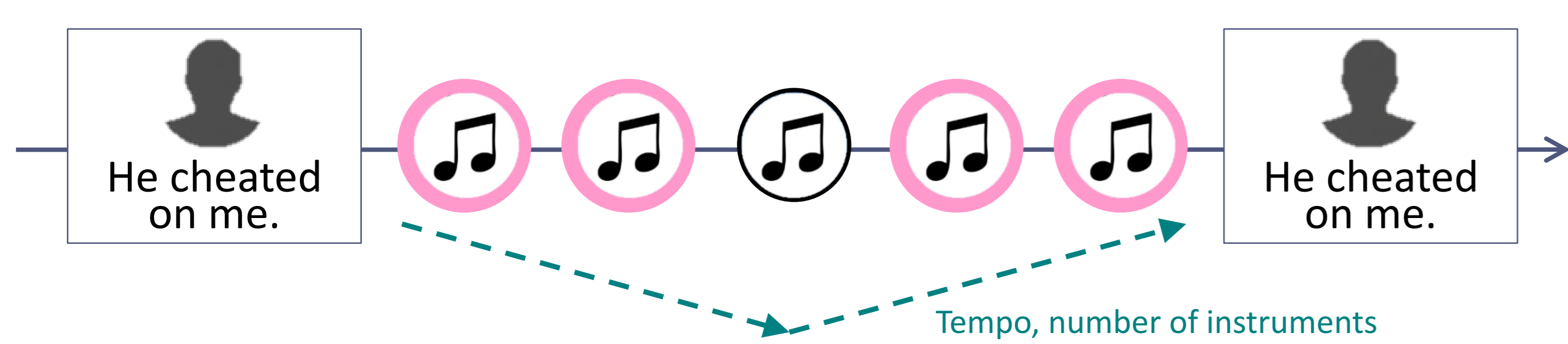
- The electrocardiogram (EKG) was recorded during the whole fMRI scanning session.
- The Positive and Negative Affect Schedule (PANAS) was administered to participants before and after scanning.
- Participants completed the Beck Depression Inventory and the Inventory of Complicated Grief before scanning.

Trial procedure

1<sup>st</sup> day: sad to happy music condition

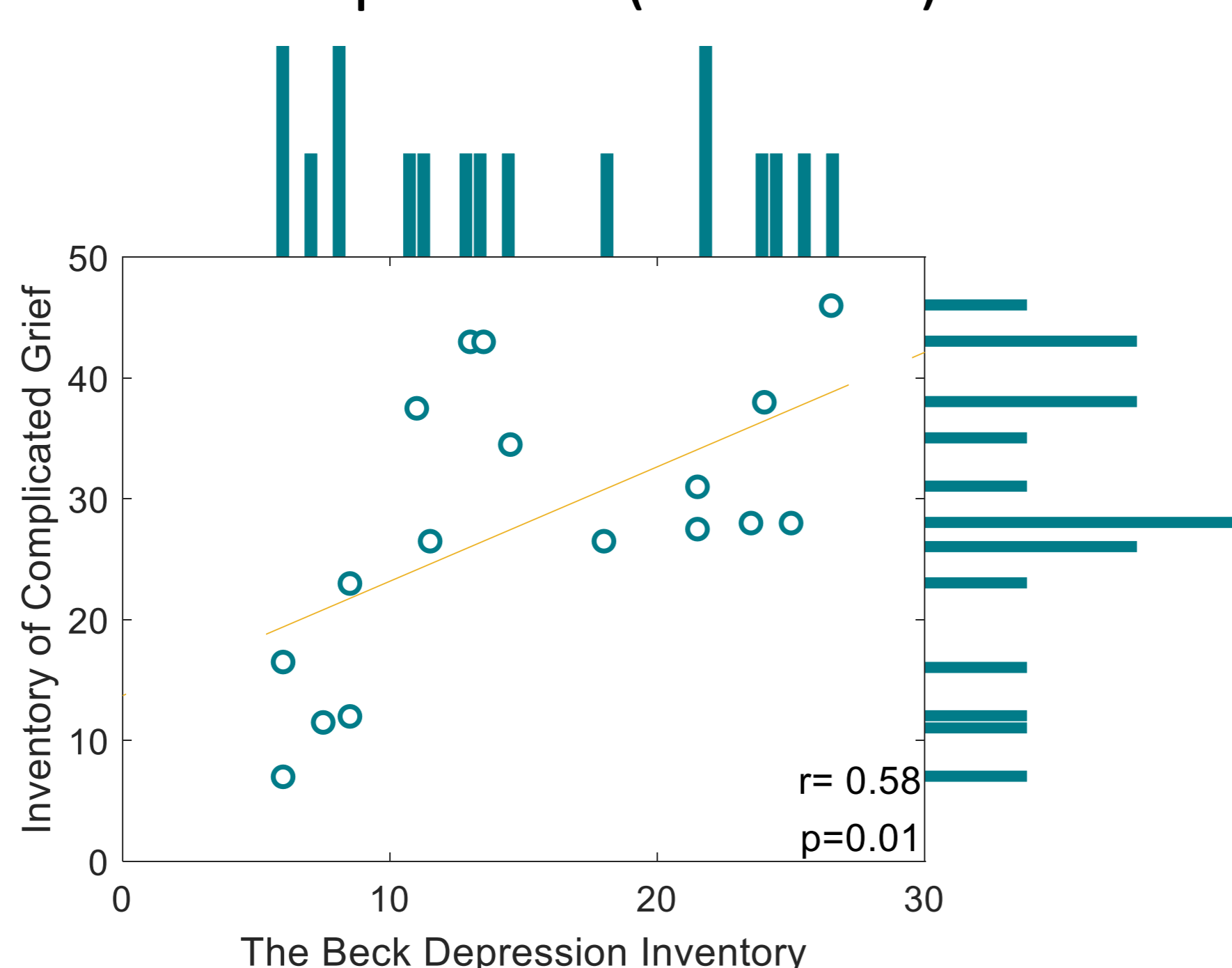


2<sup>nd</sup> day: all happy music condition



BEHAVIORAL RESULTS

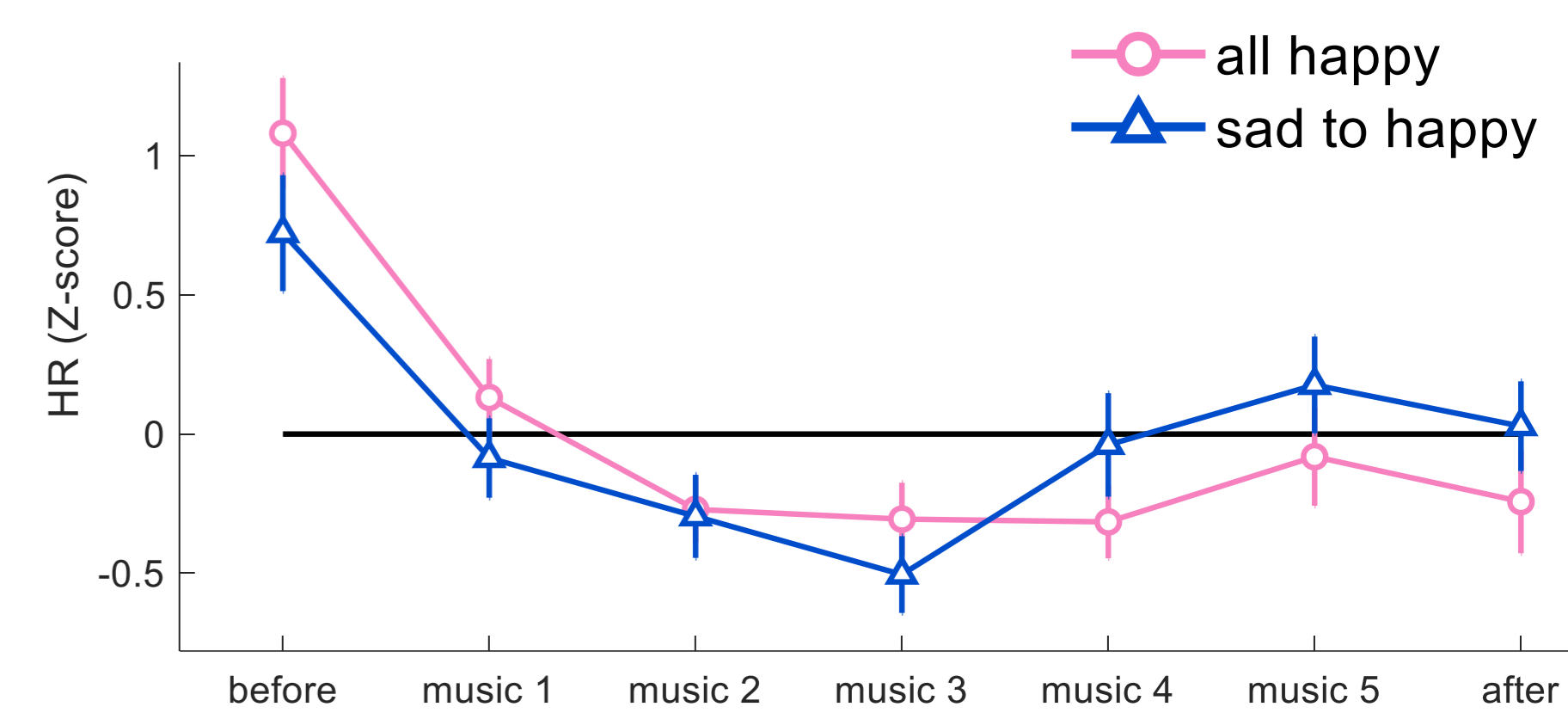
- The Positive and Negative Affect Schedule (PANAS) scores were tested and showed no difference between before and after scanning.
- The Barcelona Music Reward Questionnaire (BMRQ) scores indicated that all participants were sensitive to feeling of reward from music (BMRQ > 65, mean = 80.57, SD = 8.57).
- No participant showed severe depression (score > 30).
- Depression scores positively correlated with complicated grief scores.



EKG MEASURES

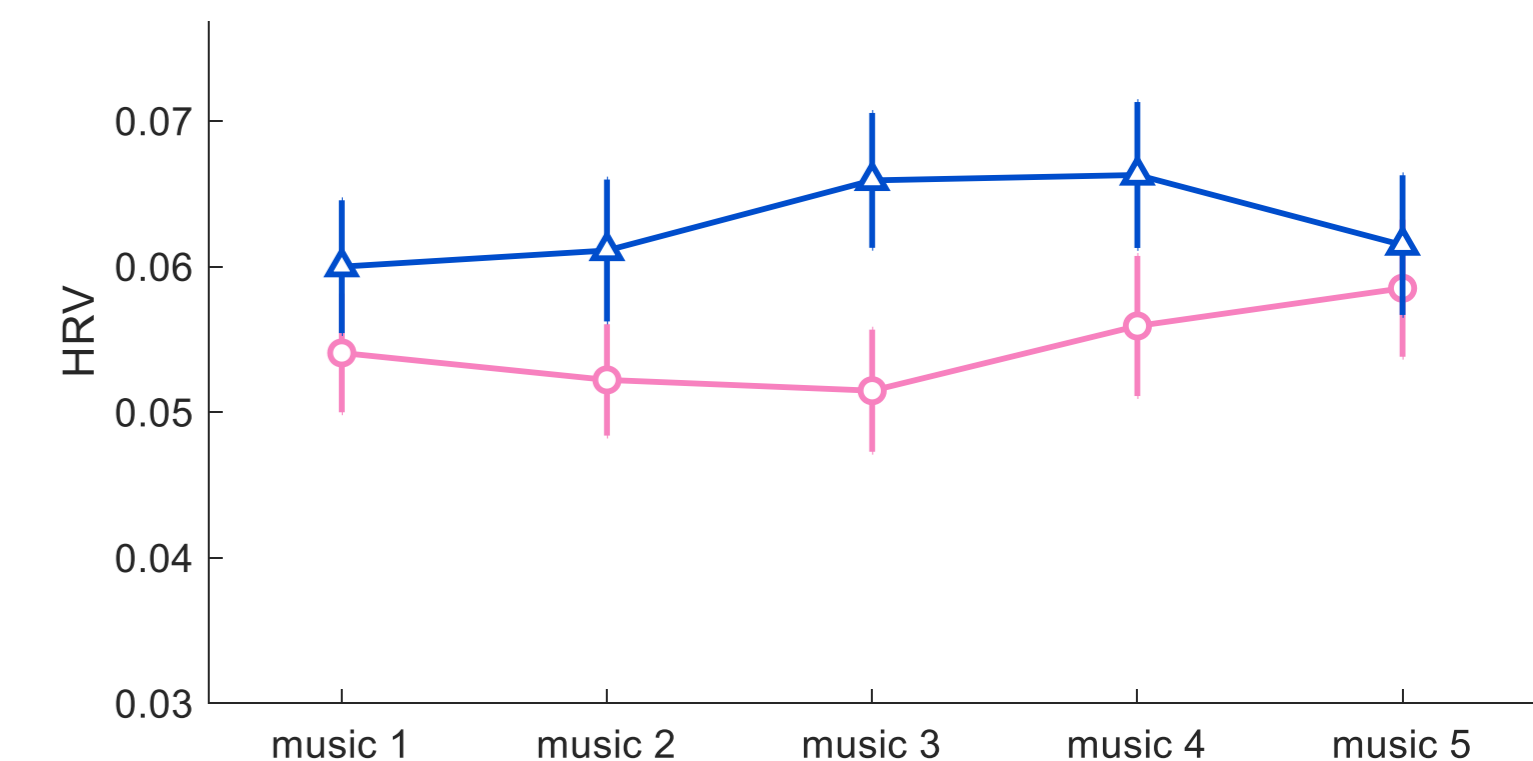
Heart rate (HR)

- Main effect of time,  $F=11.92, p<0.001$
- Main effect of music,  $F=7.06, p=0.01$
- No interaction,  $F=1.18, p=0.32$
- There is a classic triphasic cardiac defense response.



Heart rate variability (HRV)

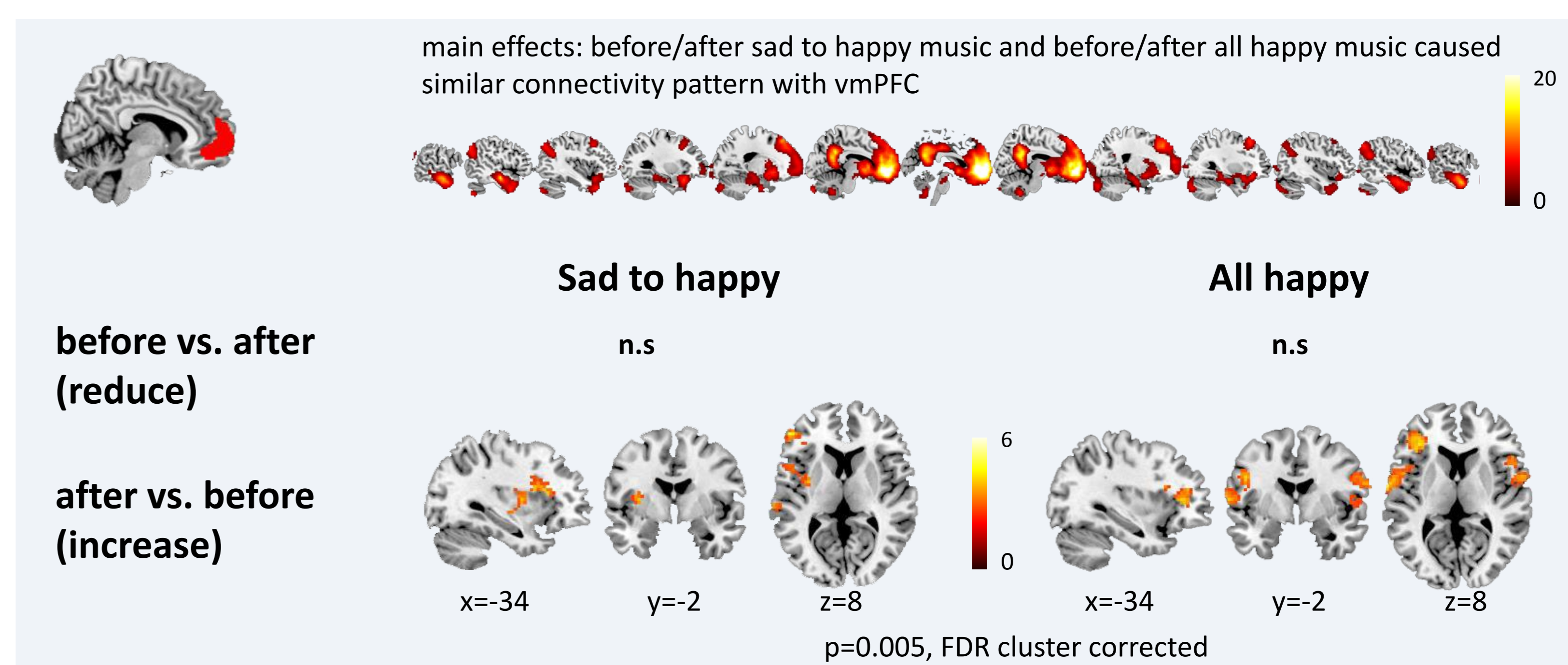
- No main effect of time,  $F=1.62, p=0.18$
- Main effect of music,  $F=5.71, p=0.02$
- Interaction between time and music,  $F=2.59, p=0.04$



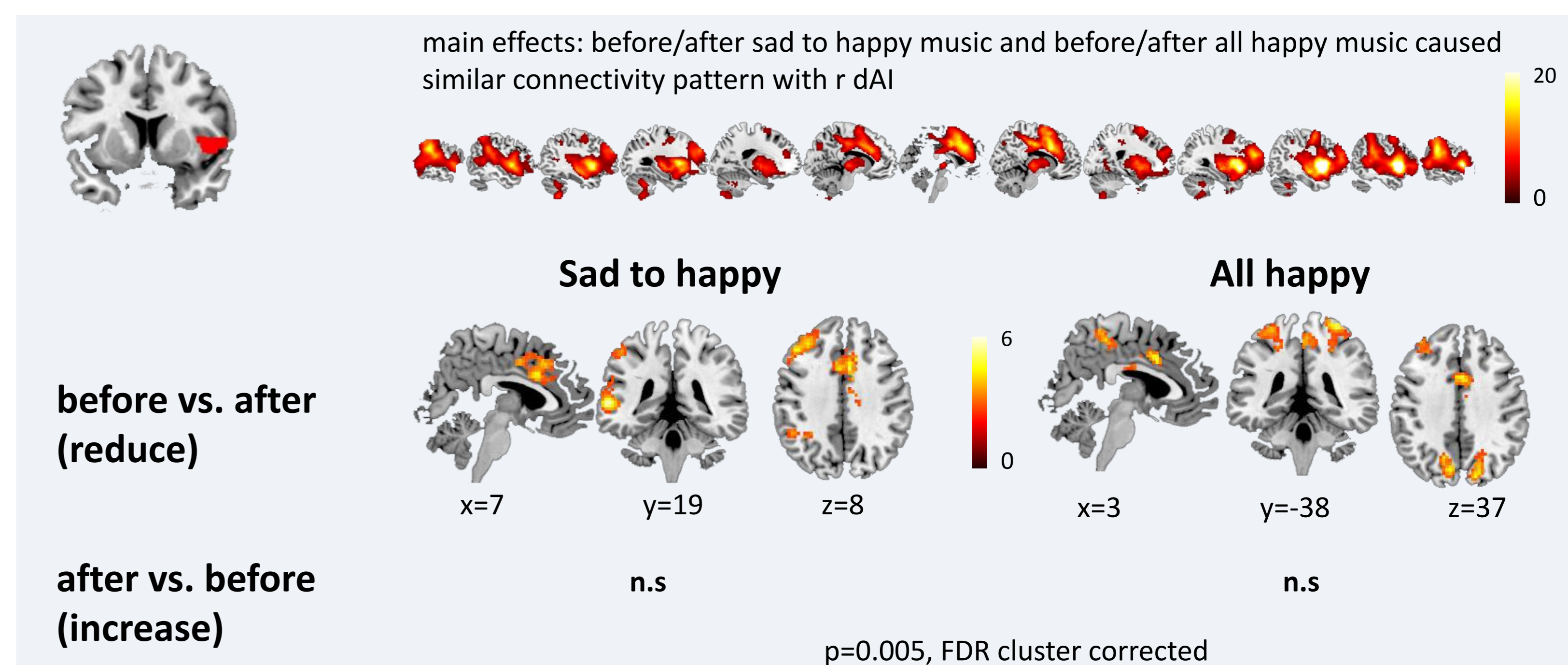
FUNCTIONAL CONNECTIVITY

Before-music vs. after-music

- ventral medial prefrontal cortex as seed



- right dorsal anterior insula as seed



During listening music

- Dynamic functional connectivity within Salience Network

Sliding window approach with window = 80s and step = 20s

