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Hanse Neuro-Psychoanalysis-Study

Neural correlates of attachment patterns in patients with chronic depression during psychoanalytic treatment: Preliminary findings at the beginning of the treatment

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Introduction

The neural effects of psychotherapeutic interventions are poorly understood and neurobiological studies on the effect of psychoanalytic therapy are still missing. The Hanse-Neuro-Psychoanalysis-Study (HNPS) intends to fill this gap by investigating patients with a chronic depressive disorder in the course of their psychoanalytic treatment (at the beginning, after 5 and 15 months) by using fMRI and EEG assessments. Clinical assessments include Scales of Psychological Capacities, Operationalized Psychodynamic Diagnosis and attachment representations (Adult Attachment Projective Picture System, AAP; Adult Attachment Interview (AAI). Here, we will report fMRI data from the experiment based on the AAP. The neural correlates of attachment patterns in 19 patients and 20 controls at the beginning of treatment will be compared. The Project was supported by the IPA.
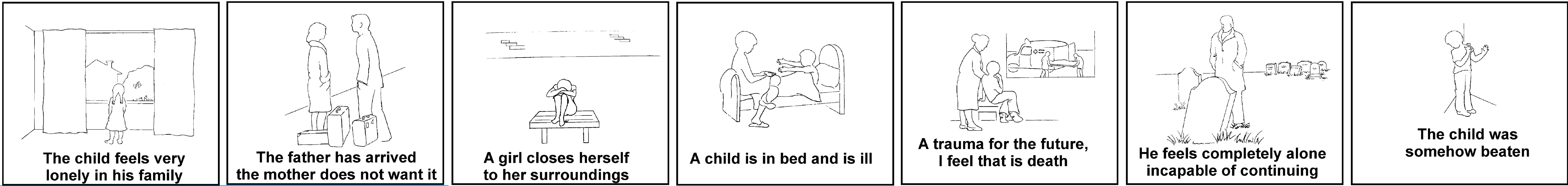
asked to describe what is happening in each of the situation, what lead up to the event, what the persons are thinking or feeling and what might happen next. See figure 1.

Stimulus generation
Based on AAP-interviews, individually tailored key-sentences with respect to attachment relevant contents (e. g. synchrony, internalized secure base, capacity to act) and defensive processes (deactivation, cognitive disconnection, segregated systems) were extracted. Those sentences represent core attachment related markers from the AAP coding manual (George et al. 1999). AAP pictures have successfully been used to measure neurobiological correlates of attachment trauma using fMRI (Buchheim et al. 2006, 2008). Especially the combination of validated pictorial material as stimuli and narrated individual stories turned out to be especially suitable to our purpose in an fMRI environment.

Methods

Subjects
● 19 patients with cronic depression, age 20-64 years, mean 39, 15 female
● Comorbity: 11 Anxiety disorders, 1 eating disorder (SCID)
● 17 matched controlles (sex, age, education), age 21-64 years, mean 37, 16 female

The Adult Attachment Projective Picture System (AAP)
The Adult Attachment Projective Picture System (AAP) is an interview measure to assess adult attachment representations. A set of 7 attachment relevant pictures are designed to gradually activate the attachment system (child at the window, departure, bench, bed, emergency, cemetery, child in the corner). Subjects are

fMRI session
IIndividual attachment-relevant sentences were presented in front of the AAP-Attachment pictures (relevant condition). See figure 1. As a comprison condition, AAP pictures were superimposed by not-attachment-relevant sentences, describing neutral aspects of the scenery ("There are two curtains at the window").
The AAP coding procedure is based on the analysis of verbatim transcribed narratives . The measure has successfully been used in a neurobiological study, to measure neurobiological correlates of attachment trauma using fMRI (Buchheim et al. 2006, 2008). Especially the combination of validated pictorial material as stimuli and narrated individual stories turned out to be especially suitable to our purpose in an fMRI environment.

The child feels very lonely in his family | The father has arrived the mother does not want it | A girl closes herself to her surroundings | A child is in bed and is ill | A trauma for the future, I feel that is death | He feels completely alone incapable of continuing | The child was somehow beaten

Figure 1: AAP Pictures. In the relevant condition, the picture was superimposed by an individual sentence derived from the AAP interview; for the irrelevant condition, the picture was superimposed by a neutral sentence.
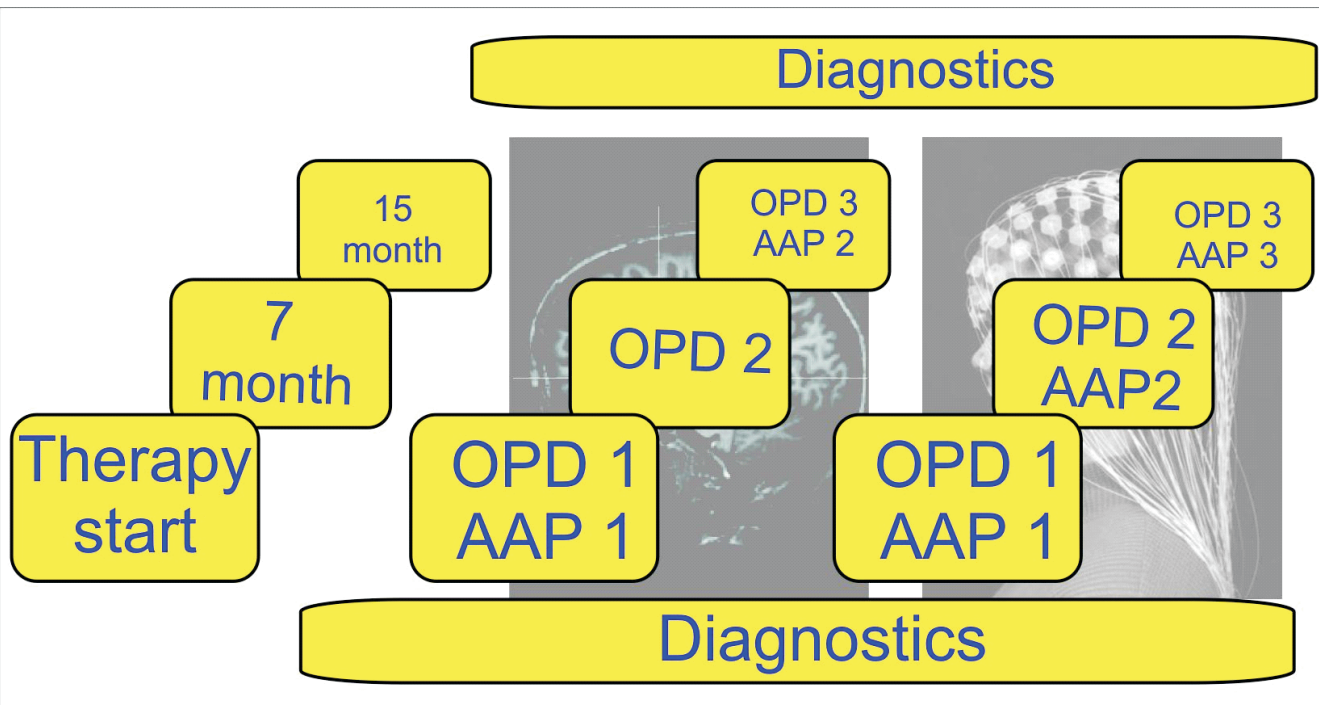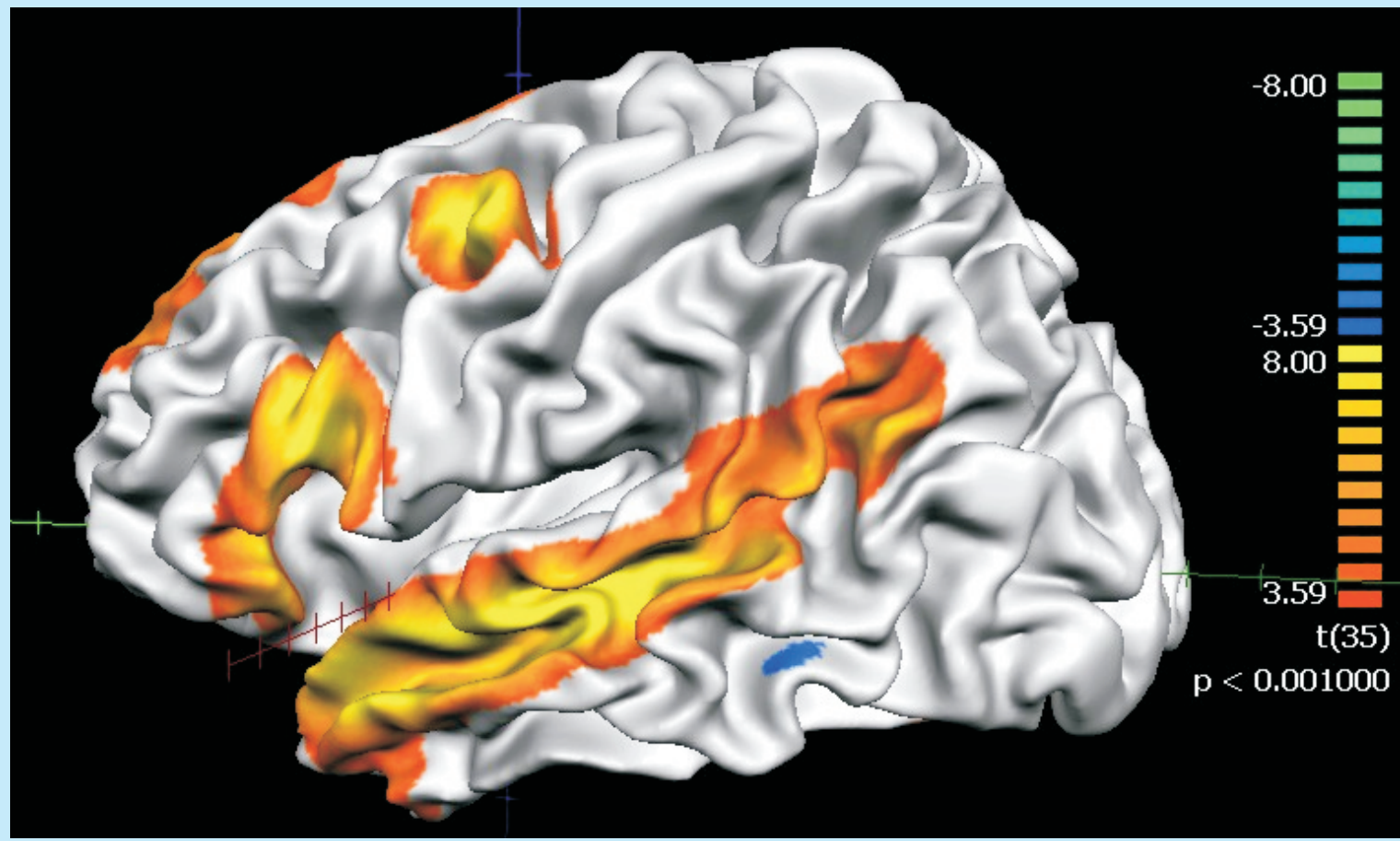
Figure 2: Study design. Paradigms will be presented 3 times, at therapy onset, after 7 month
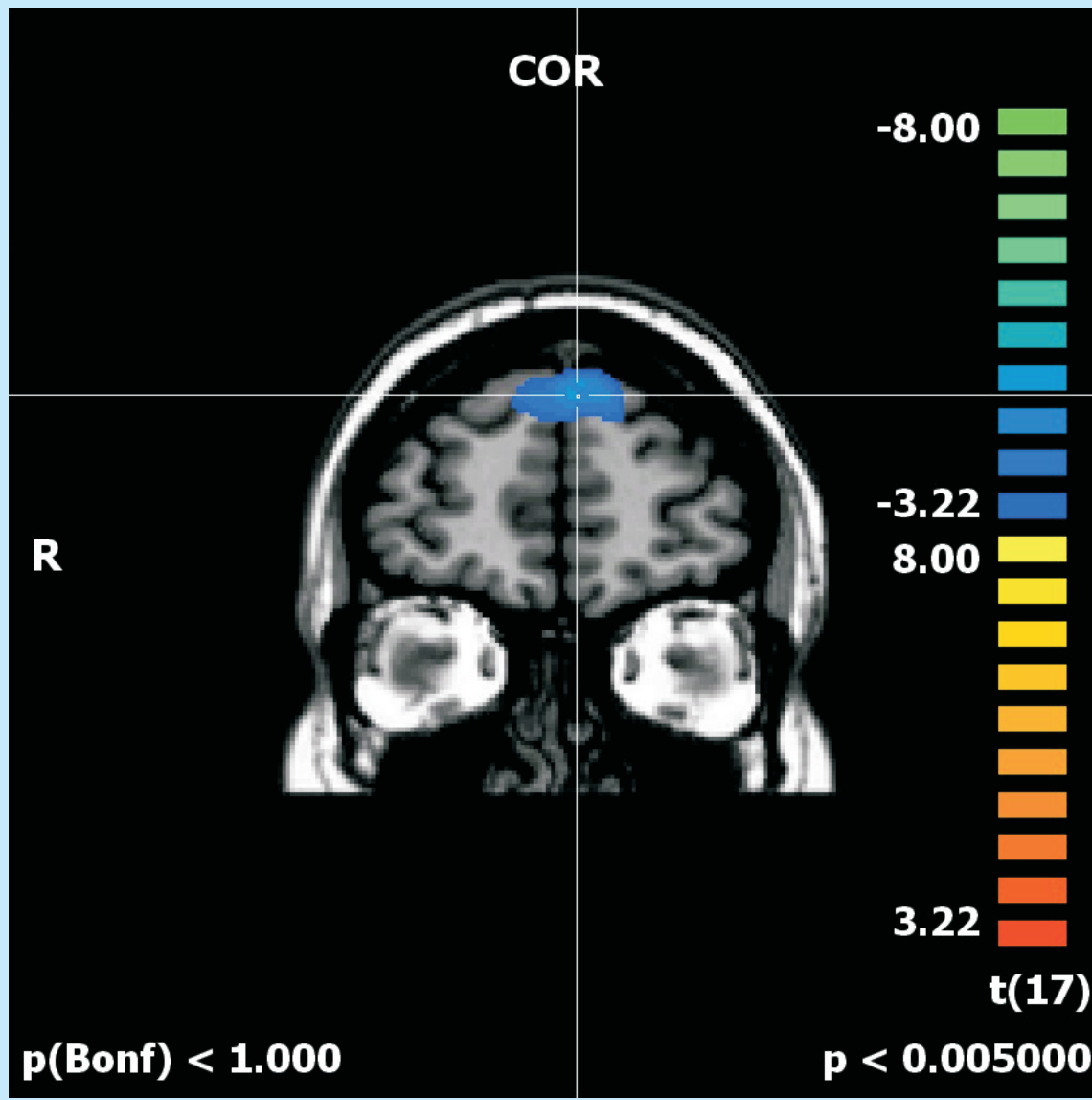
Results

As expected, there was a significant difference between patients and controls with respect to unresolved attachment trauma
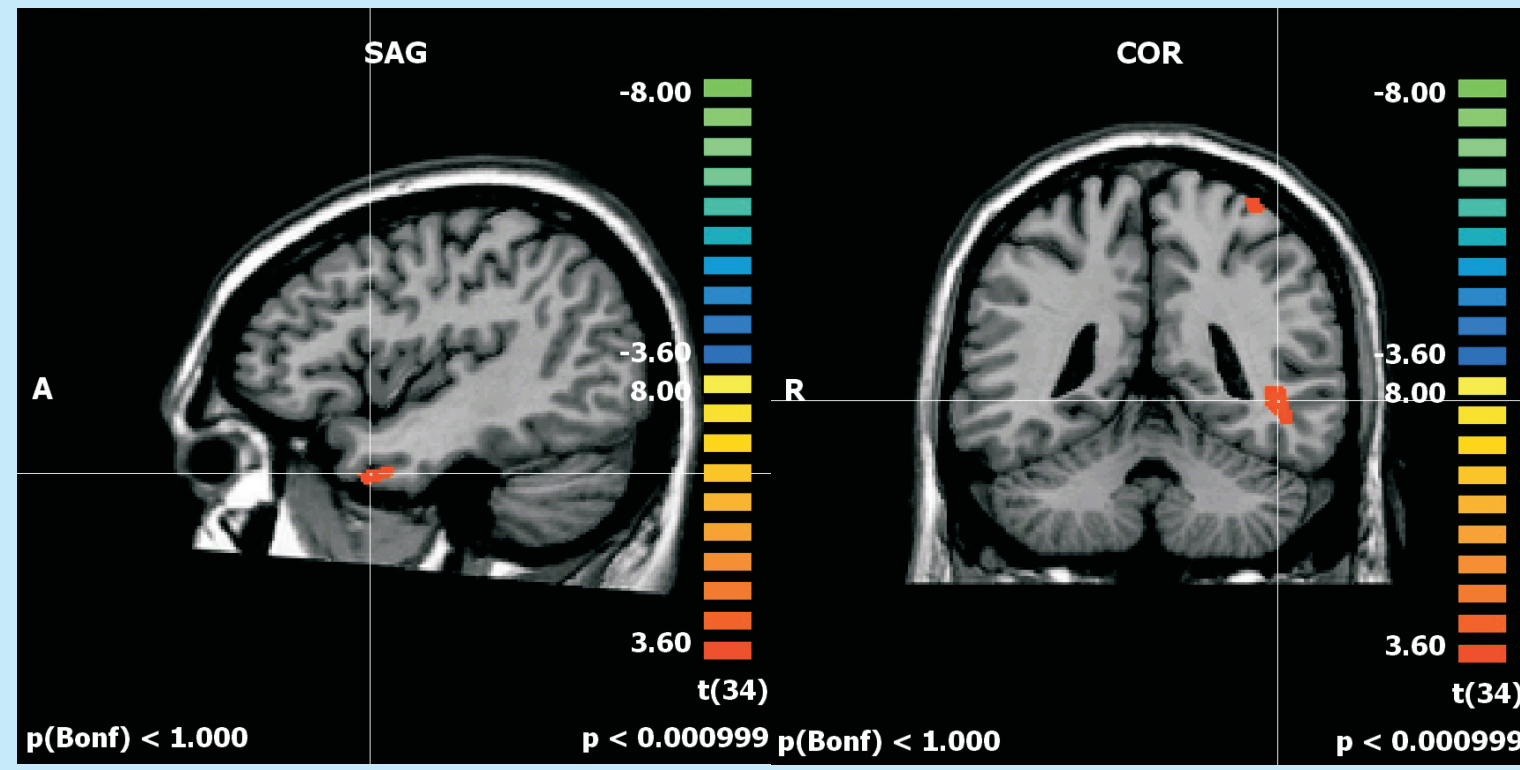
Controls; disorganized : organized = 4 :16
Patients: disorganized : organized = 9 :10

	Patients (n=19)	Controls (n=20)	p
SCL90/ GSI (m)	1.3 (.68)	.20 (.13)	p<.001
BDI (m)	23.12 (10.8)	2.23 (2.8)	p<.001
DEQ (m) anaclitic	.42 (1.15)	-.45 (.66)	p<.01
DEQ (m) introj.	1.32 (.86)	-.28 (.85)	p<.001
LEAS (m)	33.1 (5.5)	32.5 (5.8)	n. s.

Figure 3: Main effect "sentences". Areas with stronger signal for relevant sentences are marked in a yellow-red-scale

Figure 4: two active clusters when testing for group differences "monadic vs. dyadic pictures". Controls show more signal for monadic pictures.
left: middle temporal gyrus, BA 21, sup. temporal gyrus, BA 38
right: left temporal lobe, BA 37

Figure 5: Example for active areas when comparing the difference (relevant minus irrelevant) for disorganized and organized patients. Organized subjects showed strongest signal for the relevant condition in medial/sup. front. gyrus (BA 8/9)

DISCUSSION

As expected the majority of patients were classified with a disorganized/unresolved attachment pattern compared to the controls at the start of the therapy. Unresolved subjects are characterized by not being able to contain attachment fears in their stories to the attachment pictures
First preliminary neuroimaging results (Figure 3 to 5) show that individually relevant AAP stimuli (compared to irrelevant ones) induced in all subjects a stronger activity in brain areas associated with conflict monitoring, self-reflection, mentalizing, autobiographical memory and social cognition (Figure 3).
On a narrative level, patients showed more attachment dysregulation when talking about AAP monadic pictures representing aloneness. When comparing monadic versus dyadic pictures in the fMRI analysis (Figure 4) only the healthy controls showed activations in brain areas (anterior temporal lobe) associated with social cognition.
When patients are confronted with their individual sentences in the relevant condition (Figure 5) only the organized patients show activations in the medial superior frontal gyrus associated with cognitive control (executive functions).
These very preliminary data suggest that 1) The paradigm we developed leads to main activations, which are appropriate with respect to the task; 2) First differences between patients and controls can be identified, but more detailed analysis is requested.

Literature:
Buchheim, A., Erk, S., George, C., Kachele, H., Kircher, T., Martius, P., et al. (2008). Neural correlates of attachment trauma in borderline personality disorder: a functional magnetic resonance imaging study. Psychiatry Res, 163(3), 223-235.
Buchheim, A., Erk, S., George, C., Kachele, H., Ruchsow, M., Spitzer, M., et al. (2006). Measuring attachment representation in an FMRI environment: a pilot study. Psychopathology, 39(3), 144-152.
George C, West M, Pettem O (1999) The Adult Attachment Projective: disorganization of adult attachment at the level of representation. In: Solomon J, George C (Eds) Attachment disorganization. New York: Guilford, 462-507