

## Proposal

### Introduction:

In daily communication people do not only exchange pure information, they often transmit their emotions about a subject discussed. We hypothesize that successful communication with an accepted result relies, to some extent, on an alignment of discussion partners on evaluations and emotional expressions.

Breitenstein and colleagues (1996) and Hielscher (2001) found out that persons with various neurological diseases actually have difficulties in processing emotional information transferred by modalities that should not be affected (e.g. perception of facial expression or gestures in patients with aphasia). Additionally, a relevant part of communication deficits in patients with mild aphasia cannot be accounted for by linguistic problems only (Jaacks, 2006).

In our empirical studies we explore the following main research question:

Is there a interrelationship between the capability to perceive emotional expressions and the quantity or quality of emotional alignment in communication?

### Preparatory study:

In order to determine methodological issues we conducted a preparatory study with 30 healthy German-speaking adults (13 males, 17 females) ranging in age from 16 years to 44 years (mean = 26.1).

To detect interpersonal alignment sequences in emotional expression we observed language production in pairs of speakers while they were discussing a subject of high affective potential. Among other procedures all participants were tested with components of the Tübinger Affekt Batterie (TAB; Breitenstein et al., 1996<sup>1</sup>). In a first step students viewed the video-clips and tagged episodes they interpreted as “emotional”. Conversation analyses of these episodes included several different aspects: linguistic parameters (e.g. particulates of gradation, interjections, etc.), conversational elements (e.g. discourse organization, topic, etc.), prosodic variables (e.g. speech rate, breaks, audibility, voice quality, variability, pitch, etc.), facial expression (e.g. smile, movement of eyebrows, etc.) and body language (e.g. gesture, eye contact, etc.). We investigated the data for correlations between conversational variables and variables of affect perception.

The first accomplished test component of the TAB was subtest 2 (discrimination of facial affect expression), where subjects reached an average of 87.25% correctly discriminated items. Subtest 3 (naming facial affect expression) revealed a mean percentage of 95.55%. The next subtest included was no. 7, which demands discrimination of prosodic affect expression. Results ranged from 92.3% to 100% (mean = 98.72%). Subtest 8 (naming prosodic effect expression) consists of two parts: subjects have to name prosodic affect expression in part 8a, part 8b includes items with inconsistent affect expressions. Participants resolved 96.5% of the incongruent and 99.58% of the congruent items. Subtest 9 finally combines prosodic and facial expression. 95.77% of the facial affect expressions were correctly assigned to prosodic affect expressions.

Conversations were rated by ten to twelve students. On average 21.7 episodes in each conversation were tagged “emotional”. The subsequent analysis revealed that 10 to 17 (mean = 13.3) of these episodes were associated with laughter which corresponds to an average percentage of 63.8%.

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<sup>1</sup> The “Tübinger Affekt Batterie” is the German version of “The Florida Affect Battery” by Bowers et al. (1991).

With regard to the initiation of laughter results ranged from 3 to 14 initiations per communication partner (mean = 7.1).

Contrary to our hypotheses there are no correlations between the ability to percept emotions (TAB) and the percentage of alignment (e.g. percentage of successfully initiated laughter; percentage of assumed laughter).

#### Clinical study:

As we did not find any relations between the capability to perceive emotional expressions and the quantity or quality of emotional alignment in communication for healthy subjects, we are now interested in the abilities and behavior patterns of patients with neurological diseases.

At the moment we analyze German-speaking persons with aphasia (n = 5) compared to healthy control subjects (n = 4). We aim at sample sizes of 10 subjects per category and an additional target group of patients with right hemisphere deficits. For further information see Table 1.

To analyze interpersonal alignment episodes in emotional expression we observed spontaneous speech in a conversation of a person with aphasia and a confederate communication partner while they were discussing an emotional subject or an emotional situation they experienced in the past. The conversation was recorded with digital video cameras. All participants were tested with components of the Tübinger Affekt Batterie (TAB; Breitenstein et al., 1996). Additionally, we applied the Emotional Contagion Scale (Doherty, 1997).

As in the preparatory study we examine different aspects: linguistic parameters, conversational elements, prosodic variables, facial expression and body language. We started by analyzing TAB results for aphasic patients and healthy controls. In subtest 2 controls reached 87.3 % and aphasic subjects 74.3%. Subtest 3 seems to be easier as there is a mean of 76% for the aphasic and 95.5% for the control group. Subtest 7 presents good results for both groups: subjects with aphasia scored 93.8%. healthy controls 98.7% on average. Performance strongly differed for the two groups for subtest 8a. While controls correctly answered 97.9% of the items, patients with aphasia showed pronounced difficulties resolving little more than half the items (57.3%). In subtest 8b we saw differences for congruent and incongruent items in both groups. Healthy controls had an average of 99.6% (96.5%) of appropriate affect expressions. Persons with aphasia only produced a mean of 52.1% of right answers for incongruent and 84.4% for congruent prosodic expressions. Almost the same performance could be seen in subtest 9 (aphasics: 51.9%, controls 95.8%). Figure 1 visualizes the results.

Aphasic subjects and healthy controls also differed in emotional contagion. The mean results of the Emotional Contagion Scale were 43.67 points for patients with aphasia and 39.50 points for healthy subjects where more points stand for more frequent emotional contagion. Especially interesting are the results for the emotional category "sadness". Control persons reached a mean of 2.42 points per question, what indicates a rare to casual emotional contagion. Patients obtained an average of 3.33 points per item indicating casual to frequent contagion. Results for all emotional categories are presented in Figure 2.

Because of the small sample size we have not yet carried out statistical analyses. Further detailed results will be discussed in our conference presentation. We know that at least some patients with neurological diseases have problems in expressing and understanding emotional information in the TAB and as well in conversation. Nevertheless, some of them show high emotional contagion scores.

We presume that their communication is characterized by altered emotional alignment compared to healthy speakers. In our presentation we will present results on emotional alignment in normal communication; additionally, we will explain variables and aspects especially relevant to persons with neurological diseases.

References:

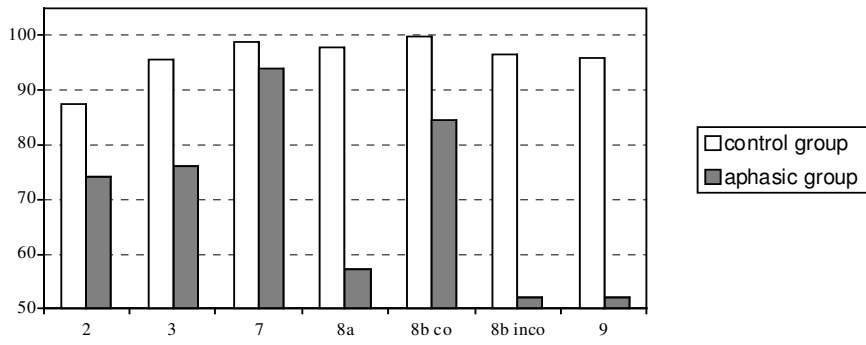
- Bowers, D., Blonder, L.X. & Heilman, K.M. (1991). The Florida Affect Battery Manual. Center for Neuropsychological Studies, University of Florida
- Breitenstein, C., Daum, I., Ackermann, H., Lütgehetmann, R. & Müller, E. (1996). Erfassung der Emotionswahrnehmung bei zentralnervösen Läsionen und Erkrankungen: Psychometrische Gütekriterien der "Tübinger Affekt Batterie". In: *Neurologie und Rehabilitation*, 2, 93-101.
- Doherty R.W. (1997). The Emotional Contagion Scale: A Measure of Individual Differences. In: *Journal of Nonverbal Behavior* 21, 2, 131-154
- Hielscher-Fastabend, M. (2001). Emotionskonzepte und Prozesse emotionaler Sprachverarbeitung. Habilitationsschrift. Bielefeld: Universität Bielefeld
- Jaecks, P. (2006). Restaphasie - Eine empirische Untersuchung von linguistischer Symptomatik, Gesprächsverhalten, Differentialdiagnose und Ursache minimal aphasischer Störungen nach Schlaganfall. Universität Bielefeld: Dissertation

*Table 1: Demographic data*

	aphasia	gender	age
Preparatory study			
n = 30		13 m / 17 f	26,1 (16-44)
Clinical study			
01	anomic aphasia	male	65
02	anomic aphasia	male	63
03	anomic aphasia	female	71
04	residual aphasia	male	64
05	control	female	60
06	control	male	65
07	control	male	66
10	control	male	59
11	residual aphasia	female	46

*Figure 1: Results TAB (%)*

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*Figure 2: Results "Emotional Contagion Scale"*

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