Coordination of patients‘ and therapists‘ conceptual phases in hand movements that accompany speech during psychotherapy sessions

Katharina C. H. Reinecke[1], Niklas Neumann[1], Peter Joraschky[2], Hedda Lausberg[1]

[1] German Sport University Cologne, Department of Neurology, Psychosomatic Medicine and Psychiatry, Am Sportpark Muengersdorf 6, 50933 Cologne, Germany;
[2] Clinic for Psychotherapy and Psychosomatics, University Hospital, Carl Gustav Carus University Dresden, Fiedlerstraße 19, 01307 Dresden, Germany

Introduction

- **Nonverbal synchrony (NVS)** in psychotherapy is considered an indicator for positive therapeutic rapport and therapeutic success and positive therapy outcome [4, 10, 11, 12, 13, 14]. But patients who quit their psychotherapy prematurely with therapeutic consensus and without general symptom remission showed high NVS with their therapists (high cross-correlations, [10]).
- This controversary could be explained by methodological reasons: In psychotherapy, NVS is assessed by rough activation measures.
- Fine-grained movement analyses show that patients change their movement behavior in the course of the psychotherapy and adopt therapists' movement structure and focus (e.g. more movement *in space*, see [5, 6, 15]. NVS definitions focus on movement coordination in time [e.g. 1] or on synchronization of the same movement concepts (e.g. [2]).
- Research question: ***How does the frequency/duration/PoT (Proportion of Time) of NVS*** *between patients and therapists change* ***in patients who improve in comparison to patients who stagnate*** *in their symptom development, using a fine-grained movement analysis and both definitory aspects?*

Methods

Sample:

- 21 patients with Social Phobia and their therapists from the *Social Phobia Psychotherapy Research Network Project*
  - *Patients with* remitted symptoms (post LSAS < 35); (n = 10; 8 female, 2 male; M = 33.60, SD = 13.85 years)
  - Patients with stagnated symptoms (n = 11; 9 female, 3 male; M = 33.91 years, SD = 13.66 years, see [20])

Data:

- 42 video recordings
- First 6 minutes of first and next-to-last psychotherapy session

NVS Analyses:

- hand movements analysis with NEUROGES-ELAN (*Figure 1a, Figure 2*); two independent, blind raters
- **Operationalization: NVS as overlap between patients' and therapists' movements' complex phases** (*Figure 1b)*

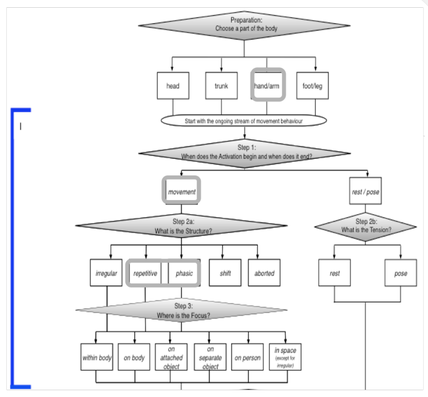

Figure 1a. NEUROGES-ELAN Algorithm (Module I) for the analysis of kinesic behavior (see [7], [8]).

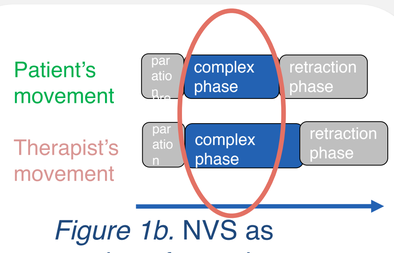

Figure 1b. NVS as overlap of complex movement; measureable with NEUROGES-ELAN.

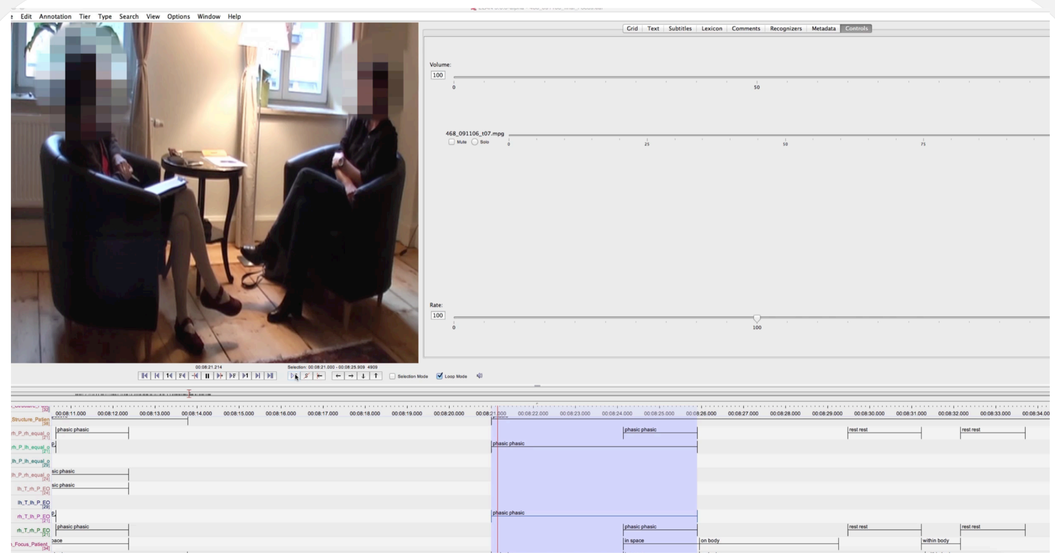

Figure 2. NVS during psychotherapy: Patient and therapist (here) display the same movement structure and focus *(phasic on body*). NVS as measured with NEUROGES-ELAN is defined as overlap of complex phase movements (here: scratching). A complex phase is the principal component of a movement, consisting out of preparation, complex and retraction phase (see [9]).

Results

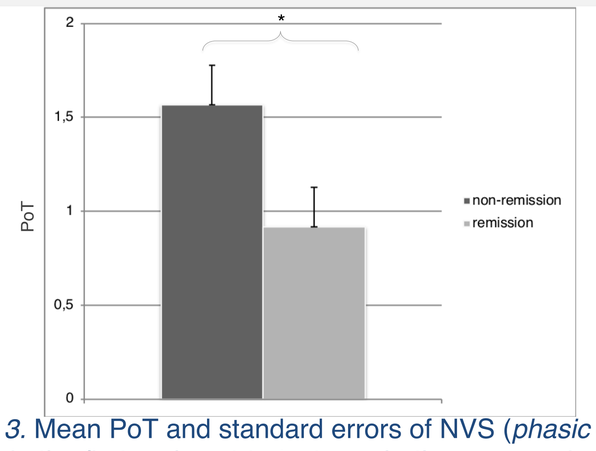

Figure 3. Mean PoT and standard errors of NVS (*phasic* overlaps) in the two groups in the first and next-to-last psychotherapy sessions.

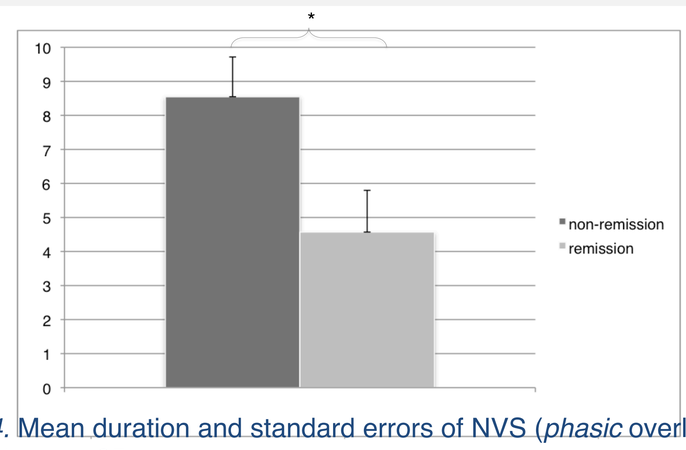

Figure 4. Mean duration and standard errors of NVS (*phasic* overlaps) in the two groups, * = $p < .05$.

Repeated-measures MANOVA for NVS (overlaps of the phasic complex phases)

PoT *(Figure 3)* **:** Significant between-subjects effect on the PoT of NVS ($F(1/19) = 4.543$, $p = .046$; *partial* $\eta^2 = 0.193$). NVS in the non-remitted group was displayed with a longer PoT than in the remission group (non-remitted group: $M = 1.566$, $SD = 0.210$; remission group: $M = 0.916$, $SD = 0.221$).

Duration *(Figure 4)* **:** Significant between-subjects effect on the duration of NVS ($F(1/19) = 5.511$, $p = .030$; *partial* $\eta^2 = 0.225$). NVS in the non-remitted group was displayed with a longer duration than in the remission group (non-remitted group: $M = 8.547$, $SD = 1.169$; remission group: $M = 4.571$, $SD = 1.226$).

Frequency: Significant univariate interaction effect of Time * Group for NVS ($F(1/19) = 5.394$; $p = .031$; *partial* $\eta^2 = 0.221$). NVS frequency significantly increased from the first therapy session ($M = 0.492$, $SE = 0.093$) to the next-to-last session ($M = 0.705$, $SE = 0.094$) for the non-remitted group ($p = .024$). At the next-to-last session the non-remitted group furthermore displayed significantly more NVS than the remitted group.

Conclusions

- **In fine-grained movement analysis, increased NVS frequencies, durations and PoT are associated with non-remission.**
- The present results are comparable to research in vocal synchrony, also using fine-grained analyses (see [16]).
- Therefore, NVS is not always positively associated with therapy outcomes. **It depends on methodological aspects, like NVS definition, rough or fine-grained measurement** and **the measurement parameters** of the synchronous movements.
- In the patient-therapist psychotherapy setting, long NVS durations indicate difficulties with nonverbal attunement (see [3]). Because of this, the present results could indicate non-remission in the patients' development towards more autonomy (from the therapist).

[1] Bernieri, F. J., Reznick, J. S., & Rosenthal, R. (1988). Synchrony, pseudosynchrony, and dissynchrony: Measuring the entrainment process in mother-infant interactions. *Journal of personality and social psychology*, *54*(2), 243.
[2] Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: the perception–behavior link and social interaction. *Journal of personality and social psychology*, *76*(6), 893.
[3] Davis, M., & Hadiks, D. (1994). Nonverbal aspects of therapist attunement. *Journal of Clinical Psychology*, *50*(3), 393-405.
[4] Koole, S. L., & Tschacher, W. (2016). Synchrony in psychotherapy: A review and an integrative framework for the therapeutic alliance. *Frontiers in psychology*, *7*, 862.
[5] Kreyenbrink, I., Joraschky, P., Konstantinidis, I., Neumann, N., & Lausberg, H. (2017). Nonverbales Verhalten von Patienten mit sozialen Phobien und ihren Therapeuten in psychodynamischen Psychotherapien (Teilprojekt SOPHO-NET). *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, *63*(3), 297-313.
[6] Lausberg, H., Kryger, M. (2011). Gestisches Verhalten als Indikator therapeutischer Prozesse in der verbalen Psychotherapie: Zur Funktion der Selbstberührungen und zur Repräsentation von Objektbeziehungen in gestischen Darstellungen. *Psychother Wiss 1*, 41-55.
[7] Lausberg, H., & Sloetjes, H. (2016). The revised NEUROGES–ELAN system: An objective and reliable interdisciplinary analysis tool for non-verbal behaviour and gesture. *Behaviour Research Methods*, *48*(3), 973-993.
[8] Lausberg H. (2019). *The NEUROGES® Analysis System for Nonverbal Behavior and Gesture.The Complete Research Coding Manual including an Interactive Video Learning Tool and Coding Template.* Frankfurt/Main: Peter Lang Verlag.
[9] Lausberg, H. (2013). *Understanding Body Movement: A Guide to Empirical Research on Non-verbal Behaviour With an Introduction to the NEUROGES Coding System.* Peter Lang GmbH, Internationaler Verlag der Wissenschaften.
[10] Paulick, J., Deisenhofer, A. K., Ramseyer, F., Tschacher, W., Boyle, K., Rubel, J., & Lutz, W. (2017). Nonverbal Synchrony: A New Approach to Better Understand Psychotherapeutic Processes and Drop-Out. *Journal of Psychotherapy Integration*. Advance online publication.
[11] Paulick, J., Rubel, J. A., Deisenhofer, A. K., Schwartz, B., Thielemann, D., Altmann, U., ... & Lutz, W. (2018). Diagnostic Features of Nonverbal Synchrony in Psychotherapy: Comparing Depression and Anxiety. *Cognitive Therapy and Research*, 1-13.
[12] Ramseyer, F., & Tschacher, W. (2010). Nonverbal synchrony or random coincidence? How to tell the difference. In *Development of multimodal interfaces: Active listening and synchrony* (pp. 182-196). Springer Berlin Heidelberg.
[13] Ramseyer, F., & Tschacher, W. (2011). Nonverbal synchrony in psychotherapy: coordinated body movement reflects relationship quality and outcome. *Journal of consulting and clinical psychology*, *79*(3), 284.
[14] Ramseyer, F., & Tschacher, W. (2014). Nonverbal synchrony of head-and body-movement in psychotherapy: different signals have different associations with outcome. *Frontiers in Psychology*, *5*, 979.
[15] Reinecke, K. C. H., Dvoretska, D., Joraschky, P. & Lausberg, H. (under review). Diagnostic potential of motor signs: Fidgeting signalizes co-morbid depression.
[16] Reich, C. M., Berman, J. S., Dale, R., & Levitt, H. M. (2014). Vocal synchrony in psychotherapy. *Journal of Social and Clinical Psychology*, *33*(5), 481-494.
[17] Tschacher, W., & Pfammatter, M. (2016). Embodiment in psychotherapy—A necessary complement to the canon of common factors. *European Psychotherapy, 13*, 9-25.
[18] Tschacher, W., Ramseyer, F., & Koole, S. L. (2018). Sharing the now in the social present: Duration of nonverbal synchrony is linked with personality. *Journal of personality, 86*(2), 129-138.
[19] Trevarthen, C., & Aitken, K. J. (2001). Infant intersubjectivity: Research, theory, and clinical applications. *The Journal of Child Psychology and Psychiatry and Allied Disciplines, 42*(1), 3-48.
[20] Von Glischinski, M., Willutzki, U., Stangier, U., Hiller, W., Hoyer, J., Leibing, E., ... & Hirschfeld, G. (2018). Liebowitz Social Anxiety Scale (LSAS): Optimal cut points for remission and response in a German sample. *Clinical psychology & psychotherapy.*

Contact and NEUROGES workshop information

Katharina C.H. Reinecke, Clinical Psychologist
German Sport University Cologne,
Department of Neurology, Psychosomatic Medicine and Psychiatry
Am Sportpark Muengersdorf 6
50933 Cologne, Germany
k.reinecke@dshs-koeln.de

Deutsche Sporthochschule Köln
German Sport University Cologne

NEUROGES workshop:
http://neuroges.neuroges-bast.info