Towards a better understanding of emotions in schizophrenia I: Cues from psychophysiological, behavioral and self report measures

S. Ronshausen, P. Kirsch, C. Lotz, S. Bräuchle, S. Eucker & D. Vaitl

Justus-Liebig-University Giessen, Bender Institute of Neuroimaging

Haina Forensic Psychiatric Hospital

Background

Emotional disturbances have been reported as a key feature of schizophrenia since its early conceptualizations. Compared with controls, schizophrenia patients show very few outward signs of emotion (Kring, 1999) and are less accurate in their ability to recognize facial emotion (Edwards et al., 2002). However, the blunted or flat affect seems to misrepresent the underlying emotional experience of schizophrenic patients. Different psychophysiological studies demonstrated, that basical emotional processing is unimpaired in schizophrenia (Curtis et al., 1999, Volz et al., 2002, Kring et al., 1999).

The present study investigated the emotional reactivity of medicated schizophrenic patients using a startle reflex paradigm. This paradigm measures the amplitude of the eye-blink reflex triggered by a loud acoustic probe while viewing slides. The slide valence and arousal was systematically varied. All participants rated their subjective experience of valence and arousal. The correlation between startle reflex modulation and clinical ratings of negative symptoms was examined.

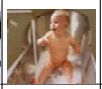
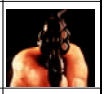
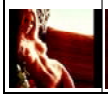
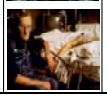
Methods

Subjects

All subjects: male, exclusion: homosexuality, mental disability, clinical relevant brain damage

	Schizophrenia (N=19)	Control (N=15)	Statistics
Age (in years)	37,6 (26-50)	32,5 (21-64)	p = .095
Number of smokers	16	10	p = .231
Duration of illness (in years)	12,26 (4-26)	-	
Number of hospitalizations	6,68 (1-31)	-	

Design

valence positive, arousal high (v+a+)	valence positive, arousal low (v+a-)	Neutral (n)	valence negative, arousal low (v-a-)	valence negative, arousal high (v-a+)
				
				

Procedure and measures

- Pictures from the International Affective Picture System (IAPS; CSEA, 2001), duration of slide presentation 6s, ITI 13-17s
- 3 baseline slides, 50 further slides (10 of each category)
- acoustic startle probe: 50ms burst of 100-dB white noise 3200 and 4800ms after probe onset paired with 40 slides, 8 probes in ITI

- **dependent variables**: EMG activity of the orbicularis oculi (left eye), subjective valence and arousal rating (self assessment manikin, SAM), viewtime
- clinical rating of negative symptoms (Scale for the Assessment of Negative Symptoms, SANS; Andreasen, 1989)

Results

- The schizophrenic patients and the control subjects show a linear startle eye-blink modulation with an inhibition while watching positive slides and a potentiation while watching negative ones (3 slide categories, Figure 1).
- With consideration of arousal, both groups again show a linear modulation of startle eye-blink again (5 slide categories, Figure 2).
- The self-ratings of slide valence and arousal in schizophrenic patients do not differ from controls (Figures 3a and 3b).
- Patients show longer viewing times (significant main effect). All participants viewed high arousal slides longer and neutral slides for a shorter time (no significant interaction effect) (Figure 4).
- There is no significant correlation between the modulation of startle eye-blink and ratings of negative symptoms (Table 1).

Figure 1

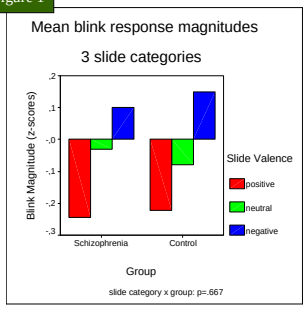


Figure 3a

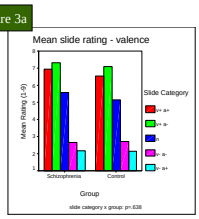


Figure 3b

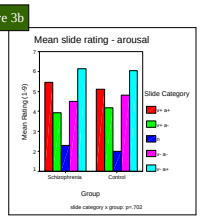


Figure 2

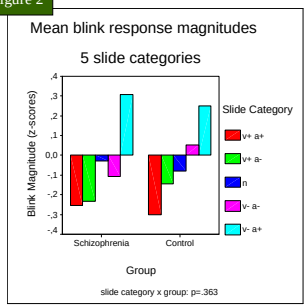


Figure 4

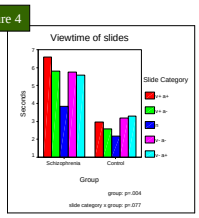


Table 1

SANS (Andreasen, 1989)	Correlation	Statistics
affective flattening	**.106**	**p=.666**
alogia	**.184**	**P=.451**
abulia - apathy	**-.241**	**p=.321**
anhedonia	**.053**	**p=.828**
attentional impairment	**-.053**	**p=.831**

Discussion

- The startle reflex modulation and self-ratings of slides (valence and arousal) in schizophrenic patients do not differ from controls.
- The longer viewing time of schizophrenic patients reflects a generally increased processing time.
- The clinical symptom rating is not reflected in the startle reflex modulation.
- The results suggest an unimpaired basic emotional processing in schizophrenia and an unimpaired ability to experience emotions.

Andreasen, N.C. (1989). Scale for the Assessment of Negative Symptoms (SANS). *British Journal of Psychiatry, 155 (7)*, 53-58.

Center for the Study of Emotion and Attention (CSEA) (2001). *The International Affective Picture System (IAPS).* Gainsville: Center for Research in Psychophysiology, University of Florida.

Curtis, C.E., Lebow, B., Lake, D.S., Katsanis, J. & Iacono, W.G. (1999). Acoustic startle reflex in schizophrenia patients an their first-degree relatives: Evidence of normal emotional modulation. *Psychophysiology, 36*, 469-475.

Edwards, J., Jackson, H.J. & Pattison, P.E. (2002). Emotion recognition via facial expression and affective prosody in schizophrenia: a methodological review. *Clinical Psychology Reviews, 22*, 789-832.

Kring, A.M. (1999). Emotion in schizophrenia: Old mystery, new understanding. Current Directions in Psychological Science, 8, 160-163.

Kring, A.M., Kerr, S.L. & Earnst, K.S. (1999). Schizophrenic patients show facial reactions to emotional facial expressions. *Psychophysiology, 36*, 186-192.

Volz, M., Rey, E.R., Bailer, J., Kirsch, P. & Hamm, A.O. (2002). Emotionale Reaktionen schizophrener Patienten mit Anhedonie: Befunde zu Lidschlagreflexmodulation, autonomer Reaktivität und subjektivem Erleben. *Zeitschrift für Klinische Psychologie und Psychotherapie, 31(2)*, 77-88.

Contact: Sabine Ronshausen, Bender Institute of Neuroimaging, Justus-Liebig-University Giessen, Otto-Behaghel-Str. 10, D- 35394 Giessen, Germany, Email: sabine.ronshausen@psychol.uni-giessen.de

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