Interference by facial expressions under perceptual load in schizophrenia and bipolar disorder

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INTRODUCTION

- Schizophrenia (SZ) and Bipolar Disorder (BD) are debilitating neuropsychiatric conditions, often considered as a part of a continuum of psychotic disorder.¹ Cognitive abnormalities have been widely described, with studies showing large deficits in SZ and only milder deficits in BD.² These are related to functional outcome and are stable throughout the course of the disorder.^{3,4}
- One of the most fundamental cognitive functions is attention. Attentional deficits are reported quite frequently in SZ and BD, with patients being more susceptible to the interference of task-irrelevant stimuli.^{5,6} Of particular interest is the interference of facial expressions in SZ and BD, given their emotional deficits.⁷ However, studies comparing both conditions are still scarce.⁸
- **Aim:** To explore the interference of facial expressions by manipulating the perceptual load, a determinant for selective attention.⁹

MATERIAL AND METHODS

Participants

- 22 **outpatients with SZ**, clinically stable and medicated;
- 20 **outpatients with BD**, euthymic and medicated;
- 22 **healthy controls**, age and gender-matched, with not no personal history of psychiatric disorders and no first-degree relative with psychotic disorder.

Target-letter discrimination task (Fig. 1)

- Participants were positioned in front of a computer screen, and were asked to discriminate a target-letter (X or N) among distractor-letters and to ignore the presence of a task-irrelevant figure. Participants should press, as quickly and accurately as possible, the discriminated letter on the keyboard.
- The distractor-letters could be identical (low load; less demanding task) or different (high load; more demanding task). The task-irrelevant figure consisted of a happy, angry or neutral face. The order of the conditions and stimuli was fully randomized.
- Participants completed 384 trials, equally distributed by load and emotion conditions. Response time (ms) and accuracy were analysed.

Measures

- **Severity of psychiatric symptoms:** Brief Psychiatric Rating Scale;
- **State anxiety levels:** Zung Self Rating-Anxiety Scale;
- **Selective attention:** Stroop Neuropsychiatric Screening Test.

Fig. 1 – Sequence of the high (A) and low (B) load conditions.

MAIN RESULTS

Sample characterization

- **Age:** M=36.63, SD=11.57; No significant difference between groups.
- **State anxiety:** Sig. higher (M=34.50, SD=6.19) in SZ than controls (M=29.18, SD=6.32). No more sig. differences (BD: M=32.70; SD=6.19);
- **Selective attention:** Sig. lower in SZ (M=81.55, SD=20.27) than controls (M=104.27, SD=13.23). No more sig. differences (BD: M=92.45, SD=16.99);

Target-letter discrimination task

- **Response time:** Significantly longer in SZ (M=813.87, SD=45.40) and BD (M=893.32, SD=47.62), compared to controls (M=650.82, SD=45.40);
- **Accuracy rate:** No main effects of group (SZ: M=89.24, SD=1.880; BD: M=90.07, SD=1.97; CG: M=94.59, SD=1.88).

Fig. 2 – Mean response time considering load and group.

▪ When conducting separate ANOVAs per group, no sig. differences were found regarding response time.

▪ When conducting separate ANOVAs per group, SZ showed sig. lower accuracy for happy faces, compared to neutral, regardless of load;

▪ No more sig. differences.

Fig. 3 – Mean accuracy rate considering load and group.

DISCUSSION

- Patients with SZ and BD are more prone to distraction by facial expressions, in accordance with previous studies.^{5,6}
- In SZ, happy faces posed significantly higher interference, compared to neutral. One possible explanation is the presence of abnormalities in the perception of facial expressions in SZ,¹⁰ but not in BD.¹¹

The findings emphasizes the importance of exploring the relationship between attentional and emotional deficits in psychotic disorders. More investigation to clarify the hypothesis of a continuum between SZ and BD is needed.

References:

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