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PATIENTS WITH PSYCHOTIC DISORDERS RECOGNIZE FACIAL EMOTIONAL EXPRESSION BETTER IN EMOTIONS COMPARED TO IN IMAGES

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ABSTRACT

Background: One of the well-documented findings in patients with schizophrenia is the deficit in processing facial expressions of emotional states. It is, however, unclear whether these patients are deficient in interpreting the intensity of facial expression or the emotional states altogether. In the current study we examine the ability of patients with a diagnosis of schizophrenia or schizoaffective disorder to identify the facial expression in emoticons and pictures of common emotional expressions. **Methods**: we recruited 10 normal individuals and 20 patients with diagnoses of schizophrenia and schizoaffective disorders. Individuals were presented with pictures of emotional states and emoticons along with a list of emotions to be matched to the image and emoticons. **Results**: the patients suffering from schizophrenia and schizoaffective disorders were able to correctly identify emotional expression in emoticons significantly better than in images (91.7% vs 73%, p=0.0001, Fisher's exact test). **Conclusion**: to our knowledge this is the first study to evaluate the ability of patients with severe psychotic disorders to differentiate between gross and subtle facial changes during expression of emotional states using emoticons. Our findings suggest that patients suffering from schizophrenia and schizoaffective disorders may have difficulty understanding the subtle facial expression of emotions with relative preservation of ability to recognize the stereotypical features of facial emotional expressions. Further research is needed to validate these findings.

Keywords: Cognitive Deficit; Emoticon; Emotional Recognition; Facial Expression of Emotion; Psychotic Disorders; Smiley

INTRODUCTION

Cognitive deficit in schizophrenia has been reported extensively in the literature (Bilder, et al., 2006; Bowie & Harvey, 2005; Feinberg, Rifkin, Schaffer, & Walker, 1986; Kerr & Neale, 1993). Controversy exists on whether the deficit in interpretation of non-verbal communication cue is part of general cognitive impairment or patients suffering from schizophrenia misinterpret nonverbal communication clues disproportionately to the overall cognitive decline (Johnston, Katsikitis, & Carr, 2001; Kerr & Neale, 1993; Kohler, et al., 2003). In a study of 28 stable young schizophrenia patients followed as outpatients, Kohler et al. found that schizophrenia patients had difficulty in both interpreting the purpose and intensity of emotional expression (Kohler, et al., 2003).

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Facial expressions of emotions have generally two components: the gross anatomical changes that accompany facial expression (e.g. wide open mouth when one laughs out loud or concave-down position of the mouth when one cries) and subtle changes in muscles of facial expression particularly important in conveying the intensity of emotions expressed. To differentiate between these two component in patients with diagnoses of schizophrenia or schizoaffective disorders, we used emoticons (corresponding to gross anatomical changes of facial expressions) and images (both subtle changes suggesting intensity of facial expressions alongside gross anatomical changes) representing universal facial expressions (Ekman, 1972). We hypothesized that patients with severe chronic psychotic disorders will identify emotions expressed in emoticons better than in images.

METHODS

1.1. Sample Selection:
After approval by Institutional Review Board (IRB), 20 patients admitted to two hospitals, and 10 normal controls were recruited. Those patients who were able to give a written (or verbal) consent, were diagnosed with schizophrenia (any subtype) or schizoaffective disorder (any subtype), and were taking psychotropic medications were included in the study. Four physicians, two nurses, and four psychiatric nurse assistants were the control group. Except for the physicians (all foreign medical graduates), other members of control group had similar racial background as the patient population.

1.2. Data Collection:

After a pilot study in normal controls and literature search, images denoting common facial expression of emotional states i.e. anger, indifference, laughter, sadness, fear, smiling and surprise (Ekman, 1972) were presented to the participants. We also included commonly used emoticons in electronic communication (anger, indifference, laughter, sadness, smiling, and surprise) for comparison. All the images and emoticons are freely available on the internet. The individuals were allowed as much time as they needed to complete the interpretation. Alongside the images and emoticons, a list of emotions organized alphabetically was included (agonized, angry, anxious, bored, confident, crying, degusted, enraged, frightened, happy, horrified, indifferent, intimidated, joyful, laughing, puzzled, sad, satisfied, smiling, surprised, and upset). Two-tailed Fisher's exact test was used to analyze the data.

RESULTS

The demographic of the study participants is shown below. All of the participants including the patients had used computers to varying degrees in the past. All patients were treated with a combination of antipsychotics along with mood stabilizers if necessary. No one in the study was on clozapine. There were 10 patients with any subtype of schizophrenia and 10 patients with any subtype of schizoaffective disorder (table 1). Interestingly, the control group matched the emotions to the list provided while the patients frequently used their own descriptive interpretations of the emotions along with a selection from the list we had provided.

Table1: *Characteristic of study participants.*

Characteristics	Control		Acute inpatient		Chronic Inpatient	
Age (SD)	40.9	(11.5)	40.2	(13.2)	42.7	(11.0)
Average number of years in school (SD)	17.4	(3.0)	13.4	(2.5)	10.2	(2.5)
Average age at onset (SD)	NA	NA	25.8	(8.6)	21.6	(9.1)
Duration of illness in years (SD)	NA	NA	14.4	(13.3)	20.1	(8.2)
Days in current hospitalization (SD)	NA	NA	12.4	(17.3)	72.3	(54.5)

Our results showed that patients identified emotional states in emoticons significantly more accurately than in pictures (91.7% vs 73%,p < 0.0001). When compared to normal controls, surprisingly, patients performed significantly better in recognizing emoticons (91.7% vs 76.7%, p < 0.01). In pictures, normal controls significantly outperformed the patients (89% vs 73% p < 0.004); the difference was very strong between normal controls and chronically inpatient individuals (p < 0.0001).

DISCUSSION

It is well documented that patients suffering from chronic psychotic disorders have difficulty in interpreting facial emotional expression (Phillips, Drevets, Rauch, & Lane, 2003). Whether these patients have difficulty differentiating the facial expressions or the intensity of the emotions is debated extensively in the literature. To our knowledge, this is the first study to evaluate the ability of psychotic patients to identify facial emotional clues in simple tools like emoticons. Emoticons have been found useful as a screen tool for depression in medically ill individuals(Lee, Tang, Yu, & Cheung, 2008); however, they have not been studied in patients with psychotic disorders. In our small study population two points become apparent.

Firstly, as expected, the patients showed evidence of deficit in recognition of emotions in pictures. However, contrary to expectation, they recognized the emotional expression in emoticons more accurately compared to normal controls. The fact that the control group performed poorly on the emoticons (older generation with less experience with emoticons) might have made them a good match to compare with these patients (who frequently do not have access to computers). Secondly, the patients used more descriptive terms to label both images and emoticons, at times suggestive of their past psychosocial lives (e.g. anger: "wicked dammed woman, a real witch"; sad: "someone killed her friend, someone beat her"; laughing smiley: "fake smile/evil smile", sad smiley "sad because did not sleep").

CONCLUSION

In conclusion, in spite of significant limitations, our results suggest that normal individuals look for more subtle clues to interpret emotional expression while patients with psychotic disorders may be puzzled by these cues. If our findings could be replicated in larger, more standardized studies, emoticons may prove useful tools in therapies targeting emotion regulation in psychotic patients.

REFERENCES

2. Bilder, R. M., Reiter, G., Bates, J., Lencz, T., Szeszko, P., Goldman, R. S., et al. (2006). Cognitive development in schizophrenia: follow-back from the first episode. *J Clin Exp Neuropsychol, 28*(2), 270-282.

3. Bowie, C. R., & Harvey, P. D. (2005). Cognition in schizophrenia: impairments, determinants, and functional importance. *Psychiatr Clin North Am, 28*(3), 613-633, 626.

4. Ekman, P. (Ed.). (1972). *Universal and Cultural Differences in Facial Expression of Emotion.* (Vol. 19). Lincoln: University of Nebraska Press.

5. Feinberg, T. E., Rifkin, A., Schaffer, C., & Walker, E. (1986). Facial discrimination and emotional recognition in schizophrenia and affective disorders. *Arch Gen Psychiatry, 43*(3), 276-279.

6. Johnston, P. J., Katsikitis, M., & Carr, V. J. (2001). A generalised deficit can account for problems in facial emotion recognition in schizophrenia. *Biol Psychol, 58*(3), 203-227.

7. Kerr, S. L., & Neale, J. M. (1993). Emotion perception in schizophrenia: specific deficit or further evidence of generalized poor performance? *J Abnorm Psychol, 102*(2), 312-318.

8. Kohler, C. G., Turner, T. H., Bilker, W. B., Brensinger, C. M., Siegel, S. J., Kanes, S. J., et al. (2003). Facial emotion recognition in

schizophrenia: intensity effects and error pattern. *Am J Psychiatry, 160*(10), 1768-1774.

9. Lee, A. C., Tang, S. W., Yu, G. K., & Cheung, R. T. (2008). The smiley as a simple screening tool for depression after stroke: a preliminary study. *Int J Nurs Stud, 45*(7), 1081-1089.

10. Phillips, M. L., Drevets, W. C., Rauch, S. L., & Lane, R. (2003). Neurobiology of emotion perception II: Implications for major psychiatric disorders. *Biol Psychiatry, 54*(5), 515-528.