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Letter to the Editor

Context and the perception of emotion in schizophrenia: Sex differences and relationships with functioning

Dear Editors,

People with schizophrenia have difficulty perceiving facial emotion (Kohler et al., 2010), which is associated with poor social skill (Pinkham and Penn, 2006) and functional outcome (Brekke et al., 2005). However, these studies present faces alone, ignoring the influence of context on emotion perception (Kring and Campellone, 2012). Developing tasks to assess the influence of context on emotion perception among people with schizophrenia is top priority in social cognitive research (Carter et al., 2009). Another important area research that has received little attention is sex differences. Given the numerous differences between men and women with schizophrenia (e.g. Mote and Kring, 2013), it is also important to investigate sex differences in emotion perception.

In the present study, 25 people with schizophrenia or schizoaffective disorder and 30 healthy controls (see Table 1) completed the Context and Perception of Emotion (CAPE) task, a computerized task of emotion perception that presents pictures of emotional faces with and without context. In the no context condition, 18 positive or negative faces selected from the Interdisciplinary Affective Science Laboratory (IASLab) Facial Stimulus Set (see www.affectivescience.org) were presented alone against a black background. In the context condition, the same faces were embedded in positive and negative scenes selected from the International Affective Picture Set (IAPS; Lang et al., 2008). In addition to the CAPE, people with schizophrenia were administered tests of functional capacity (UPSA-B; Mausbach et al., 2007) and social skills (SSPA; Patterson et al., 2001).

To investigate gender and group differences in context and emotion perception, we conducted a 2 (Group: Schizophrenia, Control) × 2 (Sex: Men, Women) × 2 (Valence: Positive, Negative) × 2 (Condition: No Context, Context) MANOVA. We also computed correlations between CAPE accuracy scores in each condition and the UPSA-B and SSPA.

Both people with and without schizophrenia were more accurate in perceiving faces presented without context compared to faces with context and positive faces compared to negative faces. However, controls were more accurate than people with schizophrenia across all conditions. The significant Group × Sex interaction, $F(1,51) = 3.93$, $p = .05$ indicated that women with schizophrenia were more accurate than men with schizophrenia regardless of valence or condition, and the significant Group × Valence interaction, $F(1,51) = 8.55$, $p = .01$ indicated that controls were more accurate than people with schizophrenia in identifying negative, but not positive faces, with or without context. Main effects and two-way interactions were qualified by a significant Group × Sex × Condition interaction, $F(1,51) = 8.92$, $p < .01$. Men with schizophrenia were less accurate than men without schizophrenia for faces presented with context. However, women with schizophrenia performed similarly to women without schizophrenia. Thus, men, not women, with schizophrenia have deficits in perceiving emotion in context.

The UPSA-B ($r = .53$, $p = .01$) and SSPA ($r = .43$, $p = .03$) were related to accuracy for the context (but not the no context) condition of the CAPE for men and women. Thus, only emotion perception accuracy for faces presented in context was related to functional capacity and social skills.

Our findings have several implications for understanding and potentially ameliorating social cognitive impairments in schizophrenia. First, behavioral interventions and training programs aimed at improving facial emotion identification (e.g. Marsh et al., 2012) may benefit from adding context. Second, sex differences in emotion perception accuracy suggest that men will benefit from additional training more so than women. Finally, training and subsequent improvement in the ability to accurately perceive facial emotion in context may improve not only task performance, but also the everyday lives of people with schizophrenia.

Table 1
Demographic and clinical variables.

	Schizophrenia (n = 25)	Controls (n = 30)
M/F	11/14	13/17
Age	46.1 (10.5)	42.7 (8.5)
Education	14.5 (2.8)	15.3 (2.9)
Parental education	14.3 (3.0)	13.8 (2.9)
Race		
Caucasian	16	14
Asian American	4	6
African American	2	6
Other	3	4
SSPA	61.4 (11.8)	73.9 (4.6)*
UPSA-B	75.5 (15.3)	N/A

SSPA = Social Skill Performance Assessment, UPSA-B = UCSD Performance-based Skills Assessment-Brief.
* Indicates a between group significance difference, $p < .05$.

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