

A preliminary study of emotion processing interference in schizophrenia and schizoaffective disorder

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Abstract

The impact of emotional arousal may be an equal or more important factor than valence in determining whether emotion interferes with language output in individuals with schizophrenia. An affective reactivity task, comprising conditions separated by emotional valence (positive, negative) and arousal (low, high), was administered to 22 individuals with schizophrenia or schizoaffective disorder and 13 non-patient controls. Individuals with schizophrenia or schizoaffective disorder demonstrated variable reactivity to both valence arousal. Results suggest that high arousal content can be especially impairing to certain individuals, and it is those individuals with schizophrenia and schizoaffective disorder who demonstrate more depressive symptomatology that show the greatest affective reactivity to negatively valenced, high arousing information. Clarifying aberrant emotion processing in schizophrenia is crucial to understanding precursors to symptom exacerbation and to the consideration of optimal treatment strategies.

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1. Introduction

Individuals with schizophrenia and healthy controls demonstrate differential cognitive performance in the context of emotional stimuli. However, it remains unclear whether emotional information facilitates or impairs information processing in individuals with schizophrenia or whether cognitive performance is affected differentially by negatively valenced information, positively valenced information, or level of arousal associated with the information. Healthy controls (e.g., [Burbridge et al., 2005](#)), as well as a subgroup of individuals with schizo-

phrenia, show an increased reference disturbance during the discussion of negative topics relative to positive topics (e.g., [Docherty et al., 1994](#)), and relative to neutral topics ([Burbridge and Barch, 2002](#)), termed “affective reactivity”, or AR. The effect of positive affective information on language output has been less well studied than negative affective information. In an exploratory study, [Cohen and Docherty \(2005\)](#) asked stable outpatients with schizophrenia to discuss neutral and positively valenced memories and reported that patients demonstrated increased reference disturbance in both the neutral and positive conditions, relative to a control group. However, within group, individuals with schizophrenia demonstrated no difference in reference disturbance between neutral and positively valenced conditions. Further, they found

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that similar percentages of the patients demonstrated marked amelioration in reference disturbance with the positive condition, exacerbation with the positive condition, and no difference between positive and neutral speech conditions.

1.1. *The influence of arousal*

To date, studies that examine AR in schizophrenia have only matched conditions on emotional valence — not arousal. This is a surprising omission because emotionally arousing stimuli, irrespective of valence, engage increased cognitive resources (e.g., Hamm et al., 2003). Further, it has been shown that a subgroup of individuals with schizophrenia demonstrates increased arousal to both negative, neutral, and positive emotion information (e.g., film clips), relative to healthy controls (Kring and Neale, 1996). Thus, since arousal has not been considered in studies of AR of individuals with schizophrenia, it is possible that work that incorporates emotional arousal of information may add additional insight into findings of increased AR to negative versus neutral information, other reports of increased reactivity to negative versus positive information, and the mixed findings concerning positive versus neutral information.

Indirect support for the effect of arousal comes from a study by Burbridge et al. (2005). They extended Docherty's findings by including negative, positive, and neutral speech conditions, administered to a group of healthy individuals, and found increased reference disturbance during the discussion of negative topics that were specifically accompanied by an increase in skin conductance. Therefore, their study leaves open the possibility that it may be the arousal or the valence (or some interaction) of the stimuli that is the determining factor in whether a response is likely to contain reference disturbance. Burbridge et al. (2005) theorize that it is a stress response, associated with alterations in dopaminergic functioning, which leads to impairments in language function.

In summary, no study of AR in individuals with schizophrenia has included analyses of negative, neutral, and positive speech conditions. Further, none have statistically equated the interview questions on level of arousal in addition to valence. The current study does both in order to clarify whether individuals with schizophrenia or schizoaffective demonstrate AR in response to valence, arousal, or both.

1.2. *Hypotheses*

Level of AR, in the form of errors of reference, will be examined in response to positively, negatively, and

neutrally valenced questions, in individuals with schizophrenia, schizoaffective disorder, and healthy controls. Importantly, the positive and negative conditions will be equated for level of valence and arousal.

It was hypothesized that individuals diagnosed with schizophrenia and those with schizoaffective disorder, due to increased resources allocated to arousal information relative to task-relevant information, would show increased reference errors during emotional (both negative and positively valenced topics), high arousal conditions, relative to low arousal conditions. Positive results would further clarify the effect of valence and arousal on disordered language output.

2. **Methods**

2.1. *Participants*

2.1.1. *Individuals diagnosed with schizophrenic disorders*

The schizophrenia/schizoaffective (SZ/SA) group consisted of 11 (7 males, 4 females) individuals diagnosed with schizophrenia (SZ) and 11 (4 males, 7 females) with schizoaffective disorder (SA) who met DSM-IV diagnostic criteria. All participants were recruited through newspaper advertisements and flyers, announcing a study looking for individuals with diagnoses of schizophrenia or schizoaffective disorder. A phone screen served as a preliminary test for study eligibility. A doctoral-level clinical psychologist (PJD) or two trained clinical psychology graduate students used the Structured Clinical Interview for the DSM-IV Axis I Disorders Patient Edition (SCID-I/P; First et al., 1995) to interview all participants. All interviews were audiotaped and administered with two interviewers present who came to a consensus on all clinical ratings. The demographic variables collected included gender, age (self-report), education (self report), and estimated IQ (Wechsler Test of Adult Reading) (Table 1). Per participant report, all but one of the individuals diagnosed with schizophrenia or schizoaffective disorder were taking psychotropic medication (nineteen taking antipsychotics including three on typical neuroleptics, three on antiparkinsonian agents, eleven on antidepressants, four on a mood stabilizer, and four on benzodiazepines, Table 1). The group experienced a mean age of onset of psychiatric disorder at 20.73 years (SD=3.00) and an average duration of illness of 20.27 years (SD=9.35). Because we were able to recruit an equal number of individuals with schizophrenia and schizoaffective disorder, we initially examined whether any differences existed between the two groups in terms of demographic variables and speech errors per condition. No significant differences were found between

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