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Change in the relationship between anhedonia and functional deficits over a 20-year period in individuals with schizophrenia

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Abstract

Although early theorists suggested that deficits in emotional experience be considered a hallmark characteristic of schizophrenia, there has been limited research, and inconsistent findings, on the relationship between anhedonia and functional capacity in individuals after the onset of schizophrenia. Stronger relationships have typically been reported for chronic samples in contrast to first episode samples, although it is not clear whether this is due to selection biases that influence recruitment in these different groups, or whether results reflect a change over the course of illness. The current longitudinal study examined the relationship between physical anhedonia and functional status in a sample of 61 individuals with schizophrenia at regular intervals over a 20-year period. Subjects were recruited into the study during an index hospitalization and completed assessments at 2-, 4.5-, 7.5-, 10-, 15-, and 20-year follow-ups. Analyses indicate that the relationship between anhedonia and impairments increases over time, although mean performance on these measures is stable across this same time period. These results suggest increasing convergence of impairments in emotional, adaptive, and cognitive capacities over time, with physical anhedonia associated with poorer outcome.

Keywords: Schizophrenia; Anhedonia; Adaptive function; Cognition; Longitudinal

Since the writings of Kraepelin (1919/1971) and Bleuler (1950), deficits in emotional function have been identified as hallmark characteristics of schizophrenic disorders. Significant early work in the study of anhedonia focused on its role as a risk factor for developing schizotypy (Rado, 1956; Meehl, 1975). Based on these early conceptualizations, researchers (Chapman et al., 1976) developed five psychosis proneness scales with the goal of identifying factors that increased risk for schizophrenic illness. Their anhedonia scales were created to characterize a subset of individuals who showed decreased hedonic response to sensory and social

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stimuli, and who were generally felt to exhibit avoidant and isolative features more typical of what we now consider schizoid personality. The effectiveness of these scales in capturing important, and potentially genetically transmitted facets of schizophrenia is supported by numerous studies indicating that anhedonia as measured with these scales tends to be higher in relatives of individuals with schizophrenia than in the general population (Clementz et al., 1991; Franke et al., 1993; Katsanis et al., 1990; Schurhoff et al., 2003).

Notably, Kraepelin and Bleuler saw emotional deficits as core problems of illness; yet most research on anhedonia has focused on the role of anhedonia as a vulnerability factor for schizophrenia. Recent studies assessing the relationship between physical anhedonia and concurrent adjustment or functional level in schizophrenia have been inconsistent. Katsanis et al. (1992) found no relationship between physical anhedonia scores and occupational functioning in a sample of first episode psychosis patients either during a hospitalization, or at an 18-month follow-up. However, high levels of physical anhedonia were noted for individuals with schizophrenia who met criteria for the deficit syndrome (Kirkpatrick et al., 2001; Kirkpatrick and Buchanan, 1990; Loas et al., 1996b) and for those who show poor social and functional outcomes (Blanchard et al., 1998; Fenton and McGlashan, 1994; Kirkpatrick et al., 1996; Tek et al., 2001). Physical anhedonia scores were also associated with lower cognitive functioning, particularly on tests of executive function (Wisconsin Card Sort Test, Trail Making Test, Verbal Fluency Test) in chronic schizophrenia samples (Laurent et al., 2000; Franke et al., 1993). Overall, it is generally believed that there are stronger relationships between anhedonia and functioning in chronic samples than in first episode samples, although it is not clear whether this is due to selection biases, or change over the course of illness.

The relationship between anhedonia and functional status has not previously been studied in a longitudinal, multi-follow-up study. In the current study data covering a 20-year period from the Chicago Follow-up Study were used to assess 1) changes in the severity of anhedonia over time; and 2) the relationship between anhedonia and functional and cognitive performance over time.

1. Method

1.1. Participants

The present research utilized data from the Chicago Follow-up Study, which recruited individuals with a variety of diagnoses (schizophrenia, major depression and other diagnoses) during the acute phase of hospitalization and followed them regularly over the next 20 years (Harrow et al., 2000; Herbener and Harrow, 2001, 2002; Marengo et al., 2000; Racenstein et al., 2002). Diagnoses utilizing Research Diagnostic Criteria (Spitzer et al., 1978) were established based on a combination of structured diagnostic research interviews, admission interviews, and detailed inpatient observations for all patients at index hospitalization. The current analyses focused on a subsample from the Chicago Follow-up study of 61 adults (44 male, 17 female) with schizophrenia.

For the sample assessed in the current paper, average age of subjects at the time of the index hospitalization was 22.89 (±3.91) years, and 66% of the participants had one or fewer psychiatric hospitalizations at index. The mean education level at index hospitalization was 12.31 (±1.79) years. Follow-up assessments were completed 2, 4.5, 7.5, 10, 15, and 20 years after the index assessment. Over the course of the 20-year follow-up period, the median frequency of rehospitalization was 5 times. For the current sample, 63.0% were taking antipsychotic medications at the 2-year follow-up, 65.0% at the 4.5-year follow-up, 66.1% at the 7.5-year follow-up, 57.9% at the 10-year follow-up, 60.4% at the 15-year follow-up, and 51.4% at the 20-year follow-up. All subjects taking antipsychotic medication were on conventional antipsychotics during the first five assessments; at the 20-year assessment several subjects were taking atypical antipsychotic medications.

Sample sizes for completion of dependent measures varied over time. At each follow-up, participants complete a series of structured interviews, cognitive and neuropsychological tests, and self-report scales. Because of the length of the protocol, subjects were not always able to complete the entire protocol. The subjects included in the current sample completed the Physical Anhedonia (PA) scale during at least two of