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Psychiatry Research 117 (2003) 113–125

**PSYCHIATRY  
RESEARCH**

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## A comparison study of early non-psychotic deviant behavior in Afrikaner and US patients with schizophrenia or schizoaffective disorder

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Received 20 June 2002; received in revised form 21 November 2002; accepted 26 November 2002

### Abstract

In a previous study early non-psychotic deviant behaviors in US adult schizophrenic patients recruited for a large-scale genetic study were examined (*Psychiatry Research*, 101, 101). Early deviance characterized a distinct subgroup of patients at rates that were consistent with earlier reports. In addition, specific early non-psychotic deviant behaviors were meaningfully associated with later disease outcomes. In the present study, we examined the demographic, syndrome course, symptom and early deviant behavior history of 109 Afrikaner probands who met criteria for DSM schizophrenia or schizoaffective disorder, and compared them to 109 age- and gender-matched US probands. Consistent with past findings, 68% of Afrikaner probands, as compared to 67% of age- and gender-matched US probands, reported one or more forms of early non-psychotic deviance, including poor socialization, extreme fears/chronic sadness, and/or attention/learning impairment. The remaining 32 and 33% of probands, respectively, were without behavioral deviance until the onset of schizophrenia or schizoaffective disorder. The frequency and distribution of individual deviant behaviors were strikingly consistent between the samples. However, logistic regression analyses revealed different patterns of associations between the early deviant behaviors manifested and disease outcome. Afrikaner participants with early fears/chronic sadness were 3 times more likely to attempt suicide, while among US participants, this form of early deviance conferred 3.5 times more risk for later schizoaffective disorder, and 3 times greater likelihood of later sensory (tactile and/or olfactory) hallucinations. Afrikaner participants with attention/learning impairment were 2.5 times more likely to experience later auditory hallucinations, while US participants with these early difficulties were 3 times more likely to experience thought disorder. We concluded that early non-psychotic childhood deviance in this independently collected Afrikaner population distinguished a distinct subtype of patients and that the forms of early deviance manifested were meaningfully linked to later disease outcome. Possible reasons for the association pattern differences in these two populations are considered.

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**Keywords:** Schizophrenia; Schizoaffective disorder; Early onset

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## 1. Introduction

A convergence of evidence over the past decade from the medical (Geddes and Lawrie, 1995; Verdoux et al., 1997, reviews), anatomical (Green et al., 1994; O'Callaghan et al., 1991; Guy et al., 1983; Cannon et al. 1994) and neuroanatomical (e.g. Lewis, 1997; Waddington and Buckley, 1996) literature has suggested that schizophrenia is a neurodevelopmental disorder with roots in early childhood (e.g. Lieberman, 1999). Moreover, early deviant behavior patterns in children who go on to develop schizophrenia have been consistently reported in high-risk, prospective and retrospective behavioral studies of schizophrenia (Cannon and Jones, 1996, review). These aberrant behaviors have been linked to early neurodevelopmental anomalies (Cannon et al., 1997; Foerster et al., 1991; Guy et al., 1983) and likely reflect abnormalities in specific neural pathways. For example, prospective longitudinal studies of large cohorts have suggested that during infancy motor development is delayed and speech problems are more frequent among children who later develop schizophrenia (e.g. Jones et al., 1994). During the preschool and early school years, studies have reported preference for solitary play (Jones et al., 1994) and behavioral maladjustment in the classroom (Done et al., 1994), and cognitive impairment in verbal, non-verbal and math skills were reported at ages 8, 11 and 15 (Jones et al., 1994). Retrospective studies have provided findings consistent with these. An analysis of taped recordings of children revealed that abnormal social reactions, odd movement and anomalous posture reliably indicated to clinicians which children would later become schizophrenic (Walker and Lewine, 1990). Social and academic impairments during the first school-age years were more frequent among 45 future schizophrenic patients as compared to a psychiatric control sample (Foerster et al., 1991). In a clinic-referred population of 61 patients with schizophrenia onset between the ages of 7 and 17, social impairment, motor deficits and language learning disabilities were increased as compared to findings in matched non-psychotic psychiatric controls.

However, early behavioral deviance appears to occur in only a subgroup of patients (Sobin et al., 2001; Done et al., 1994; Torrey et al., 1994; Offord and Cross, 1969)—a distinction that has often gone unrecognized among those interested in describing a neurodevelopmental model of schizophrenia. That early behavioral deviance, and perhaps also the various neurodevelopmental anomalies that underlie these behaviors, may in fact be both a subtype and disease-onset marker, has important implications. Understanding the patterns and distribution of early deviant behaviors that in some patients long precede DSM schizophrenia may be fundamental to accurately characterizing its broad phenotypic heterogeneity. Moreover, for those patients whose histories include early deviant behavior, the behaviors themselves may provide important clues about brain development and, by extension, possible neurobiologic and neurogenetic underpinnings of schizophrenia.

In a previous study we described early non-psychotic deviance in a population of US participants who met lifetime criteria for schizophrenia or schizoaffective disorder. We found 67% of 205 patients reported marked behavioral abnormalities before age 10 and that the specific early behavioral abnormalities predicted later aspects of the disease course that were clinically consistent with the early behaviors, and also predicted family history of schizophrenia (Sobin et al., 2001). However, by necessity, the data were based on retrospective report of patients. School records were generally unavailable. (Even when available, school records only reflected the readily observable classroom behaviors spontaneously provided by teachers or aides.) Obtaining reports from parents and/or siblings was also problematic. Families of schizophrenic patients are often fragmented. At the same time, the perceptions of involved families are understandably influenced by lingering emotional reactions that can include guilt, disappointment, anger or fear. Parents are especially unwilling to remember or reveal painful details of a sick child's early experiences. Thus, while the approach is not without limitations, it seemed useful to further explore patient-reported non-psychotic early deviant childhood behaviors.

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