Letter to the Editors

Subclinical expression of schizophrenia-like symptoms in non-psychotic siblings of individuals with schizophrenia

Dear Editors,

There have been numerous reports of mild psychopathology in the relatives of individuals with schizophrenia, including odd behaviors, social withdrawal, and difficulty with personal relationships. These features have been referenced as "schizotypal," given their similarity to the psychopathology observed in individuals with schizophrenia, and viewed as evidence for the genetic basis of schizophrenia (e.g., Meehl, 1962). Recently, psychopathology in individuals with schizophrenia has been factored into four domains; i.e., positive symptoms, disorganized symptoms, diminished expression (i.e., affective flattening, alogia) (Blanchard and Cohen, 2006) and social dysfunction (i.e., anhedonia, avolition) (Peralta and Cuesta, 1999). However, the applicability of this model to the expression of psychopathology in the relatives of individuals with schizophrenia has not been studied.

The younger siblings of individuals with schizophrenia are a particularly interesting group of relatives because they can still be at risk for developing the illness or its prodrome (Woods et al., 2001). Hence, we aimed to assess the factor structure of psychopathology in the non-psychotic siblings of individuals with schizophrenia and to determine whether it conformed to a model that is observed in individuals with schizophrenia. Notably, Hawkins et al. (2004) reported the absence of a disorganization factor in individuals who meet criteria for the schizophrenia prodrome. Given that an expression of disorganization was not likely in our sibling population, this factor was not examined in this study. Thus, we hypothesized that the non-psychotic siblings of individuals with schizophrenia, still within the age of risk for developing the disorder, would exhibit subtle forms of positive symptoms, diminished expression, and social dysfunction.

Participants were from a study of neuromorphology in individuals with schizophrenia and their siblings at the Conte Center for the Neuroscience of Mental Disorders at Washington University in St. Louis. This substudy included 40 non-psychotic siblings (mean age = 21.8 (SD = 3.5), 52.5% female, and 62.5% Caucasian) of individuals with schizophrenia. The recruitment procedures can be referenced elsewhere (Delawalla et al., 2006).

Symptom domains were assessed via global ratings from the SAPS and SANS (Andreasen, 1983a,b). Indicators for positive symptoms were hallucinations and delusions. Indicators for diminished expression were affective flattening and alogia, and indicators of social dysfunction were anhedonia and avolition. Confirmatory factor analysis was estimated using LISREL-8.80 (Jöreskog and Sörbom, 1996).

Among the latent factors, we found that diminished expression was correlated with both positive symptoms ($r = .57$, $p < .01$) and social dysfunction ($r = .48$, $p < .01$), while the latter two were not correlated ($r = .07$, $p = .71$). All indicators loaded significantly onto each factor (Table 1). The model had a good fit to the data ($\chi^2 = 3.13$, $df = 6$, $p = 0.79$; GFI = 0.97; CFI = 1.0; IFI = 1.0; RMSEA = 0.00).

Our results suggest that the structure of positive and negative psychopathology usually found in individuals with schizophrenia was preserved in their non-psychotic siblings. This supports our hypothesis that the subclinical expression of psychopathology can be measured in the non-psychotic siblings of individuals with schizophrenia using the global ratings from the SAPS and SANS. However, it is possible that a sample of 40 cases provides insufficient statistical power to reliably analyze the structure of six variables as indicators of three factors. Thus, a larger sample would be ideal.

Limitations include that we estimated CFA model fit based on a sample size that does not meet the recommended ratio of 10 cases-per-variable. We only examined two indicators per factor, which inherently creates a stronger fit to the data due to the estimation of a single covariance matrix per factor. However, our model

Table 1
Confirmatory factor analysis of positive and negative symptom domains in non-psychotic siblings of individuals with schizophrenia

	Positive symptoms	Diminished expression	Social dysfunction
SAPS7 (hallucinations)	0.12 (0.04)**	–	–
SAPS20 (delusions)	0.25 (0.08)**	–	–
SANS8 (affective flattening)	–	0.67 (.11)***	–
SANS13 (alogia)	–	0.42 (0.10)***	–
SANS22 (anhedonia)	–	–	1.06 (0.25)***
SANS17 (avolition)	–	–	0.41 (0.15)*

Standardized path coefficients and standard errors are reported.
*$p<.05$, **$p<.01$, ***$p<.001$.

adheres to Bollen's (1989) guidelines to validate model identification given two indicators per latent variable. Given that 84% of individuals with schizophrenia were males, our results may not fully generalize to non-psychotic siblings of females with schizophrenia.

Acknowledgments

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