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Letter to the Editors

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Dear Editors

We examined 17 clinically stable schizophrenic outpatients after a 7 day medication washout and evaluated two commonly used indices of thought disorder — the Thought Disorder Index (TDI, Holzman et al., 1986) and the Brief Psychiatric Rating Scale (BPRS, Overall and Gorham, 1962) — in conjunction with intellectual, executive, and memory measures. Our goals were: (1) to compare a standard, operationalized procedure for stimulating and rating verbal output (TDI) to an interview-based symptom rating of thought disorder (BPRS); (2) to evaluate the relation of thought disorder measures to intelligence, executive problem-solving, source memory, and semantic memory processing.

All subjects were rated on the BPRS and the TDI, and were administered the Shipley Institute of Living Scale and the Wisconsin Card Sort Test (WCS). Semantic priming effects were examined (Ober et al., 1997) and a source monitoring task was administered (Vinogradov et al., 1997).

Raw scores from the TDI Total Score, Combinatory Thinking, and Confusion showed skewed distributions which were normalized using a logarithmic transformation (first two variables) or an inverse transformation. All other variables were normally distributed. One-tailed statistics provided the most accurate estimates of alpha (only a unidirectional hypothesis is tenable and consistent with prior research).

BPRS Conceptual Disorganization was significantly correlated only with TDI Total Score ($r=0.49$, $p=0.02$); Idiosyncratic Verbalizations was correlated with Combinatory Thinking ($r=0.56$, $p=0.01$). There were no other significant correlations among measures of thought disorder. Paranoid ($n=8$) and non-paranoid ($n=9$) subjects showed no differences on any measures of thought disorder or neurocognitive variables, except for semantic priming, where paranoid subjects showed lower or more unreliable Semantic Priming Effects ($t=4.09$, df$=15$, $p=0.001$).

Table 1 presents correlations between the five measures of thought disorder (BPRS Conceptual Disorganization and four TDI scores) and the six cognitive variables. Findings remained statistically significant after partialling IQ from the correlations.

The use of both the TDI and the BPRS allowed us to compare and contrast two different methods of assessing thought disorder in a single sample. BPRS ratings of Conceptual Disorganization were significantly correlated with total TDI score, but not with any specific TDI factors. This may be due to greater reliability of the TDI total score, or reflect the more global and non-specific nature of BPRS ratings of Conceptual Disorganization. Thought disorder assessed by the TDI but not the BPRS was associated with several specific neurocognitive measures. Thus, one's operational definition of thought disorder influences whether it is detected within and across subject samples, and determines whether or not it will show associations with neurocognitive measures.

Interestingly, subjects with lower general intelligence had more severe thought disorder as rated by the TDI. To our knowledge, the relation of thought disorder to IQ in schizophrenia has not been reported previously. Regardless of IQ, however, higher overall ratings of thought disorder on the TDI were related to poorer problem-solving (WCS categories completed), while specific aspects of thought disorder were related to other cognitive factors (Source Monitoring Errors and lower Semantic Priming Effects).

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Table 1
Correlation matrix of thought disorder measures with neurocognitive variables ($n=17$)

	BPRS conceptual disorganization	TDI total score	Idiosyncratic verbalizations	Confusion	Combinatory thinking
BPRS conceptual disorganization	–	0.49*	0.36	0.26	0.10
IQ	0.13	−0.44*	−0.46*	0.09	−0.34
WCS categories	−0.20	−0.56**/−0.47*,[a]	0.02	−0.11	0.15
WCS set loss	0.28	0.50*/0.38[a]	−0.16	0.13	0.38
WCS perseverative percent	−0.09	0.22	0.01	−0.05	−0.10
Semantic priming effects	0.01	−0.30	−0.00	−0.59**/−0.61**,[a]	−0.15
Source monitoring errors	−0.02	0.25	0.47*/0.38[a]	0.27	0.25

* Pearson's correlation significant at the 0.05 level.
** Pearson's correlation significant at the 0.01 level (one-tailed).
[a] Partial correlations, controlling for IQ.

While these results are highly preliminary and require replication, they are consistent with reports by Peralta et al. (1992) and Docherty and Hebert (1997), and underscore the fact that thought disorder in schizophrenia is not a unitary neurocognitive phenomenon. First, different assessment methods tap into different aspects of the symptom complex. Second, various specific cognitive factors appear to be independently related to thought disorder in different patients. Lower IQ is one such factor. Others include: executive dysfunction, source monitoring errors, and abnormal information processing in semantic memory.

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