Data Supplement for Revheim et al., Reading Deficits in Schizophrenia and Individuals at High Clinical Risk: Relationship to Sensory Function, Course of Illness, and Psychosocial Outcome. Am J Psychiatry (doi: 10.1176/appi.ajp.2014.13091196)

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eTable 1: Data from Figure 1

Measure	Source	Control mean	n	std dev	Patient mean	n	std dev	Between-group statistics t	df	p	d
Passage reading	Gray Oral Reading Scale, oral reading quotient	108.1	24	9.2	74.2	45	20.0	7.86	67	4.3E-11	-2.3
Single word reading	WRAT, scaled score	105.9	24	5.9	95.6	45	12.6	3.81	67	.0003	-1.1
Difference	Difference, Scaled Score – Oral Reading Quotient	2.2	24	7.4	21.3	45	16.0	7.86	67	1.79E-07	1.6
Grade equivalent reading	Nelson Denny Composite Score, Grade Equivalent	15.1	15	2. 9	8.7	15	3.4	6.27	41	1.79E-07	-2.1
Years of education completed	Self-report	14.2	15	1.5	12.6	15	2.2	2.58	41	.014	-0.9
Difference	Self-report minus Grade equivalent Score	-0.9	15	2.5	3.9	15	3.3	5.00	41	1.12E-05	1.7

eTable2: Data from Figure 4

Measure	Control mean	n	ctl sd	Patient mean	n	ctl sd	Between-group difference			d
							t	df	p	
Gray Oral Reading Test										
Rate	10.9024	41	2.3854	9.3684	19	2.6291	2.24	58	0.03	-0.61
Accuracy	12.6585	41	3.0628	12.1579	19	3.2018	0.58	58	0.56	-0.16
Fluency	12.6829	41	3.7043	10.8947	19	4.1217	1.68	58	0.1	-0.46
Comprehension	9.5122	41	2.5605	8.7895	19	2.485	1.03	58	0.31	-0.29
Comprehensive Test of Phonological Processing										
Visual	101.8462	41	13.6156	82.7895	19	19.7254	4.3	58	0.0001	-1.14
Phonological	100.525	41	13.6447	94.7105	19	15.2674	1.47	58	0.15	-0.40
Memory	99.625	41	11.5929	99.3684	19	12.553	0.08	58	0.94	-0.02
Single word vs. passage reading										
WRAT	109.8182	41	7.7823	106.7222	19	7.6911	1.05	58	0.3	-0.40
Grey Oral Reading Test, Oral Reading Quotient	101.5	41	17.4	100.8	19	23.1	0.13	58	0.9	-0.03

Case Illustration

Mr. L., diagnosed with paranoid schizophrenia, was tested at age 33. He was a high school graduate who dropped out of college in his first year. His first hospitalization was at age 26. At the time of testing, he attended a day treatment program and worked as a janitor at night. His SES was 17 compared to his parental SES of 41; his mom was a HS graduate working as a cashier and his father had partial college and worked as a computer technician. Mr. L.'s Quick IQ score was 104 and his WRAT3 SS=93, suggesting he read at the high school level, and that his premorbid IQ was in the normal range. His GORT4 Fluency was at the 6.2 grade level; GORT4 Rate at the 8th grade level; GORT4 Accuracy at the 4.7 grade level and GORT4 Comprehension at the 6.2 grade level. His overall GORT ORQ was 64, and his composite CTOPP APA score was 52, suggesting severe impairment.

Sample GORT4 Story. Starting Point for Grade 5 (Rate and Comprehension WNL, but Accuracy and Fluency Deficiencies Preclude Basal Score)]

Mr. L. had insight into his reading impairment and was motivated to participate in a pilot reading intervention project. He was randomly assigned to the active condition and participated in 40 hours of software activities. He came for his research sessions on a weekly basis for 3 hours per week in order to accommodate his treatment and work schedule. He attended sessions for approximately 4 months.

Upon post-testing, Mr. L. showed multiple improvements. His overall GORT4 ORQ was 82, and his composite CTOPP APA was also 82, both approximating the normal range. His GORT Comprehension improved to the 10.2 grade level; and GORT4 Fluency, GORT4 Rate and GORT4 Accuracy improved to the 8.4 grade level. Improvements on post-tests are notable since we used the GORT4 alternate form, which eliminates the possibility of practice effects, and CTOPP APA focuses on blending and segmenting nonwords, which are designed not to be memorable.

Mr. L. achieved a non-impaired reading status at the end of his intervention. More importantly, his literacy behavior changed. Prior to post-testing, while completing the last few weeks of his intervention, he would arrive at this session with a book (i.e., an age appropriate novel), which he reportedly was reading at home in his spare time for pleasure—a leisure time pursuit that had been absent for "years."

We presented this case illustration (1) in order to document the vast discrepancy between educational attainment and current reading status in an individual who had been ill with schizophrenia for 7 years, (2) to highlight the specific deficits in orthographic and phonological processing deficits found during narrative passage reading compared to single word reading; and (3) to indicate the potential benefit of reading remediation, regarding objective test scores and subjective improvements in functional outcome.