Supporting Information

Gläscher et al. 10.1073/pnas.0910397107

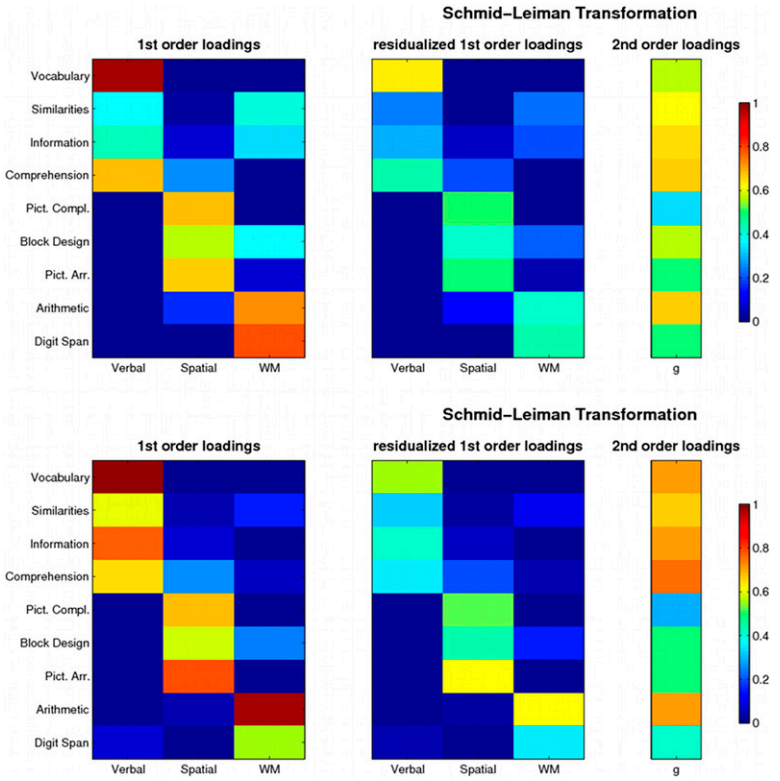

Fig. S1. Robustness of *g* extraction from incomplete data set. *Top:* Replication of Fig. 1 from the main text. Factors were extracted from 241 subjects, where missing data (see Table S2 for sample sizes) were replaced by the mean. *Bottom:* Same extraction of *g* and the first-order factors from a reduced sample of 117 subjects with complete data set on all Wechsler Adult Intelligence Scale (WAIS) subtests. The loading patterns between these two analyses are highly similar [similarity coefficient $R_V = 0.92$ ($Z = 14.24$, $P < 0.001$); for details, see Abdi H (2007) RV coefficient and congruence coefficient. *Encyclopedia of Measurement and Statistics*, ed Salkind N (Sage, Thousand Oaks, CA), pp. 849-853], thus confirming that replacing missing data by the mean yields a robust estimate of *g* and our three first-order factors.

Fig. S2. Statistical power map (see *Materials and Methods* in main text for details on its computation). Areas in red indicate sufficient statistical power to detect a significant lesion–deficit relationship at a threshold of 5% false discovery rate. Areas in green show actual significant lesion–deficit relationship for the *g* factor scores at the same threshold. The overlap is shown in yellow.

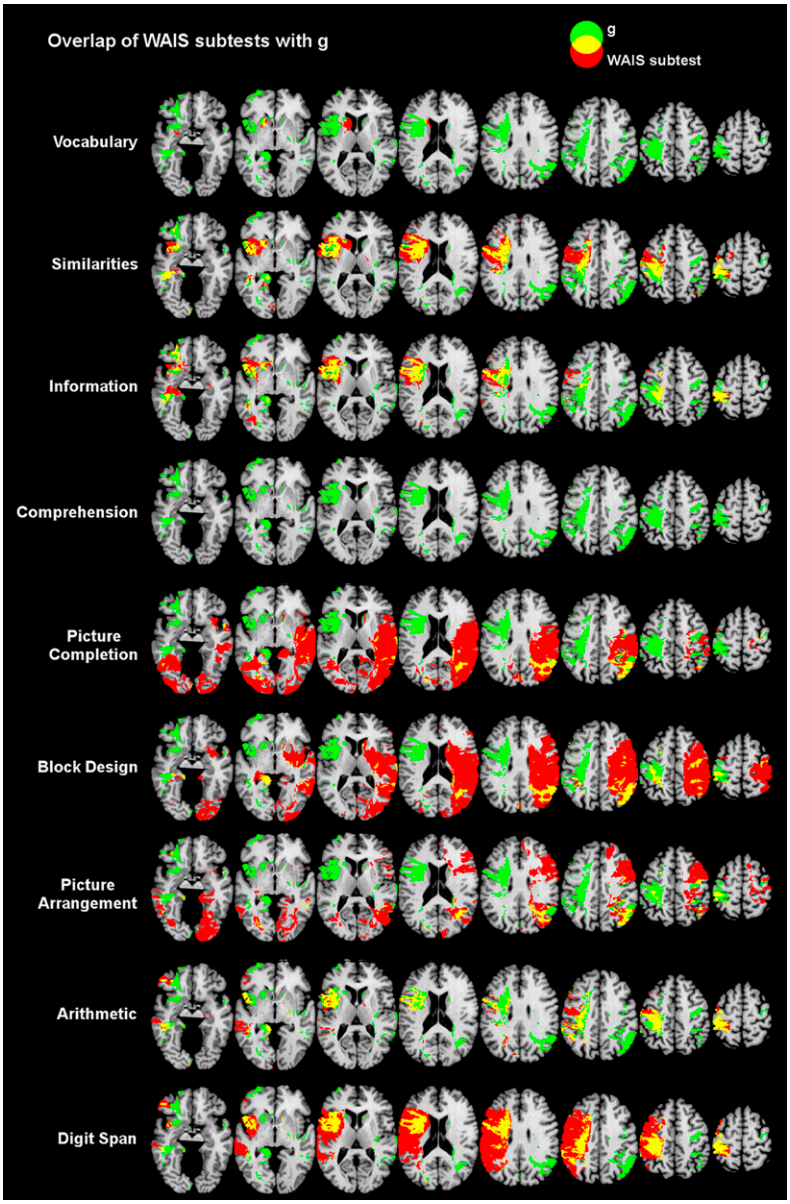

Fig. S3. Overlap (in yellow) of individual Wechsler Adult Intelligence Scale subtests (in red) with *g* (in green). Each statistical map is thresholded at 5% false discovery rate.

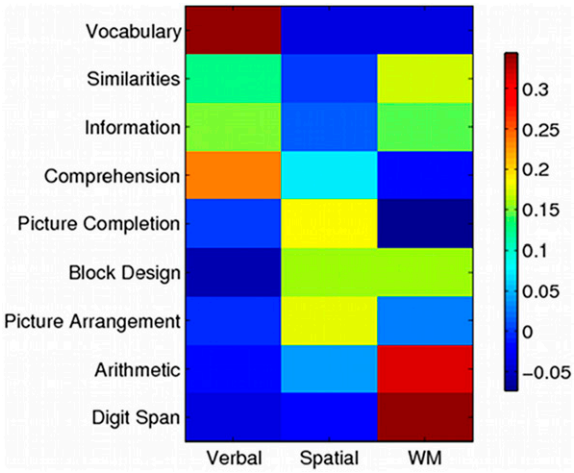

Fig. S4. Difference between the original factor solution (three promax-rotated factors using principal axis factoring) and the residualized first-order loadings after *g* has absorbed the common variance among (Schmid-Leiman transformation). The first-order loading of Vocabulary, Arithmetic, and Digit Span experience the largest attenuation.

Table S1. Demographics, lesion volume, and etiology for 241 lesion patients

Etiology	*n*	Age (yr)	Gender (female/male)	Education (yr)	Volume (mL)	Hand (left/right)
Cerebrovascular disease	188	52.4 (14.2)	85/103	12.7	57.5 (63.3)	20/168
Anterior temporal lobectomy	30	32.0 (10.3)	16/14	13.5	43.5 (17.2)	4/26
Surgical intervention	16	45.6 (14.4)	6/10	13.3	67.9 (53.6)	0/16
Herpes simplex encephalitis	3	38.0 (25.4)	2/1	13.8	127.2 (6.8)	0/3
Traumatic brain injury	4	21.3 (5.5)	1/3	11.0	33.4 (17.6)	0/4
Overall	241	48.8 (15.8)	110/131	12.8	56.9 (58.6)	24/217

Values are number or mean (SD).

Table S2. Means, SDs, and sample sizes of all WAIS subtests

WAIS subtest	*n*	Mean	SD
Vocabulary	125	9.49	2.97
Similarities	211	9.42	2.71
Information	223	9.58	2.96
Comprehension	140	10.12	3.07
Picture Completion	154	9.81	2.95
Block Design	239	9.20	3.05
Matrix Reasoning	84	10.45	2.98
Picture Arrangement	204	9.00	2.82
Arithmetic	227	9.46	3.00
Digit Span	228	8.92	2.92
Letter–Number Sequencing	71	9.54	3.26
Digit Symbol/Coding	224	8.27	2.87
Symbol Search	72	9.85	3.04

Table S3. Schmid-Leiman transformationa for 13 WAIS subtests

WAIS subtest	Residualized first-order loadings				
	g	VCI	POI	WMI	PSI
Vocabulary	0.501	0.626	−0.128	−0.094	0.183
Similiarities	0.560	0.395	0.090	0.146	−0.158
Information	0.583	0.457	0.057	0.124	−0.116
Comprehension	0.660	0.480	0.079	−0.120	0.218
Picture Completion	0.431	−0.017	0.368	−0.180	0.009
Block Design	0.631	−0.048	0.463	0.123	−0.176
Matrix Reasoning	0.333	−0.018	0.111	0.067	0.291
Picture Arrangement	0.541	0.034	0.369	−0.030	−0.061
Arithmetic	0.617	0.098	0.169	0.387	0.056
Digit Span	0.465	−0.056	−0.016	0.697	0.259
Letter–Number Sequencing	0.319	0.047	−0.140	0.246	0.666
Digit Symbol/Coding	0.512	−0.036	0.278	0.170	0.061
Symbol Search	0.365	0.011	0.168	−0.078	0.296
% explained variance	26.321	5.276	7.752	6.489	6.501

VCI, Verbal Comprehension Index; POI, Perceptual Organization Index; WMI, Working Memory Index; PSI, Processing Speed Index.

Table S4. Schmid-Leiman transformation for 10 WAIS subtests

WAIS subtest	Residualized first-order loadings			
	g	Verbal	Spatial	Working memory
Vocabulary	0.539	0.649	−0.102	−0.040
Similarities	0.619	0.253	0.011	0.217
Information	0.641	0.321	0.026	0.173
Comprehension	0.641	0.481	0.177	−0.041
Picture Completion	0.345	0.022	0.486	−0.116
Block Design	0.604	−0.105	0.431	0.178
Picture Arrangement	0.505	0.009	0.469	0.008
Arithmetic	0.674	0.006	0.107	0.363
Digit Span	0.524	−0.075	−0.074	0.444
Digit Symbol/Coding	0.490	−0.035	0.249	0.177
% explained variance	32.035	8.378	4.850	7.623

Table S5. Schmid-Leiman transformation for 9 WAIS subtests (see main text)

WAIS subtest	Residualized first-order loadings			
	g	Verbal	Spatial	WM
Vocabulary	0.573	0.640	−0.105	−0.052
Similarities	0.614	0.236	0.012	0.225
Information	0.656	0.284	0.047	0.193
Comprehension	0.661	0.442	0.192	−0.024
Picture Completion	0.336	0.007	0.500	−0.096
Block Design	0.572	−0.105	0.421	0.207
Picture Arrangement	0.495	−0.009	0.486	0.036
Arithmetic	0.671	−0.029	0.117	0.410
Digit Span	0.497	−0.072	−0.069	0.444
% explained variance	32.836	8.425	5.658	8.134