Table 1. Demographical data of 111 normal volunteers included in BDNF comparisons.

	Val/Val			Met-Carriers			
	n	mean	SD	n	mean	SD	p[a]
age (yrs.)	69	32.5	9.20	42	32.6	9.50	0.94
education (yrs.)	69	16.5	2.54	41	17.4	3.32	0.14
IQ	68	107.8	8.35	41	107.7	9.16	0.93
	N	male	female	N	male	female	p[b]
gender	69	53.6%	46.4%	42	45.2%	54.8%	0.39

SD, standard deviation; a, two-tailed t-test for independent samples; b, χ^2-test.

Table 2. Areas of reduced volume in whole brain analysis comparing met-BDNF to val/val-BDNF individuals.

Lobe	Region	Sub-Region	t	z	p[a]	x[b]	y	z
left								
frontal	Inferior Frontal Gyrus	BA 47	4.09	3.93	**	-46	25	-2
	Inferior Frontal Gyrus	BA 45	3.57	3.46	**	-48	35	4
	Middle Frontal Gyrus	BA 47	4.09	3.93	**	-41	41	-10
	Middle Frontal Gyrus	BA 11	3.90	3.76	**	-34	46	-10
	Middle Frontal Gyrus	BA 10	4.00	3.85	**	-32	56	6
parietal	Precuneus	BA 19	3.20	3.12	*	-27	-77	41
	Superior Parietal Lobule	BA 7	4.01	3.86	**	-31	-65	52
	Superior Parietal Lobule	BA 7	3.84	3.71	**	-27	-71	47
right								
frontal	Inferior Frontal Gyrus	BA 44	3.86	3.72	**	50	38	0
	Medial Frontal Gyrus	BA 10	3.44	3.34	**	3	66	5
	Middle Frontal Gyrus	BA 10	3.83	3.70	**	38	45	22
	Middle Frontal Gyrus	BA 6	4.05	3.90	**	37	9	60
	Precentral Gyrus	BA 6	3.70	3.58	**	62	5	39
	Superior Frontal Gyrus	BA 10	3.75	3.63	**	27	57	16
	Superior Frontal Gyrus	BA 9	3.66	3.54	**	24	47	30
parietal	Postcentral Gyrus	BA 43	4.26	4.08	**	56	-12	14
temporal	Sub-Gyral	Hippocampus	3.77	3.64	**	33	-30	-11
	Caudate nucleus	Caudate tail	3.50	3.39	**	40	-33	-6

**, $p<0.001$; *, $p=0.001$; a, p-values are uncorrected; b, coordinates have been transformed from MNI space to that of Talairach and Tournoux.

Table 3. Areas of reduced volume in whole brain analysis comparing val/val-BDNF to met-BDNF.

Lobe	Region	Area	t	z	p[a]	x[b]	y	z
right								
frontal	Middle Frontal Gyrus	BA 6	4.87	4.61	**	32	3	49
occipital	Lingual Gyrus	BA 18	3.65	3.53	**	17	70	9

**, $p<0.001$; a, p-values are uncorrected; b, coordinates have been transformed from MNI space to that of Talairach and Tournoux.

Winsor Filtering

"Winsorizing" (named after the developer) is an old idea in statistics and has been cited in statistical literature for more than the last fifty years. Basically "Winsorizing" addresses the following problem: "The computation of many statistics can be heavily influenced by extreme values. One approach to providing a more robust computation of the statistic is to Winsorize the data before computing the statistic. To Winsorize the data, tail values are set equal to some specified percentile of the data. For example, for a 90% Winsorization, the bottom 5% of the values are set equal to the value corresponding to the 5th percentile while the upper 5% of the values are set equal to the value corresponding to the 95th percentile. Note that Winsorization is not equivalent to simply throwing some of the data away. This is because the order statistics are not independent." (see http://www.itl.nist.gov/div898/software/dataplot/refman2/auxillar/winsor.htm)

For a more detailed description of "Winsorization", please see: Karen K Yuen. A Note on Winsorized t. Applied Statistics, 20: 297-304 (1971).

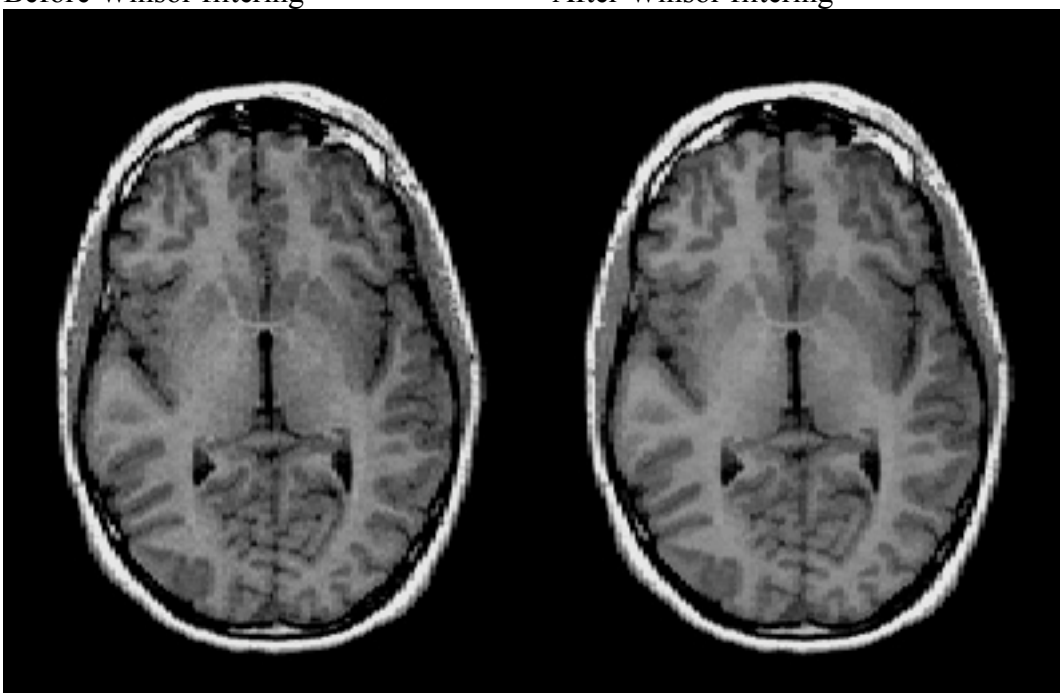
In detail local "Winsorization" was iterated upon our images until less than 500 voxel changed their value anymore within a very small anatomical radius: the nearest 1.5 values to each voxel were collected and sorted, where distance is defined as sqrt(i*i+j*j+k*k) and (i,j,k) are voxel index offsets; if the current voxel's value lay below the 20th percentile point in this distribution, it was replaced by the 20th percentile value; if the voxel's value lay above the 80th percentile point, similarly it was replaced by the 80th percentile value. Voxels with zero values were not filtered. The goal is the same as in

statistics -- to clip off extreme values, which will cause problems in later in the analysis, and replace them with more reasonable values derived from the actual data.

Another rationale for applying this filter was to sharpen the histogram of our images, which actually improved segmentation results.

The following images illustrate Winsor filtering:

Before Winsor filtering After Winsor filtering



For details about the program being used see:

http://afni.nimh.nih.gov/afni/doc/help/3dWinsor.html and

http://afni.nimh.nih.gov/afni/doc/source/3dWinsor_8c-source.html