Outputs from the **ACEfit** function of APACE software for the **ACE** model

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| **Filename** | **Description** | **Comments/Caveats** |
| ***Basic summaries*** |  |  |
| Stdev.nii | Phenotypic standard deviation | Computed and saved if image-wise inference is made. |
| ***Heritability*** |  |  |
| h2\_dist.pdf | Cumulative distribution of all in-mask h2 |  |
| h2\_hist.pdf | Histogram of positive in-mask h2 | Percentage of positive h2 is provided. |
| ACE\_A\_h2.nii | Narrow sense heritability, h2 | Computed and saved if image-wise inference is made. |
| ACE\_A\_LRT.nii | Likelihood ratio test (LRT) statistic for testing H0: h2=0 | Basis for all thresholding procedures. Computed and saved if image-wise inference is made. |
| ACE\_A\_LRT\_vox\_Pasym.nii | -log10(P-value) for testing H0: h2=0 using large sample parametric null distribution | Not trustworthy except for very large samples. Computed and saved if image-wise inference is made. |
| ***Common Environment*** |  |  |
| ACE\_C\_c2.nii | Estimate of c2, shared environmental component | Computed and saved if image-wise inference is made. |
| ACE\_C\_LRT.nii | LRT statistic for testing H0: c2=0 | Computed and saved if image-wise inference is made. |
| ACE\_C\_LRT\_vox\_Pasym.nii | -log10(P-value) for testing H0: c2=0 using large sample parametric null distribution | Not trustworthy except for very large samples; note that no permutation test is possible for c2. Computed and saved if image-wise inference is made. |
| ***Error*** |  |  |
| ACE\_E\_e2.nii | Estimate of e2, unique error component | Computed and saved if image-wise inference is made. |

Additional outputs from permutation inference of APACE software for the **ACE** model

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| **Filename** | **Description** | **Comments/Caveats** |
| ***Heritability*** |  |  |
| H0dist\_mean.pdf | Null distribution of mean of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_wh2.pdf | Null distribution of variance-weighted average of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_median.pdf | Null distribution of median (Q2) of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_q3.pdf | Null distribution of the third quartile (Q3) of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_mGTmedian.pdf | Null distribution of mean of in-mask h2≥Q2(h2) | Permutation-based p-value is displayed in plot title. |
| H0dist\_mGTq3.pdf | Null distribution of mean of in-mask h2≥Q3(h2) | Permutation-based p-value is displayed in plot title. |
| Pvals\_h2.mat | Permutation-based p-values for summary statistics | Heritability summary measures include mean, variance-weighted average, Q2, Q3, mean of h2≥Q2(h2), and mean of h2≥Q3(h2). |
| H0dist\_test\_statistic.pdf | Null distribution of maximum LRT statistic | Permutation-based p-value is displayed in plot title. Only produced if image-wise inference is made. |
| h2\_FDRplot.pdf | Scatter plot of voxel/element-wise FDR-adjusted p-values vs. expected p-values for heritability | Only produced if image-wise inference is made. |
| ACE\_A\_LRT\_vox\_P.nii | -log10(P-value) for testing H0: h2=0 using nonparametric permutation-based null distribution | Only produced if image-wise inference is made. |
| ACE\_A\_LRT\_vox\_FWEP.nii | Voxel/element-wise FWE-corrected -log10(P-value) for testing H0: h2=0 using nonparametric permutation-based null distribution | Only produced if image-wise inference is made. |
| ACE\_A\_LRT\_vox\_FDRP.nii | Voxel/element-wise FDR-adjusted -log10(P-value) for testing H0: h2=0 using nonparametric permutation-based null distribution | Only produced if image-wise inference is made. |
| H0dist\_cluster\_size.pdf | Null distribution of maximum suprathreshold cluster size | Permutation-based p-value is displayed in plot title. Only produced if image-wise cluster inference is made. |
| ACE\_A\_LRT\_clus.nii | Suprathreshold cluster size on LRT statistic for testing H0: h2=0 | Cluster forming threshold of u=2.706, the large permutation-based sample α=0.05 threshold. Only produced if image-wise cluster inference is made. |
| ACE\_A\_LRT\_clus\_FWEP.nii | Cluster FWE-corrected -log10(P-value) (size statistic) | Only produced if image-wise cluster inference is made. |
| H0dist\_cluster\_mass.pdf | Null distribution of maximum suprathreshold cluster mass | Permutation-based p-value is displayed in plot title. Only produced if image-wise cluster inference is made. |
| ACE\_A\_LRT\_mass.nii | Suprathreshold cluster mass on LRT statistic for testing H0: h2=0 | Cluster forming threshold of u=2.706, the large permutation-based sample α=0.05 threshold. Only produced if image-wise cluster inference is made. |
| ACE\_A\_LRT\_mass\_FWEP.nii | Cluster FWE-corrected -log10(P-value) (mass statistic) | Only produced if image-wise cluster inference is made. |
| Pvals\_Max\_h2.mat | Permutation-based p-values for maximum statistics | Permutation-based p-value for maximum LRT statistic is saved if image-wise inference is made. Permutation-based p-values for maximum cluster size and maximum cluster mass are saved if image-wise cluster inference is made. |
| ***Pairwise Correlation*** |  |  |
| H0dist\_Tstat\_rMZ\_rDZ.pdf | Null distribution of 2-sample t-statistic for testing H0: rMZ=rDZ | Permutation-based p-value is displayed in plot title. |
| H0dist\_Diff\_rMZ\_rDZ.pdf | Null distribution of mean difference between rMZ and rDZ for testing H0: rMZ=rDZ | Permutation-based p-value is displayed in plot title. |
| H0dist\_Tstat\_rDZ\_rSib.pdf | Null distribution of 2-sample t-statistic for testing H0: rDZ=rSib | Permutation-based p-value is displayed in plot title. |
| H0dist\_Diff\_rDZ\_rSib.pdf | Null distribution of mean difference between rDZ and rSib for testing H0: rDZ=rSib | Permutation-based p-value is displayed in plot title. |
| Pvals\_AgHe.mat | Permutation-based p-values for 2-sample t-statistics and mean differences | P-values for testing H0: rMZ=rDZ and H0: rDZ=rSib are saved. |

Outputs from the **ACEfit** function of APACE software for the **AE** model

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| **Filename** | **Description** | **Comments/Caveats** |
| ***Basic summaries*** |  |  |
| Stdev.nii | Phenotypic standard deviation | Computed and saved if image-wise inference is made. |
| ***Heritability*** |  |  |
| h2\_dist.pdf | Cumulative distribution of all in-mask h2 |  |
| h2\_hist.pdf | Histogram of positive in-mask h2 | Percentage of positive h2 is provided. |
| AE\_A\_h2.nii | Narrow sense heritability, h2 | Computed and saved if image-wise inference is made. |
| AE\_A\_LRT.nii | Likelihood ratio test (LRT) statistic for testing H0: h2=0 | Basis for all thresholding procedures. Computed and saved if image-wise inference is made. |
| AE\_A\_LRT\_vox\_Pasym.nii | -log10(P-value) for testing H0: h2=0 using large sample parametric null distribution | Not trustworthy except for very large samples. Computed and saved if image-wise inference is made. |
| ***Error*** |  |  |
| AE\_E\_e2.nii | Estimate of e2, unique error component | Computed and saved if image-wise inference is made. |

Additional outputs from permutation inference of APACE software for the **AE** model

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| **Filename** | **Description** | **Comments/Caveats** |
| ***Heritability*** |  |  |
| H0dist\_mean.pdf | Null distribution of mean of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_wh2.pdf | Null distribution of variance-weighted average of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_median.pdf | Null distribution of median (Q2) of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_q3.pdf | Null distribution of the third quartile (Q3) of all in-mask h2 | Permutation-based p-value is displayed in plot title. |
| H0dist\_mGTmedian.pdf | Null distribution of mean of in-mask h2≥Q2(h2) | Permutation-based p-value is displayed in plot title. |
| H0dist\_mGTq3.pdf | Null distribution of mean of in-mask h2≥Q3(h2) | Permutation-based p-value is displayed in plot title. |
| Pvals\_h2.mat | Permutation-based p-values for summary statistics | Heritability summary measures include mean, variance-weighted average, Q2, Q3, mean of h2≥Q2(h2), and mean of h2≥Q3(h2). |
| H0dist\_test\_statistic.pdf | Null distribution of maximum LRT statistic | Permutation-based p-value is displayed in plot title. Only produced if image-wise inference is made. |
| h2\_FDRplot.pdf | Scatter plot of voxel/element-wise FDR-adjusted p-values vs. expected p-values for heritability | Only produced if image-wise inference is made. |
| AE\_A\_LRT\_vox\_P.nii | -log10(P-value) for testing H0: h2=0 using nonparametric permutation-based null distribution | Only produced if image-wise inference is made. |
| AE\_A\_LRT\_vox\_FWEP.nii | Voxel/element-wise FWE-corrected -log10(P-value) for testing H0: h2=0 using nonparametric permutation-based null distribution | Only produced if image-wise inference is made. |
| AE\_A\_LRT\_vox\_FDRP.nii | Voxel/element-wise FDR-adjusted -log10(P-value) for testing H0: h2=0 using nonparametric permutation-based null distribution | Only produced if image-wise inference is made. |
| H0dist\_cluster\_size.pdf | Null distribution of maximum suprathreshold cluster size | Permutation-based p-value is displayed in plot title. Only produced if image-wise cluster inference is made. |
| AE\_A\_LRT\_clus.nii | Suprathreshold cluster size on LRT statistic for testing H0: h2=0 | Cluster forming threshold of u=2.706, the large permutation-based sample α=0.05 threshold. Only produced if image-wise cluster inference is made. |
| AE\_A\_LRT\_clus\_FWEP.nii | Cluster FWE-corrected -log10(P-value) (size statistic) | Only produced if image-wise cluster inference is made. |
| H0dist\_cluster\_mass.pdf | Null distribution of maximum suprathreshold cluster mass | Permutation-based p-value is displayed in plot title. Only produced if image-wise cluster inference is made. |
| AE\_A\_LRT\_mass.nii | Suprathreshold cluster mass on LRT statistic for testing H0: h2=0 | Cluster forming threshold of u=2.706, the large permutation-based sample α=0.05 threshold. Only produced if image-wise cluster inference is made. |
| AE\_A\_LRT\_mass\_FWEP.nii | Cluster FWE-corrected -log10(P-value) (mass statistic) | Only produced if image-wise cluster inference is made. |
| Pvals\_Max\_h2.mat | Permutation-based p-values for maximum statistics | Permutation-based p-value for maximum LRT statistic is saved if image-wise inference is made. Permutation-based p-values for maximum cluster size and maximum cluster mass are saved if image-wise cluster inference is made. |
| ***Pairwise Correlation*** |  |  |
| H0dist\_Tstat\_rMZ\_rDZ.pdf | Null distribution of 2-sample t-statistic for testing H0: rMZ=rDZ | Permutation-based p-value is displayed in plot title. |
| H0dist\_Diff\_rMZ\_rDZ.pdf | Null distribution of mean difference between rMZ and rDZ for testing H0: rMZ=rDZ | Permutation-based p-value is displayed in plot title. |
| H0dist\_Tstat\_rDZ\_rSib.pdf | Null distribution of 2-sample t-statistic for testing H0: rDZ=rSib | Permutation-based p-value is displayed in plot title. |
| H0dist\_Diff\_rDZ\_rSib.pdf | Null distribution of mean difference between rDZ and rSib for testing H0: rDZ=rSib | Permutation-based p-value is displayed in plot title. |
| Pvals\_AgHe.mat | Permutation-based p-values for 2-sample t-statistics and mean differences | P-values for testing H0: rMZ=rDZ and H0: rDZ=rSib are saved. |