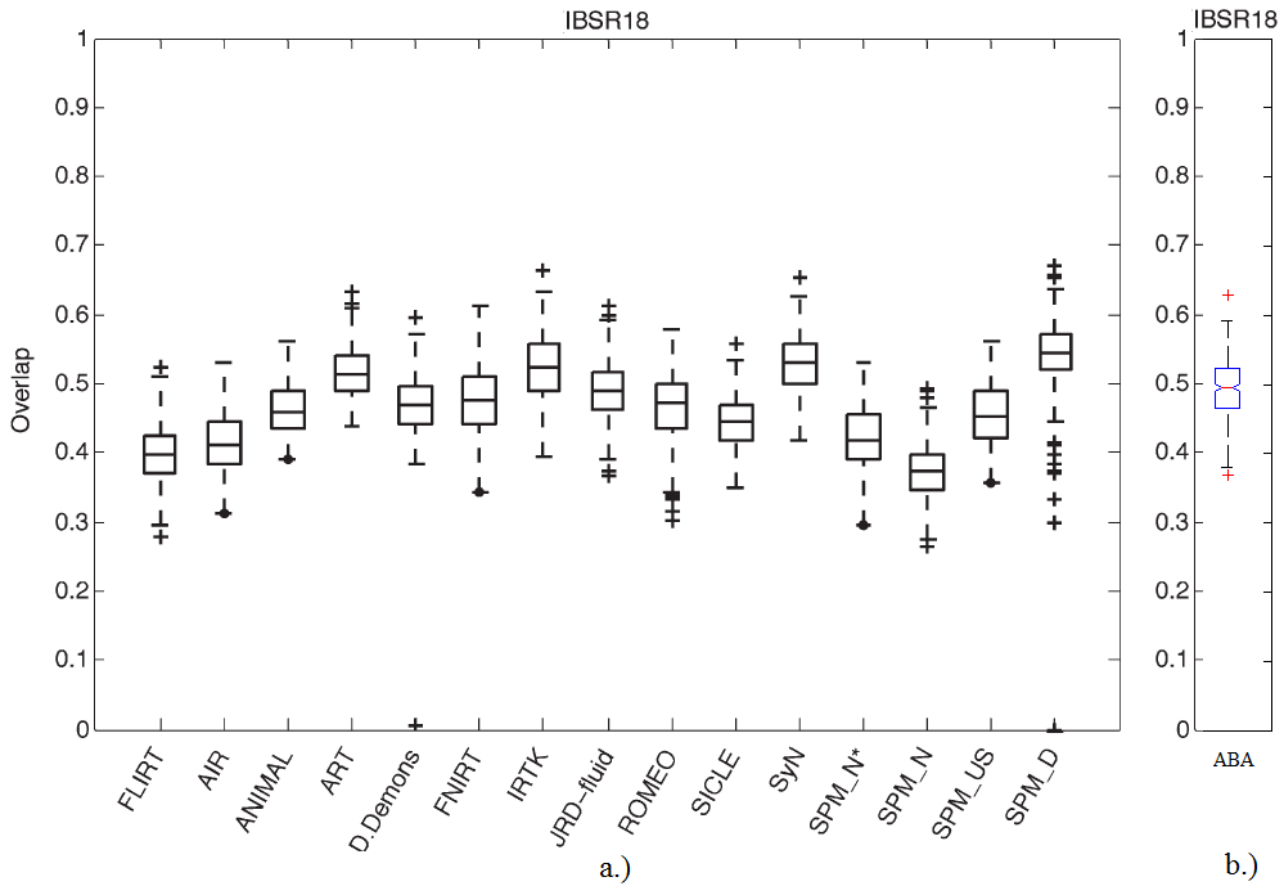
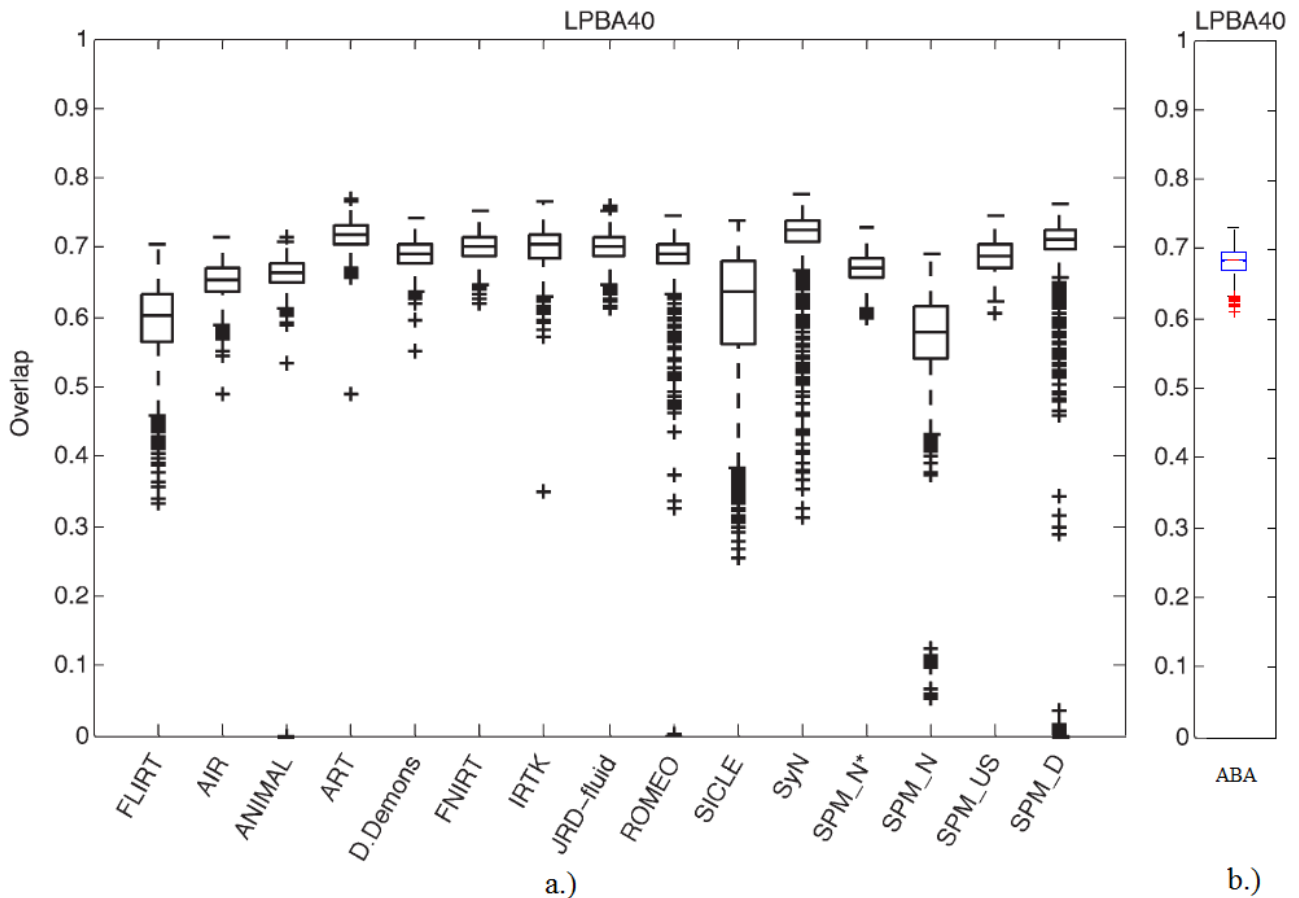


SUPPLEMENTARY MATERIAL

The adaptive bases algorithm (ABA) used for registration with TOADS-CRUISE was validated by replicating the evaluation process performed in Klein et al. (2009) using two of that analysis' data sets: IBSR18 and LPBA40. For the IBSR18 data, ABA has the highest median score except for the ART, IRTK, SyN, and SPM DARTEL algorithms, which are the four consistently ranked best registration algorithms in the Klein study. For the LPBA40 data, the median score of ABA is only better than 9 of the 15 algorithms tested, but in this data set the median scores are fairly close together. If one looks at worst-case overlap performance, however, ABA becomes quite distinctive. In particular, only ART, IRTK, and SyN have both higher median and worst-case overlap in the IBSR18 data set while, in contrast, only FNIRT and JRD-fluid have that property in the LPBA40 data set. So, by assessing both median and worst-case overlap performance, ABA is the top choice on the premise that only ABA gives the best combined worst-case and median performance across two datasets.



Supplementary Figure 1.) Overlap results for the IBSR18 data set. Values were averaged over all regions and then across the 306 brain pairs. Each box has lines at the lower quartile, median, and upper quartile values and the whiskers extend from each end of the box to 1.5 times the interquartile range. Outliers are indicated by (+). (a.) shows the original comparisons presented in Figure 5 from Klein et al. (2009) and (b.) shows the equivalent results from ABA. The notched box shows the range of significance for the median.



Supplementary Figure 2.) Overlap results for the LPBA40 data set. Values were averaged over all regions and then across the 1560 brain pairs. Each box has lines at the lower quartile, median, and upper quartile values and the whiskers extend from each end of the box to 1.5 times the interquartile range. Outliers are indicated by (+). (a.) shows the original comparison presented in Figure 5 from Klein et al. (2009) and (b.) shows the equivalent results from ABA. The notched box shows the range of significance for the median.