

## Supplemental Information

**Table S1** Estimates from phylogenetic generalized least squares (PGLS) models used to quantify the relative contribution of the dentary to the lower jaw for the ancestral state reconstructions in non-mammalian synapsids.

Explanatory variable	Estimate	SE	t	P
(A) Relative dentary area				
Intercept	-0.816	0.131	-6.226	<0.001
Lower jaw area	0.995	0.015	68.244	<0.001
(B) Relative Dentary Length 1				
Intercept	-0.907	0.230	-3.947	<0.001
Lower jaw length	0.990	0.042	23.769	<0.001
(C) Relative Dentary Length 2				
Intercept	-0.386	0.129	-2.995	<0.001
Lower jaw length	1.018	0.023	43.593	<0.001

PGLS models were performed assuming a standard Brownian motion (BM) model of trait evolution. (A) The relative dentary area was calculated as a residual from the PGLS regression of the dentary area (log) on the lower jaw area (log). (B) The relative Dentary Length 1 was calculated as a residual from the PGLS regression of the Dentary Length 1 (log) on the lower jaw length (log). (C) The relative Dentary Length 2 was calculated as a residual from the PGLS regression of the Dentary Length 2 (log) on the lower jaw length (log) (see Fig. 1 for definitions of positions and length measurements).