

DISCUSSION OF EVOLUTIONARY PALAEOBIOLOGY IN EARLY PSEUDOSUCHIA: HOW A PRIORI WEIGHTING METHODS AFFECT PHYLOGENETIC HYPOTHESES.

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Recent phylogenetic analyses of archosaurs have resulted in different topologies. Particularly remarkable are conflicts in the phylogenetic positions of early pseudosuchian clades, such as the relationships of Erpetosuchidae and Ornithosuchidae. One dataset produced a topology with Ornithosuchidae at the base of Pseudosuchia as a sister taxon of Suchia, whilst another recovered Ornithosuchidae within a suchian clade that also includes Erpetosuchidae and Aetosauria. These differences in phylogenetic hypotheses between datasets result from differing character lists and the inclusion of different species. Most of the previously published phylogenetic analyses used a priori weighting methods (AWM), such as additive multistate characters. Here we conducted several phylogenetic analyses combining different AWMs (i.e., implied weighting) on a published dataset. Using different standardised values of K, we obtained, in some cases, the two competing topologies for these basal pseudosuchian clades. Such results complement the biological discussion (i.e., origin and fixation) regarding the synapomorphies of those clades. In addition, it will be useful to observe whether or not there exists any biological rationale for giving different weights to characters. For methodological purposes of the present work, we furnish the proper theoretical basis for conducting a cladogram comparison. Therefore, a discussion of which phylogenetic hypotheses for those clades are more plausible *a priori* is provided because of the parsimony criteria.