

## **Prior distributions from meta-analytic predictions**

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Bayesian hierarchical models provide a flexible framework for data characterized by variance components at different aggregation levels. The setup in terms of a Bayesian formulation allows to interpret certain model components as *priors* for other “downstream” sections of a model. *Meta-analytic-predictive (MAP)* priors implement this idea within the context of a full “meta-analytic-combined” approach. This perspective may be utilized to explicate and quantify the flow of information within a hierarchical model, and it allows to separate out certain model components. A MAP prior may be examined separately to quantify the conveyed information, and adjustments may be made to simplify its form, to deliberately enforce greater vagueness, or to implement robustness against certain assumption violations. Applications of such MAP approaches may aim at different modeling levels, from informative priors for control groups, via dynamic borrowing of effect estimates to empirically motivated heterogeneity priors. The idea of MAP priors will be introduced, and some example applications will be showcased.