

Training Spatial Skills: What works, for Whom, and for How Long?

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Abstract: Strong spatial skills predict achievement in STEM fields (e.g., Shea, Lubinski, & Benbow, 2001; Wai, Lubinski, & Benbow, 2009). Improving spatial skills is therefore of both theoretical and practical importance. To determine whether and to what extent training can improve these skills, we meta-analyzed 217 research studies, investigating the magnitude, moderators, durability and generalizability of training on spatial skills. The average effect size (Hedges' g) for training relative to control was .47 ($SE = .04$). Effect sizes were affected substantially by the presence of control groups. When treatment and control group improvements were considered separately, the mean effect size for trained groups was .62 ($SE = .04$), while the effect size for control groups was only .45 ($SE = .04$). Training effects were durable, and led to near and medium transfer. Considered together, the results suggest that spatially enriched education could pay substantial dividends in increasing participation in STEM disciplines.