What does it take to show that a cognitive training procedure is useful? A critical evaluation.

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Jacoby, N, Ahissar M. 2013.

Abstract:

Individuals substantially improve with training, indicating that a large degree of plasticity is retained across ages. In the past 20 years, many studies explored the ability to boost cognitive skills (reasoning, linguistic abilities, working memory, and attention) by training with other tasks that exploit limited cognitive resources. Indeed, individuals with long-term training on challenging skills (musicians and action video gamers) show impressive behavior on related tasks (linguistic and visual attention, respectively). However, a critical evaluation of training studies that last weeks to months shows typically mild effects, mainly with respect to control groups that either did not practice or practiced with less challenging, rewarding, or exciting conditions. These findings suggest that future training studies should evaluate these factors carefully and assess whether they mainly impact the testing sessions or actual longer-term skills, and whether their impact can be further strengthened. The lack of a comprehensive theory of learning that integrates cognitive, motivational, and alertness aspects poses a bottleneck to improving current training procedures.

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