

Musicians have a better memory than nonmusicians: a meta-analysis

Francesca Talamini¹, Gianmarco Altoè², Barbara Carretti¹ and Massimo Grassi¹

¹Department of General Psychology, University of Padova. ²Department of Developmental Psychology and Socialization, University of Padova

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Several studies investigated whether musicians (i.e., people who underwent a long music training) have better performances than nonmusicians (i.e., people who received little to none music training) in different memory tasks. Although, results revealed an advantage of musicians over nonmusicians in various memory tasks [1,2], some studies did not observe this advantage [3]. For this reason, we ran a meta-analysis, with the aim of understanding whether there is any positive effect of the music training on memory, and whether this (possible) positive effect might be explained by type of task.

We collected 22 studies that included 72 different tasks. Tasks were divided in three categories, depending on the system of memory tapped: long-term memory, short-term memory, and working memory. Three meta-analyses were conducted separately for each memory system. We also tested the effect of possible moderators (i.e., variables that can explain the different results obtained by the different studies) that we defined as the type of stimuli (i.e., verbal, visuospatial, and tonal).

The meta-analyses revealed a medium effect-size in short-term memory, $g = .66$, 95%-CI [.51 - .80], $p < .001$, and in working memory, $g = .47$, 95%-CI [.21 - .73], $p < .001$, meaning that the music training has a positive effect on these two memory systems. The moderator analysis for short-term memory and working memory was significant, suggesting that the type of stimuli presented influences the dimension of the effect. In long term memory, the effect-size was small, $g = .29$, 95%-CI [.05 - .52], $p = .020$, with no effect of moderators.

Overall, results show that musicians have better memory performances than nonmusicians, and that these performances vary depending on the type of stimuli presented (verbal, visuospatial or tonal), in particular in short term and working memory tasks. In long term memory tasks, there are still weak evidences of a positive effect of the music training.

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