

Absolute memory for music: Comparative replication studies of the “Levitin effect” in six European laboratories

Kathrin Bettina Schlemmer¹, Timo Fischinger², Klaus Frieler³, Daniel Müllensiefen⁴, Kai Stefan Lothwesen⁵, Kelly Jakubowski⁶

¹*Katholische Universität Eichstätt-Ingolstadt, Germany*

²*Universität Kassel, Germany*

³*Universität Hamburg, Germany*

^{4,6}*Goldsmiths, University of London, UK*

⁵*Hochschule für Musik und Darstellende Kunst Frankfurt am Main, Germany*

¹kathrin.schlemmer@ku.de, ²timo.fischinger@uni-kassel.de, ³klaus.frieler@uni-hamburg.de,
⁴d.muellensiefen@gold.ac.uk, ⁵kai.lothwesen@hfmk-frankfurt.de, ⁶ps101kj@gold.ac.uk

ABSTRACT

Background

When analysing human long term memory for musical pitch as well as musical rhythm, relational memory (for pitch and time relations) is commonly distinguished from absolute memory (for the absolute pitches and durations of tones). The ability of most musicians and non-musicians to recognise tunes even when presented in a different key or tempo suggests the existence of relational music memory. However, a series of studies points towards the additional existence of absolute music memory (e.g., Terhard & Seewann 1983, Schellenberg & Trehub 2003, Halpern 1990, Levitin 1994, Levitin & Cook 1996). According to Levitin’s results, the majority of non absolute pitch possessors can produce pitch and tempo at an absolute level when the task is to recall a very familiar pop song recording.

Aims

Up to now, no replication of Levitin’s (1994) study has been published. The aim of this paper is to present the results of a replication project across six different labs in Germany and the UK.

Method

All six labs used the same methodology, carefully replicating the experimental conditions of Levitin’s study. In each lab, between 40 and 60 participants were tested. They were primarily university students with different majors and included musicians and non-musicians.

Participants were asked to recall a pop song that they had listened to very often, and to sing, hum, or whistle a phrase of this song exactly as they had imagined it. The produced songs were recorded, analysed regarding pitch, and compared with the published original version.

A questionnaire was used to describe the musical sophistication of participants and to gather relevant information on their general music listening habits as well as their familiarity with the produced songs.

Results

Preliminary results from three labs suggest that participants show a tendency to sing in the original key, but a little flat (mean difference of -1 semitone). This is in general line with Levitin’s results. The distribution of the data is significantly

not uniform, but much more spread out than Levitin’s data. The distributions differ significantly in the three labs analysed so far.

Conclusions

Our replication study supports basically the hypothesis that that there is a strong absolute component for pitch memory of very well-known tunes. However, the observed differences in the labs analysed so far could be the result of a decline effect as discussed by Schooler (2011).

Keywords

Music memory, absolute pitch, replication, music listening

REFERENCES

- Halpern, A.R. (1990). Memory for the absolute pitch of familiar songs. *Memory & Cognition*, 17, 572-581.
- Levitin, D.J. (1994). Absolute memory for musical pitch: Evidence from the production of learned melodies. *Perception & Psychophysics*, 56, 414-423.
- Levitin, D.J. & Cook, P.R. (1996). Memory for musical tempo: Additional evidence that auditory memory is absolute. *Perception & Psychophysics*, 58, 927-935.
- Schellenberg, E.G. & Trehub, S.E. (2003). Good pitch memory is widespread. *Psychological Science*, 14, 262-266.
- Schooler, J. (2011). Unpublished results hide the decline effect. *Nature*, 470, 437.
- Terhardt, E. & Seewann, M. (1983). Aural key identification and its relationship to absolute pitch. *Music Perception*, 1, 63-83.