nWhen You Heard It First: Age of Exposure Affects Encoding of Music in the Default Mode Network

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The “reminiscence bump” describes the ability of older adults to recall a disproportionately high amount of autobiographical memories from adolescence and young adulthood compared to any other time across the lifespan. This effect holds true for music-evoked autobiographical memories: not only do older adults recall more autobiographical memories in response to music from their adolescence and young adulthood compared to music outside this time period, but they also show lifelong preferences for music from this time period. Here we explored the effect of developmental timing of music encoding on how it is represented in the brain. We collected fMRI data on older adults (n=17; ages 56-89) while they listened to both self-selected and researcher-selected musical excerpts. Whole-brain fMRI analyses across all music listening conditions revealed activation in auditory regions (superior temporal gyrus and Heschl’s Gyrus) and the Default Mode Network (medial prefrontal cortex and posterior cingulate cortex). Compared to music released during childhood (ages 0-11) or adulthood (ages 19+), music released during adolescence (ages 12-18) showed greater activation in the Default Mode Network, specifically the posterior cingulate cortex, surviving FDR cluster-size correction at the 0.05 level. These results demonstrate how stimuli encoded during adolescence differ from those outside this time period, providing neuroscientific insight into the reminiscence bump effect and the development of lifelong preferences.