

Framing the Future First: Medial Temporal Lobe Activation Discriminates Delay and Acceleration Framing in Intertemporal Choice

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People often discount future rewards, embracing smaller rewards that are delivered sooner rather than waiting for larger rewards delivered later. Previous behavioral research has demonstrated that people are more patient when options are presented as decisions to accelerate rather than delay consumption. This behavioral effect is well-established in the literature, but the underlying neural mechanisms have not been identified. We examined the neural correlates of delay and acceleration framing in intertemporal choice. We find greater activation in the hippocampus, amygdala, and anterior insula when options were framed as decisions to delay rather than accelerate consumption. These findings are consistent with theoretical accounts that posit that preferences are constructed. Specifically, the heightened activation observed in medial temporal regions may reflect more vivid representations of sooner outcomes in delay versus acceleration framing. These results provide insight into contextual effects in intertemporal choice specifically and preference construction more broadly.

Keywords: intertemporal choice, decision neuroscience, hippocampus, framing effects, preference construction

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Intertemporal choice underpins important decisions humans face daily, from deciding whether to eat indulgent foods to saving for retirement. The tradeoff between lower valued sooner options and more valuable future options

determines many life outcomes (Golstein et al., 2014), and much research has focused on how to increase willingness to postpone immediate rewards. Most prior neuroscience research on intertemporal choice has focused on identifying neural

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manuscript. Data are available at https://osf.io/mpe74/?view_only=b43409bb8c0e419a9570596179ffd851 and <https://neurovault.org/collections/NAABLORD/>.

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