

Youth adapt faster than seniors to unexpected events

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Does experience give seniors an edge in reacting to sudden change or are younger people quicker to respond? A new study from Concordia University shows that when a routine task is interrupted by an unexpected event, younger adults are faster at responding. Published in the *Journal of Gerontology*, the findings have implications for educators and for older adults in situations where performance is crucial.

"When we frequently perform a task, our reactions become automatic," says Kevin Trewartha, first author and a PhD student in Concordia's Department of Psychology and a researcher at the Centre for Research in Human Development. "For example, experienced drivers are often 'on autopilot' when they're behind the wheel, but they do just fine, unless something unexpected happens. We're interested in reaction speeds in different age groups when something unexpected does occur while someone is performing a routine task."

Some 40 participants took part in the study: half were 19 to 36 years old, while the other half were 60 to 75 years old. Each participant was asked to follow visual cues on a [computer screen](#) and press corresponding keys on a piano keyboard. Some sequences were repeated frequently so that participants learned to expect them, while other sequences were randomly added at intervals to create unexpected sequences.

Reaction in older adults

"[Older adults](#) were less able to overcome their habitual responses when unexpected sequences arose," says Trewartha. "They were also slower in learning to adapt. They didn't improve as much as younger adults when they were asked to vary their learned routine on multiple occasions."

The study is one of the first to use 3D motion capture technology, the same tool used in film and animation, to link age-related cognitive changes to motor control. In short, the research sought to break down the [reaction time](#) of participants before they undertook a movement and the time they required to complete that movement. This breakdown produced unexpected results.

The research team found older adults tended to take less time to plan movements but more time to execute them – perhaps because they felt uncertain about their reactions. Trewartha and colleagues are already planning follow-up research to study the brain activity linked with the performance of learned and new movement patterns.

These results suggest that focus is even more important for older adults than for younger individuals. "When they really need to perform well at a given task, older adults should probably seek out an environment where they can focus on the task at hand without distractions," says senior author Karen Z.H. Li, a professor in Concordia's Department of Psychology and a researcher at the Centre for Research in Human Development.

More information: The study, "Movement Kinematics of Prepotent Response Suppression in Aging During Conflict Adaptation," published in the *Journal of Gerontology*, was authored by Kevin M. Trewartha, Virginia B. Penhune and Karen Z.H. Li from Concordia University. [psychsocgerontology.oxfordjour ... 3/geronb.gbq090.full](https://psychsocgerontology.oxfordjour.../3/geronb.gbq090.full)

Provided by Concordia University

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