Long-lasting effects on brain performance from child- and adulthood trauma

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Individuals who suffer trauma in child- and adulthood may experience a greater amount of cognitive decline as they age than individuals who haven't experienced trauma, a new study found.

The research, published in June in the *Journal of Traumatic Stress*, also found that recent trauma suffered in adulthood has a larger impact on some aspects of cognitive functioning than trauma in childhood.

"We found that the more adverse events experienced, such as your parents' divorce or a parent dying, the greater the cognitive decline," said Margie Lachman, the Minnie and Harold Fierman Professor of Psychology, who co-authored the study with psychology graduate student Kristin Lynch MS '18.

Lynch, who earned her master's in psychology in a year in Lachman's lab, was first author on the journal article. Her thesis explored the effect of lifetime trauma exposure on the relationship between age and religiosity

The researchers studied roughly 2,500 adults, ages 28 to 84, between 2004 and 2013. The participants were part of the Midlife Development in the U.S. (MIDUS) study, a national longitudinal study of health and well-being in adulthood.

Participants were given a list of 12 potentially traumatic events and asked if they'd experienced any, and how negatively they were affected.

The events on the list included divorce or death of a parent during childhood, emotional or physical abuse, parental alcohol or drug addiction, combat experience and losing a home to fire, flood or natural disaster. For any of these to be considered traumatic, respondents needed to indicate they caused severe emotional distress.

Subjects were also asked a series of questions that tested their cognitive abilities in two areas: executive functioning (EF) and episodic memory (EM). EF pertains to such skills as focusing attention, planning, problem-solving, and multitasking. The test of EM involved remembering

recently learned information.

The scientists compared the results of individuals who said they had lived through trauma with those who indicated they hadn't and tested their EM and EF over the course of nine years.

Those respondents who said they had experienced more traumatic events showed greater declines in both EF and EM.

Lachman said this may be because trauma has been linked to stress and depression, both of which are known to impair cognitive functioning. Trauma is also linked to metabolic disease, inflammation, and disruption of the body's immune system, which are likewise also known to harm the brain's performance.

Lynch stressed that suffering trauma does not automatically mean an individual will suffer greater cognitive impairment in later life. The impact of trauma varies and some people are more resilient or receive treatment that can mitigate the effects.

Lynch, who is now a Ph.D. student at the John Jay College of Criminal Justice in New York, also said the effects of cognitive decline can be subtle and may go unnoticed. "It might not feel like there's an effect on your day-to-day functioning," she said.

Lachman and Lynch also looked at whether childhood or more recent traumatic experiences had a greater effect on cognition. They found that individuals exposed to trauma later in life had a greater decline in EF than individuals whose first traumatic event occurred earlier in life. The amount of decline in EM did not vary based on when the event occurred in life, a finding that the researchers said required further study.

Lachman speculated there may be more of an opportunity to recover

from trauma that occurs years before, in childhood. She said children may be more likely to receive supportive interventions or the increased plasticity of their brains may make them more likely to adapt in the long term.

More information: Kristin S. Lynch et al. The Effects of Lifetime Trauma Exposure on Cognitive Functioning in Midlife, *Journal of Traumatic Stress* (2020). DOI: 10.1002/jts.22522

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