**New Study Shows That Stress Has Been Affecting Your Life Before You Even Knew What It Was**

*Developmental Science*

By Alex Matz

A study published in *Developmental Science* supports existing ideas about a link between traumatic events in early childhood and slower brain development.

Leading a team of Vanderbilt researchers, Katheryn Humphreys, examined how stressful events during various critical periods of brain development, known as early sensitive periods, negatively affected hippocampal volume. Hippocampal volume is primarily responsible for memory and emotional formation and development. The study indirectly contributes to existing research about the link between stressful environments and correlated long term health impacts.

Recording responses from 178 early adolescents (aged 9-13 years), Humphreys used a modified version the Traumatic Events Screening Inventory for Children, which ranks the physiological experiences of potentially traumatic events, to assign different stressful incidents unique weightings. The participants were asked about situations varying from moving homes, to the death of a close friend or family member. Then, using structural magnetic resonance imaging, Humphreys’ team screened the hippocampal volume (HV) of each constituent and used software to estimate linear regressions of HV during early adolescents.

“We were able to examine how experiences of stress severity in a child’s life may predict an area of the hippocampal volume as a function of the stress severity of the child reported,” said Humphreys. She added how this study is looking for a correlation between the two variables, not causation.

Humphreys’ findings revealed that “it was stress specifically in the first five years of life that had a stronger association with HV than stress experiences later in life.” She added that “it wasn’t just the kind of kids who experienced stress on average that tended to have smaller HV, but it was those kids that had more sever stressors earlier in life rather than later in childhood that seemed to be predictive.” For instance, a child who experienced a significant traumatic event at age 3 was more likely to have a smaller HV than a child who experienced the same event at age 7. In other words, the existence of stress was not a differentiating factor, but rather, it was the timing of that stress which was important.

Although Humphreys team was able to identify the precise age range at which hippocampal volume is most sensitive to stress, there were limitations to the study. For instance, because ethically scientists can not intentionally subject people to stress, testing the causality of stress on HV is difficult to deduce. However, Humphreys noted that alternative solutions do exist. One resolution mentioned was to to concentrate on the HV of children who experienced less stressful environments.

 Jamie Hanson, who serves as Assistant Professor of Psychology at University of Pittsburg said, “this is another powerful piece of evidence to that fact that we should be supporting families.” Hanson acknowledged the paper’s critical finding that HV was most greatly impacted during the 0-5 age range, noting that it adds to larger debate around the timing of critical sensitive periods.

Humphreys hopes the study will shed light on the fact that “early experiences matter [in childhood development]”. She is hesitant to say if the paper has gotten into the hands of policy makers, but is optimistic that if her results become “common understanding, then it will help spread the message that we should do things to prevent stress experiences in kid’s lives”.

Sources:

Humphreys, Kathryn & King, Lucy & Sacchet, Matthew & Camacho, M. Catalina & Colich, Natalie & Ordaz, Sarah & Ho, Tiffany & Gotlib, Ian. (2018). Evidence for a Sensitive Period in the Effects of Early Life Stress on Hippocampal Volume. Developmental Science. 10.1111/desc.12775.

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