

Studies support new approach to reduce stress in parents and kids

July 2 2019, by Carolyn Levinn



Everyday interactions between a mother and her daughter are videotaped during a FIND session. Credit: Center for Translational Neuroscience

Scientists at the University of Oregon are working to establish a new model for the study and prevention of childhood stress-related diseases.

Two recent studies, done under the direction of Philip Fisher of the UO Center for Translational Neuroscience, approach this from different

angles. One probed the underlying mechanisms of child-supportive parenting coaching and the other focused on the early detection of stress-related mental health disorders in children.

The two studies, Fisher said, represent part of a major transition in the field of child development, where neuroscience, psychology and biology research can be combined to tackle the critical problem of childhood adversity and mental health.

The first study, led by Nicole Giuliani, used [magnetic resonance](#) imaging to investigate how a video-coaching program affects the brains of caregivers who go through it. The program, called Filming Interactions to Nurture Development, or FIND, was pioneered by the Fisher lab and aims to help caregivers recognize and increase child-supportive behavior.

Giuliani, an assistant professor of school psychology in the College of Education, and colleagues invited 37 mothers of young children to participate in the study. About half were recorded during normal interactions with their children. The video was then edited to select for moments that were classified as "active ingredients in supportive parenting," such as recognizing a child's needs and waiting for a child to respond. The edited video let parents see what they were already doing well.

The researchers used MRI imaging to monitor neural responses in the regions of the [brain](#) associated with inhibitory control and self-evaluations—two processes believed to be at the core of FIND. They investigated neural changes from before to after participating in the program, comparing the mothers who did FIND with those who did not.

Using MRI, researchers capture images of activity in different areas of the brain by tracking changes in [blood flow](#). Because oxygenated blood

and oxygen-depleted blood produce different magnetic signals, MRI allows the tracking of neural activity related to where fresh, oxygenated blood is going in the brain.

Giuliani and colleagues found that the mothers who had participated in FIND had increased activity in the inferior frontal gyrus and left insula, brain regions associated with self-control.

It is known that adult brains have less plasticity and are harder to mold than the brains of children. What the Fisher lab found, however, was that a change in brain activity was observed in those adults who participated in the coaching program.

"By practicing paying attention to a child and waiting for the child to respond, you're actually changing the part of your brain that does this," Giuliani said.

Fisher noted that the study, published Feb. 12 in *Frontiers in Behavioral Neuroscience*, and ongoing research shows that the positive, strengths-based nature of FIND is especially effective for mothers who themselves had high levels of adversity during childhood and who are often difficult to engage in family-based interventions.

The second study, published April 26 in *PLOS One*, examined the relationship between oxidative stress, adversity and mental health in children, linking them definitively for potentially the first time.

It is known that oxidative stress and psychological disorders are linked in adults, but little comparable work done with children, said Sarah Horn, a doctoral student in psychology who led the study.

"Oxidative stress is a sign of metabolic disruption in the body," Horn said. "Reactive oxygen species try to take electrons from the body,

which initiates a chain reaction. Normally, antioxidants terminate this chain reaction, but if there's too much stress it overwhelms the body/cells defenses."

This leads to oxidative degradation of proteins, DNA and fatty acids, and the formation of certain biomarkers in urine and plasma. Levels of one biomarker spike during stress events, remain elevated, but then normalize when the stress is resolved. Because of this, a measured high level over time indicates oxidative stress.

Horn used these indicators to link childhood adversity, such as parental abuse, neglect and incarceration, with oxidative [stress](#) and mental health pathology.

In her study of 50 at-risk adolescent women, Horn and co-authors found that those experiencing four or more adverse childhood experiences showed significantly higher levels of the biomarker. The higher levels were associated with all internalizing disorders examined, including anxiety, depression and disordered eating, along with attention deficit hyperactivity disorder.

Importantly, the study found that biomarkers could be useful in detecting early indications of troubling behavior in children.

"This tool might actually be sensitive enough to detect early signs of these disorders before they fully develop," Fisher said.

With recent funding for a large, multiyear study from the National Institutes of Health, Fisher said, there are plans to expand the pilot programs to further investigate the connection between video coaching and altered brain activity, as well as use FIND alongside the monitoring of biomarker levels to study the relationship between [oxidative stress](#) and adverse childhood experiences.

More information: Sarah R. Horn et al. Childhood adversity, mental health, and oxidative stress: A pilot study, *PLOS ONE* (2019). [DOI: 10.1371/journal.pone.0215085](https://doi.org/10.1371/journal.pone.0215085)

Nicole R. Giuliani et al. A Preliminary Study Investigating Maternal Neurocognitive Mechanisms Underlying a Child-Supportive Parenting Intervention, *Frontiers in Behavioral Neuroscience* (2019). [DOI: 10.3389/fnbeh.2019.00016](https://doi.org/10.3389/fnbeh.2019.00016)

Provided by University of Oregon

Citation: Studies support new approach to reduce stress in parents and kids (2019, July 2) retrieved 19 April 2024 from <https://medicalxpress.com/news/2019-07-approach-stress-parents-kids.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.