Professor Studies Prenatal Environment Effects on Long-term Development

It is widely recognized that early childhood experiences have lasting consequences on development. But little is known about how the prenatal environment affects development both before and after birth. Elysia Davis, associate professor in the department of psychology, is studying the ways in which the prenatal environment shapes physical and mental health across a lifespan.

Davis is director of the Neurodevelopmental Research Program in the department of psychology. Among other projects, she and her research team are tracking children from the fetal period through adolescence to determine how a child’s prenatal environment, including fetal exposure to stress and stress hormones, gestational age at birth and medications given during pregnancy, may affect his/her behavior and the way he/she learns and grows.

“Studies of prenatal development historically have focused on insults to the developing brain or exposure to teratogens, such as drugs or alcohol,” said Davis. “However, it’s becoming increasingly recognized that even normal changes in the prenatal environment, including variations in the exposure to maternal hormones, play a critical role in shaping the developing fetus and contributing to postnatal behavioral and brain development.”

Specifically, the team is evaluating prenatal exposure to naturally occurring maternal psychosocial stress and stress hormones, as well as synthetic glucocorticoids which are used to promote fetal lung maturation in women at risk of preterm delivery.

“My research has shown that variations in stress hormone exposures, even within the normal physiologic range, have lasting effects on health and development,” she said.

Davis received her PhD in developmental psychobiology at the University of Minnesota, and began her research while a postdoctoral fellow at the University of California, Irvine. In 2012, she came to the University of Denver and established the Neurodevelopmental Research Program, which is supported by grants from the National Institutes of Health. Her team consists of other faculty members, graduate and undergraduate students and staff.

“Running longitudinal studies with human mothers and infants takes a lot of time and effort. I’m here every day working on these studies, alongside a great group of colleagues. They are critical to the success of this lab!”
Students interested in working on the study go through an interview process before being selected for the program. They assist with data collection, behavioral coding of mothers and babies, database management and anything else needed to make the studies run.

“There are opportunities for highly motivated undergraduate students to develop their own interests,” said Davis. “These students perform literature reviews and collect relevant information to develop a research question. One of my students recently was awarded a PINS grant to pursue her research interests.”

When she’s not in the lab, Davis is teaching courses on biological process in development, prenatal and infant development, child and lifespan development and health psychology. “One of my favorite things about teaching is seeing students’ excitement as they learn new information about the important role early experiences play in our health and development.”

Learn more about the Neurodevelopmental Research Program.